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**PROCEEDINGS OF THE 5TH ANNUAL CONFERENCE
OF THE FORMAL LINGUISTICS SOCIETY OF
MID-AMERICA**

EDITOR

James H. Yoon

**VOLUME 24, NUMBERS 1/2
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CONTENTS

Preface	v
AKINBIYI AKINLABI: Alignment constraints in ATR harmony	1
ANDREW BARSS: Derivations and reconstruction	19
J. FRASER BENNETT: Iambicity in Thai	39
DEBORAH MILAM BERKELEY: The OCP and gradient data	59
RAKESH MOHAN BHATT: On experiencers and subjects of perfect predicates	73
ANDREW CARNIE, ELIZABETH PYATT & HEIDI HARLEY: The resurrection: Raising to Comp? Some evidence from Old Irish	85
JENNIFER COLE & CHARLES W. KISSEBERTH: An optimal domains theory of harmony	101
MICHEL DEGRAFF: The morphology-syntax interface in creolization (and diachrony)	115
MAARTEN DE WIND: Checking interrogative subject pronouns in French	133
ALEXIS DIMITRIADIS: Clitics and island-insensitive object drop	153
GEORGE FOWLER: Verbal prefixes as functional heads	171
STEFAN FRISCH: Reanalysis precedes syntactic change: Evidence from Middle English	187
JANINE GRAZIANO-KING: Selection properties of raising verbs	203
GEORGIA M. GREEN: The structure of context: The representation of pragmatic restrictions in HPSG	215
REBECCA HERMAN: "La Double Vie De W" or the status of [w] in Karuk	233
ELIZABETH HUME & DAVID ODDEN: Contra [consonantal]	245
JONGHO JUN: A constraint-based analysis of place assimilation typology	263
MARK KAS & FRANS ZWARTS: Intervention phenomena: Towards an extended monotonicity calculus	279
DAVID KATHMAN: Infinitival complements in a Minimalist theory of grammar	293
ANDREAS KATHOL: Parasitic "gaps" in German revisited	303
BYONG-KWON KIM: VP-internal subject hypothesis and ATB gap parallelism	317
MARTINA LINDSETH: Overt expletives and thematic subjects in West Slavic	333
JAIRO NUÑES: Another look at Lithuanian impersonal passives	347
MARI BROMAN OLSEN: The semantics and pragmatics of lexical aspect features	361
JANINA RADÓ: Complexity limitations on parsers and grammars	377
CARSON T. SCHÜTZE: Serbo-Croatian second position clitic placement: Syntax is not enough	389
KUO-MING SUNG: A typological study of NP extraction from QP	403
ELLEN THOMPSON: The syntax and semantics of temporal adjunct clauses	419
NATSUKO TSUJIMURA: Resultatives and motion verbs in Japanese	429
SPYRIDOULA VARLOKOSTA: Factive complements and wh-extraction	441
GERT WEBELHUTH & FARRELL ACKERMAN: German idioms: An empirical approach	455
MARY WU: Demonstratives, focus, and the interpretation of complex NPs in Mandarin Chinese	473

Preface

The papers included in this volume are based on those presented at the 5th Annual Meeting of the Formal Linguistics Society of Mid-America, held May 20-22, 1994 at the University of Illinois, Urbana-Champaign. Thirty-two papers are included in this volume, with the exception of papers by keynote speakers (James McCloskey, Angelika Kratzer, and Donca Steriade) and presentations by J-M Authier, Gorka Elordieta, David Gohre and Ljiliana Progovac. They are published as a special combined issue (volume 24, 1/2) of the department journal, *Studies in the Linguistic Sciences*.

I would like to thank a number of individuals and organizations for their generous support during the conference and in the (delayed) production of the proceedings. The conference was made possible through the sponsorship of the Department of Linguistics, the Beckman Institute, the College of Liberal Arts and Sciences, the Cognitive Science/Artificial Intelligence Steering Committee at the University of Illinois, and the Department of Foreign Languages and Literatures, Illinois State University. The following units at Illinois also made contributions to the conference: the Language Learning Laboratory, East Asian Languages and Cultures, Germanic Languages and Literatures, Spanish-Italian-Portuguese, French, Slavic Languages and Literatures, the Division of English as an International Language, the Center for African Studies, and the Program in South and West Asian Studies.

In the preparatory stages and during the conference, I was privileged to have the cooperation of the local organizing committee: Professors Elmer Antonsen, Elabbas Benmamoun, Chin-Chuan Cheng, Jennifer Cole, Laura Downing, Georgia Green, Lorie Heggie (Illinois State University), Hans Hock, Charles Kisseberth, Jerry Morgan, and Alessandro Zucchi. The outstanding work of my assistant Simon Donnelly needs to be singled out for special mention. It was his work that made the sometimes overwhelming task of organizing a conference seem almost routine. I would also like to acknowledge the help of student volunteers during the conference, in particular, Molly Homer, Elaine Hsiao, and Khalil Iskarous.

In the production of this volume, I was aided by Sara Michael and Mark Honegger. Their expertise in editorial work is largely responsible for the professional look and organization of this volume. The editors for *SLS*, Hans Hock and Elmer Antonsen, have provided much editorial advice for which I am deeply indebted.

January 1996

James H. Yoon
Editor



ALIGNMENT CONSTRAINTS IN ATR HARMONY*

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This paper proposes an analysis of ATR harmony within the optimality theoretic alignment constraints called featural alignment. The types of ATR harmony discussed here are those in which the harmonic ATR value is morphemic or morpheme level. It is proposed that the same set of constraints are applicable in both cases. Finally, I provide additional support for a central theme of featural alignment: that misalignment occurs when a feature co-occurrence constraint dominates a feature alignment constraint.

1. Introduction: Featural Alignment

There are at least three sources of ATR harmony in the world's languages. ATR harmony may result from an underlying ATR morpheme as in signifying the difference between completive and incompletive aspects in Kanembu, in (1).

(1) Kanembu (Jouannet 1982, Roberts 1994)

Completive [-ATR]	Incompletive [+ATR]
'gónàkì 'I took'	'gónàkì 'I am taking'
'dállàkì 'I got up'	'dállàkì 'I am getting up'
dállá'kì 'I soaked'	dállá'kì 'I am soaking'
bàrénó'kì 'I cultivated'	bàréná'kì 'I am cultivating'

It may also be nonmorphemic, as in Kalabari in (2) where vowels within a morpheme must agree in ATR value. This is by far the commonest type.

(2) Kalabari (Williamson 1969, Jenewari 1973)¹

ééré 'female'	ééré 'name'
béle 'light'	bééré 'case/trouble'
mónō 'to sleep'	kōrō 'rafia palm'
póló 'compound'	óló 'cough'

The third source of harmony is a case in which one of the vowels in a morpheme is underlyingly specified for the harmonic ATR feature to which all other vowels harmonize, such as is the case in Wolof (Archangeli and Pulleyblank in press). The discussion in this paper will be restricted to the first two cases. The reader is referred to Archangeli and Pulleyblank (in press) for a discussion of a number of cases of the third type, including Wolof.

In this paper, I will pursue a line of thought in which the forms of ATR harmony in (1) and (2) are accounted for within the Optimality theoretic alignment constraints (McCarthy and Prince 1993a,b;

Prince and Smolensky 1993), called Featural Alignment (Akinlabi 1994; see also Kirchner 1993 and Pulleyblank 1993).

(3) Featural Alignment

Align (PFeat, GCat)

Any occurrence of a prosodic feature is aligned with some grammatical category.

PFeat consists of a set prosodic features in the Firthian sense of the word, features which span grammatical categories. As is well known such features may include pitch, nasality, roundness, palatalization, and the like. The question that arises is, in such cases as Kanembu ATR in (1) why does a morpheme get realized as part of another morpheme? The answer is that features require licensing, hence their association with the stem. Featural Alignment in (3) aligns a **free** harmonic element with specific edges of grammatical categories,² or with an entire grammatical category.

Under Featural Alignment an edge does not necessarily mean a morphological edge; an edge is defined for a PFeat based on possible licenser. From Licensing theory, we know that universally, feature licensers can be either a **mora** or a **root node** (Ito 1989; Ito and Mester 1993; Ito, Mester and Padgett 1993, etc.). Therefore while edges in tones refer to the initial or final mora, edges in nasal harmony and the like may refer to the first or last root node, i.e. real morphological edges.

In its original conception, Featural Alignment was designed as a featural version of McCarthy and Prince's (1993b) Align (MCat, MCat), to handle cases of featural affixation (see Akinlabi 1994). Here I apply it to cases of ATR harmony where the feature may or may not be a formative but is underlyingly free.

To be clear, Featural Alignment (3) applies when the following two conditions are satisfied: (a) the harmonic feature is underlyingly free, i.e. underlyingly unassociated and (b) there is one occurrence per grammatical category (which follows from the fact that they are edge aligned). Therefore, free featural affixes as well as underlyingly free morpheme level features spanning grammatical categories (e.g. Vowel Harmony) may fall under the purview of Featural Alignment.

In their study of alignment in regular affixation, McCarthy and Prince (1993b) observe that an alignment constraint, such as one which aligns the left edge of one morpheme with the right edge of another, may be violated when dominated by a prosodic constraint, such as one that disallows a coda. This may force a suffix to be realized as an infix. A major theme of Featural Alignment (3) is that a feature alignment constraint may be violated under pressure from feature cooccurrence constraints, leading to misalignment (cf. Pulleyblank 1993). A featural suffix may for example be realized elsewhere in the stem, resulting in featural infixation, as shown in Akinlabi's (1994) analysis of Chaha labialization.

In the following sections I illustrate the application of featural alignment with ATR harmony in two languages, Kanembu and Kalabari Ijo.

2. Kanembu

Kanembu, a Nilo-Saharan language of the Sahara group spoken in Chad and Niger, illustrates a system in which [+ATR] is a morpheme. Citing Jouannet (1982) Roberts (1994) gives the vowel system of Kanembu, as in (4).

(4) Kanembu vowel system (Data from Roberts 1994)

[+ATR] (Tense) Vowels:	i	e	ʌ	o	u
[-ATR] (Lax) Vowels:	ɪ	ɛ	ə	a	ʊ

In Kanembu, the difference between the completive and the incompletive aspects of the verb are marked by vowel quality. The incompletive forms are characterized by [+ATR] vowels while the completive forms have [-ATR] vowels, as the examples in (5) and (6) reveal. (The central [+ATR] vowel [U] corresponds to the two [-ATR] vowels [ə] and [a].)

(5) Forms composed of the verb root, followed by the first person subject pronoun marker *-nəkɪ* or *-nəkɪ*.

Completive [-ATR]	Incompletive [+ATR]
'gónəkɪ 'I took'	'gónəkɪ 'I am taking'
'dálləkɪ 'I got up'	'dálləkɪ 'I am getting up'
dálló'kɪ 'I soaked'	dálló'kɪ 'I am soaking'
bàrénəkɪ 'I cultivated'	bàrénəkɪ 'I am cultivating'

(6) Forms with other person markers: *-i* or *-ɪ* (3rd person singular), *-yeɪ* or *-yeɪ* (3rd person plural), and *-nəmɪ* or *-nəmɪ* (2nd person singular).

Completive	Incompletive
'fâi 'he woke up'	'fâi 'he is waking up'
'gárcɛi 'they encircled'	'gárcɛi 'they are encircling'
'dárɛmɪ 'you strolled'	'dárɛmɪ 'you are strolling'

The analysis of the above forms is straightforward. Following Roberts (1994) I assume that the incompletive aspect marker is a free [+ATR], which is a featural affix. The completive aspect is unmarked, and it takes the default [-ATR]. ATR is licensed by any mora in this language. Finally, the domain of the aspectual marker is the entire clitic group, which I will refer to as the stem.

In Optimality theory (Prince and Smolensky 1993, McCarthy and Prince 1993a,b), the input of each process is associated, via the function GEN, with a set of output candidates which are evaluated against a set of ranked constraints. The candidate which best satisfies the constraint system is the optimal form. GEN is restricted by the principle of Containment, which dictates that the input must be contained in the output. All the information present in the input form is pre-

sent in the output form as well. Employing Featural Alignment (3) within the above approach, the following constraints account for Kanembu ATR harmony.

(7) Align- [+ATR]

Align (Inc.[+ATR], Stem)

Any occurrence of the incompletive [+ATR] must be aligned with the right and left edges of the stem.³

(8) *Gapped

Autosegmental Association may not be gapped.

(Archangeli and Pulleyblank in press, Pulleyblank 1993, Kirchner 1993).

Note that right and left edges in (7) imply rightmost and leftmost mora respectively, given featural alignment. Three additional constraints enforce faithfulness of the output. Two of these, Lex-Feat and Lex-Link, are adopted from Ito, Mester and Padgett (1993). (see also Pulleyblank 1993, Archangeli and Pulleyblank 1993 for Recover-F and Recover-P). The third constraint is Parse-ATR. These constraints are defined below in (9)-(11).

(9) Parse [+ATR]

Incompletive [+ATR] must be parsed.

(See Ito 1986, Prince and Smolensky 1993, McCarthy and Prince 1993a)

(10) Lex-Feat

All features should be part of lexical input.

(11) Lex-Link

All association lines should be part of lexical input.

The construction of a grammar in Optimality theory is a matter of determining the proper ranking of CON, the set of constraints out of which grammars are constructed. A constraint tableau such as the one in (12) is employed as a calculation device. Constraints are arranged on a tableau from left to right in order of domination. On a typical constraint tableau a line between two constraints indicates domination, but a dashed or dotted line is used to show that there is no evidence of ranking between two constraints. Constraint violations are indicated by *, and fatal constraint violations are indicated by !. Below the fatal violations, cells are shaded to indicate their irrelevance to determining the comparison at hand. The optimal candidate is indicated by ⚡.

The following tableau illustrates how the constraints produce a form such as *'gónl̀k̀ì* 'I am taking'. For clarity I show the partial autosegmental representation of each candidate output in (13), as arranged in the tableau. In the following as well as subsequent representations, capital letters represent vowels unspecified for ATR.

(12) Input: [+ATR]; gO + nɛkI

Candidates	Parse-[+ATR]	Align-[+ATR]	*Gapped	Lex-Link
'qónɛ̀kɪ	*!			
'qónɛ̀kɪ		*!		*
'qónɛ̀kɪ			*!	*
ɛ̀ɛ̀ 'qónɛ̀kɪ				*

(13) gO nɛkI gO nɛkI gO nɛkI ɛ̀ɛ̀ gO nɛkI
 <[+ATR]> | / \ / \ / | /
 [+ATR] [+ATR] [+ATR] [+ATR]

It is assumed that given the input in (12), GEN supplies at least the four candidates listed in the first column. The tableau (12) shows that a violation of any of the three constraints Parse-[+ATR], Align-[+ATR] and *Gapped renders the output nonoptimal, since there is a candidate that violates none of the constraints. Note also that there is no evidence of ranking among the three constraints above; this is indicated with the dotted line between them. Note that parsing [+ATR] implies a violation of Lex-Link, since the association is not underlying. Therefore Parse-[+ATR] must dominate Lex-Link. I have not included Lex-Feat here because it is irrelevant to this example.

In the case of Kanembu discussed above, a rule based approach faces difficulty since there has to be an arbitrary decision on the direction of linking and spreading. Note that it is not clear from the data whether the [+ATR] affix links first to the verb or to the suffix before spreading. A constraint based approach does not face such difficulty since there can only be domination, and not ordering, among constraints.

The crucial issues to note from the discussion of Kanembu, with a [+ATR] formative are that [+ATR] is underlyingly free and the domain of [+ATR] is the entire clitic group. These same properties are found in Kalabari, a language in which [+ATR] is not a formative, but in which [+ATR] is also underlyingly free. The Kalabari system is more interesting in that alignment constraints may be violated. I now turn to discuss this system, showing that the system can be accounted for with the same constraints as for Kanembu.

3. Kalabari

On the surface, Kalabari, a Niger-Congo Language of Nigeria, has nine oral vowels: [i, ɪ, e, ɛ, a, o, ɔ, u, ʊ], and nine corresponding nasal vowels (Jenewari 1985), which may be split into [+ATR] and [-ATR] sets as in (14).

(14) Kalabari vowels (Williamson 1969, Jenewari 1973, 1980, 1985)

[+ATR] Vowels: [i, e, o, u]

[-ATR] Vowels: [ɪ, ɛ, a, ɔ, ʊ].

From this list, it is obvious that every vowel has a [+/-ATR] counterpart except the low vowel /a/. Within a morpheme, mid vowels of

the same set cooccur with each other, and those of different sets do not cooccur; as the examples in (15) show.

(15) Roots with mid vowels

[+ATR]		[-ATR]	
a.	é ré 'female'	é ré 'name'	
	bé lé 'light'	bé ré 'case/trouble'	
	mónō 'to sleep'	kō rō 'rafia palm'	
	póló 'compound'	óló 'cough'	
	cf. *ere	*mōno	
	*ere	*mono	
b.	ólóló 'bottle'	òbókò 'fowl'	
	énéme 'oil palm'	ètérē 'mat'	

Like the mid vowels, high vowels split neatly into [+ATR] and [-ATR] sets. They cooccur with other high and mid vowels of their respective sets. Thus they both trigger and undergo harmony as the examples in (16) show.

(16) Roots with high vowels

[+ATR]		[-ATR]	
a.	buru 'yam'	buru 'become rotten'	
	kírí 'ground'	fírí 'work/message'	
	íkú 'louse'	íkú 'rock'	
b.	fíyé 'food'	bìtẹ́ 'cloth'	
	féní 'bird'	dẹrì 'laugh'	
	poku 'bat'	tórú 'river'	
	fúrō 'belly/stomach'	dúrò 'barracuda'	
	pókí 'listen'	dókí 'burn v. i.'	
	ímō 'sweat'	píkò 'feather'	
	númé 'song'	fẹ́rú 'wind'	
c.	ìgbìgì 'money'	sìkírí 'wash'	
	ókúró 'shoe'	ófíyọ́n 'whistle'	
	ínúmé 'hair'	tórúmgbò 'eye'	
	tòkùrú 'chew'	ílúkú 'folk story'	
	ólókū 'shout'	ífókò 'a (Kalabari) village name'	
	óbórí 'goat'	íngẹ́rì 'alone'	
		ìyòrò 'female (goat)'	

A crucial observation that emerges from the examples in (15) and (16) is that there is at most one ATR specification per morpheme. Therefore ATR is a morpheme level feature (meaning one occurrence per morpheme) which does not have to be specified in the underlying representation of any particular vowel. ATR is thus a **free** underlying feature.

The forms with the low vowel /a/ reveal a different picture from what we have observed so far. The low vowel /a/ cooccurs with itself and with other vowels regardless of their surface ATR specification, as (17) shows. Williamson (1969:107) gives the occur-

ring patterns (with a low vowel) within a morpheme as: *ia*, *ai*, *au*, *ua*, *aa*, (*ia*, *ai*, *au* and *ua*), noting that the patterns in parentheses are more rare but that they occur. These patterns exhaust all the expected forms between high and low vowels in bisyllables. Note however that the same is true for mid vowels too, as the following examples reveal.

(17) Roots with low vowels

a.	<i>niná</i>	'urine'	<i>pínā</i>	'be white'
	<i>ati</i>	'ten'	<i>wáří</i>	'house'
	<i>fúrā</i>	'be pregnant'	<i>ḍubá</i>	'be(come) fat/big'
			<i>árú</i>	'canoe'
b.	<i>ḍáwó</i>	'kolanut'	<i>ḍawo</i>	'dream'
	<i>áyō</i>	'onion'	<i>awo</i>	'children'
	<i>gbólá</i>	'call'	<i>kpóma</i>	'really (adverbial)'
	<i>bomá</i>	'personal name'	<i>sóná</i>	'five'
			<i>ámá</i>	'town'
c.	<i>íbílá</i>	'bed'	<i>píláma</i>	'bitter leaf'
	<i>òkpòká</i>	'pipe'	<i>àkàlú</i>	'moon'
	<i>ósúká</i>	'grass'	<i>íkákí</i>	'tortoise'
	<i>lòliá</i>	'star'	<i>íkásí</i>	'lock'
	<i>awuwán</i>	'yawn'		
	<i>kálìè</i>	'be small'		
	<i>támgbóló</i>	'mosquito'		

In (17), such forms as *ḍáwó* 'kolanut', *bomá* 'personal name', etc., reveal the fact that the active harmonic feature cannot be [-ATR] regardless of the direction in which harmony is assumed to go, since [+ATR] vowels occur to the left or right of vowel /a/. Note that [-ATR] high and mid vowels can also occur on either side of /a/ as expected, as in *ḍawo* 'dream', *sóná* 'five'. In fact it is impossible to explain a form like *awuwán* 'yawn', with a [+ATR] vowel sandwiched between two [-ATR] vowels, within such an assumption. The traditional approach to this problem is to assume that vowel /a/ is neutral with respect to harmony (Williamson 1969, Jenewari 1973). But this position cannot be accurate because across morphemes only vowels of the [-ATR] set can occur before /a/, as the examples in (18) show.

(18)	<i>i da</i>	'my father'	cf.	* <i>i da</i>
	<i>i dawóō</i>	'my kolanut'	cf.	* <i>i dawóō</i>
	<i>iye adóo</i>	'my inlaw'	cf.	* <i>iye adóo</i>

Therefore /a/ cannot be neutral with respect to harmony.

I propose therefore that the active harmonic feature is [+ATR]. This implies that forms such as *ḍáwó* and *bomá* have free underlying [+ATR], while morphemes like *ḍawo* 'dream', *sóná* 'five' lack [+ATR]. In such forms as (18) vowel /a/ blocks the propagation of [+ATR]. The occurrence of vowel /a/ with [+ATR] vowels however still remains to be accounted for. Following the practice in Archangeli and

Pulleyblank (in press) I represent morphemes with free harmonic [+ATR] as in (19a), and those without it as in (19b)

- (19) a. $\left[\begin{array}{c} +ATR \\ \mu \quad \mu \end{array} \right]$ b. $\left[\begin{array}{c} \mu \quad \mu \end{array} \right]$

And finally, prefixes, including all pronoun clitics, undergo harmony, as shown by the examples in (20). The domain of harmony in Kalabari is thus the clitic group.⁴

- (20) a. o torūū 'his chalk'
 o ɬorūú 'his face'
 b. ó bóo 'you (pl.) are to come'
 ó ɛgíí 'you (pl.) are to sit down'
 c. i féníí̄ 'my bird'
 i finíí̄ 'my firewood'
 d. ori ókí̄m 'he sat down'
 ori ɛgí̄m 'he swam'
 e. iye obíí̄ 'my dog'
 iye ɔbókō 'my fowl'
 f. ini ólókú̄m 'they shouted'
 ini ɛrí̄m 'they saw (it)'

Suffixes, however, do not harmonize with the verb root. They surface as [-ATR], which I assume here to be the default. Kalabari tense suffixes confirm this. (The crucial case in all of the examples below is the last one, the nonalternating suffix *-té*; since we do not expect the vowel /a/ to alternate.) The relevant suffixes are in boldface.

- (21) Bómá Gogó fómú-**ba** 'Boma will beat Gogo'
 boma / gogo / beat / TNS
 Bómá Gogó fómú-**árí** 'Boma is beating Gogo'
 Bómá Gogó fómú-**m̄**⁵ 'Boma beats Gogo'
 Bómá Gogó fómú-**té** 'Boma has beaten Gogo'

The basic generalizations from the above description of Kalabari ATR harmony are as follows:

- (i) The active harmonic feature is [+ATR].
 (ii) There is only one [+ATR] value per morpheme; some morphemes have it, others don't.
 (iii) Mid and high vowels within the same morpheme have the same [ATR] value.
 (iv) Mid and high vowels with any [ATR] value can cooccur with vowel /a/ within the same morpheme. Vowel /a/ blocks the propagation of [+ATR] across morphemes.
 (v) Prefixes, but not suffixes, undergo harmony.

3.1 Analysis

Within an Optimality theoretic approach employing Featural Alignment (3), ATR harmony in Kalabari can be accounted for with the same constraint system established for Kanembu, with a number of modifications which I will make as they become necessary. The effects of ATR harmony in Kalabari may be derived from the operation of two feature alignment constraints, stated in (22) and (23). I assume that Kalabari harmony crucially involves two alignment constraints because the domain of each constraint is different.⁶

(22) ALIGN-RIGHT

Align ([+ATR], Root, R)

Any occurrence of [+ATR] is aligned with the right edge of a root.

(23) ALIGN-LEFT

Align ([+ATR], Stem, L)

Any occurrence of [+ATR] is aligned with the left edge of a stem (clitic group).

(24) Parse-ATR

Underlying [+ATR] must be parsed within the morpheme.

As noted before the right and left edges here imply the rightmost and leftmost moras respectively. Both of the alignment constraints properly ensure that prefixes, but not suffixes constitute the domain of ATR harmony. Given the traditional morphological hierarchy, the root is properly contained in the clitic group; or morphological word (see McCarthy and Prince 1993b:6), therefore where there is no prefix, the left edge of the morphological word coincides with the left edge of the root.

3.1.1 Forms with mid and high vowels

I now proceed to illustrate how an interaction of these constraints produce the output forms in Kalabari, including relevant constraint domination. I begin with the simplest of the cases, the examples in (15) and (16) with high and mid vowels only. These examples may be accounted for by aligning the harmonic ATR feature with both edges of the root morpheme. The interaction of the two alignment constraints with Parse-ATR produce these cases. They do not however provide crucial ranking information between these three constraints. The reason is that the satisfaction of an alignment constraint implies the satisfaction of Parse-ATR. Tableau (25) illustrates an example with only mid vowels, but the same tableau is adequate for a form with both high and mid vowels. For trisyllabic forms, satisfaction of *Gapped is required as well, but I will not illustrate these here for reasons of space.

(25) Lexical Input: ErE, +A ; Output: éré 'female'

Candidates	Parse-ATR	Align-Right	Align-Left	Lex-Link
εre	*!			
ere			*!	*
εre		*!		*
ÉrÉ 'female'				**

As in the case of Kanembu, for such inputs as these the optimal output candidate is one in which both of the alignment constraints and Parse-ATR are satisfied. The crucial constraint conflict is between Parse-ATR which demands that free underlying [+ATR] be parsed, and Lex-Link which demands all surface association be underlying. Thus the crucial candidates are the first, which violates only Parse-ATR, and the last, which violates only Lex-Link. In this case since the optimal candidate is the last one, Lex-Link is violated in favor of Parse-ATR. Parse-ATR thus crucially dominates Lex-Link. (Parse-ATR >> Lex-Link).

Let us now consider a comparable input in which there is no underlying [+ATR], the optimal candidate is *EcE* (*εre*) *éré* 'name', the candidate that is completely faithful to underlying representation. All other serious candidates are ruled out by the Lex-Feat, since they have the feature [+ATR] which is not underlying. In the following tableau, I have left out the alignment constraints and Parse-ATR, since they are irrelevant here.⁷

(26) Input: ErE, Ø; Output: éré 'name'

Candidates	Lex-Feat	Lex-Link
ÉrÉ 'name'		
εre	*!	*
ere	*!	*
éré	*!	**

A violation of Lex-Feat implies a violation of Lex-Link, so these constraints cannot be ranked with respect to each other. The above account takes care of the straightforward cases, i.e. those with high and mid vowels only, regardless of the number of moras in the root morpheme.

The dominance relation established in this section is Parse-ATR >> Lex-Feat, Lex-Link.

3.1.2 Forms with low vowels

I now turn to roots with vowel *la*, *bomá* 'personal name', *dáwó* 'kolanut'; as exemplified in (17). These examples provide crucial support for a central theme of Featural Alignment (3): that alignment is violated only under pressure from feature cooccurrence constraints, establishing the relation: Feature Co-occurrence >> Feature Alignment.

We observed above that /a/ is the only vowel that lacks a [+ATR] counterpart in Kalabari. Kalabari does lack a [+LO, +ATR] vowel. Following Archangeli and Pulleyblank (in press), we can express this as a (grounded) constraint barring the association of [+ATR] to a mora linked to [+LO].⁸

(27) *LO/ATR

If [+LO] then not [+ATR].

The interaction of *LO/ATR (27) with Parse-ATR and the two alignment constraints accounts for these forms. *LO/ATR is apparently unviolated in Kalabari, being surface true. This indicates that it is more harmonic to violate either or both alignment constraints and Parse-ATR in favor of *LO/ATR in Kalabari. It thus crucially dominates both alignment constraints and Parse-ATR. I present evidence for each domination in the next three tableaux.

(28) *LO/ATR >> Align-R, Input: bOmA, [+ATR]

Candidates	*LO/ATR	Parse-ATR	Align-Right	Align-Left
bɔma		*!		
bɔmæ	*!			*
^{ɛ̄} boma			*	
bomæ	*!			

The cases represented in tableau (28) are those in which the last mora is linked to [+Low]. The forms to compare in the tableau are the last two. In the last output candidate **bomæ* the underlying [+ATR] is properly aligned with both edges, but this is in violation of *LO/ATR. It is therefore not optimal. The optimal output *bomá* 'personal name' on the other hand violates Align-Right in favor of *LO/ATR. It thus shows a feature alignment constraint, Align-Right, violated under pressure from feature cooccurrence constraint, *LO/ATR.

The tableau in (28) also provides evidence that underlying [+ATR] must be parsed if there is at all any chance to do that; even if it is not parsed onto the rightmost mora, providing evidence that Parse-ATR dominates Align-R. This constitutes the difference between the first nonoptimal candidate *bɔmá* and the actual output *bomá*. The first candidate fails because there is a possibility of parsing [+ATR] on the initial mora, a possibility which is not utilized. So a parse violation is fatal if it is at all possible to parse.

Along the same direction as the form *bomá* 'personal name', a form like *dáwó* 'kolanut' shows that Align-Left may be violated in favor of *LO/ATR, again providing crucial evidence that a feature alignment constraint is violated under pressure from a feature cooccurrence constraint. The following tableau illustrates the point.

(29) *LO/ATR >> Align-L; Input: dAwO, +ATR

Candidates	*LO/ATR	Parse-ATR	Align-Right	Align-Left
dawo		*!		
^ḍ dawo				*
dæwo	*!		*	
dæwo	*!			

Tableau (29) represents forms in which the first mora is linked to [+Low]. The candidates to compare are the second candidate which is the optimal form, and the last candidate. In the last output candidate *dæwo, the underlying [+ATR] is properly aligned with both edges, in violation of *LO/ATR. It is therefore not optimal. The optimal output *dáwó* 'personal name' on the other hand violates Align-Left in favor of *LO/ATR; again showing a feature alignment constraint, Align-Left, violated under pressure from a feature cooccurrence constraint, *LO/ATR.

Finally, a form like *awuwán* 'yawn' shows that both alignment constraints may be violated at the same time under pressure from *LO/ATR.

We can actually draw a parallel here between McCarthy's and Prince's Generalized Alignment and the account proposed above. In Generalized Alignment, McCarthy and Prince show that a suffix may be realized as an infix if an alignment constraint is dominated by a prosodic constraint such as *NO CODA. In Featural Alignment, whether the feature is a morphemic (a featural affix) or morpheme level (one specification per morpheme), what forces misalignment is a cooccurrence constraint dominating an alignment constraint. I have demonstrated this here with ATR alignment constraints and a feature cooccurrence constraint between [+Low] and [+ATR].

In closing the discussion on the forms with [+ATR] mid and high vowels occurring in the same root with low vowel /a/, we note that these forms have a possible treatment in a rule based approach. A rule based approach recognizing [+ATR] as done here may treat disharmonic /a/ in two ways; (a) it may ban the creation of [æ] with structure preservation, or (b) it may ban the association of [+ATR] to a mora specified for [+Low], as done here. In either case, the rule based approach will be employing rules as well as constraints. The advantage of a constraint based approach is that it employs only constraints.

Turning now to forms with entirely low vowels, outputs like *ámá* 'town' indicate that underlying [+ATR] may not be parsed if a violation of *LO/ATR will result. Therefore *LO/ATR must dominate Parse-ATR.

(30) *LO/ATR >> Parse-ATR; Input: AmA, +ATR

Candidates	*LO/ATR	Parse-ATR	Align-Right	Align-Left
ama		*		
amæ	*!			*
æma	*!		*	
æmæ	*!			

None of the competing candidates fares any better than the first candidate since they all violate *LO/ATR, a violation which is fatal. Thus in such cases, it is more harmonic not to parse the underlying [+ATR] at all if such parsing will lead to a violation of *LO/ATR.

The question is, if we assume that [+ATR] is underlying in some of these forms with all low vowels, how come it is not realized on the prefix. The answer to that lies in the restriction on parsing. In Kalabari, [+ATR] must be parsed within the morpheme in which it is underlying, otherwise it becomes unclear what the source of the underlying [+ATR] is. If it cannot be parsed because it will violate *LO/ATR, it does not get parsed at all.

Since underlying [+ATR] will not be parsed onto the prefix in an all low vowel root, the prediction of the above analysis is that all vowels preceding a vowel /a/ will be [-ATR]. That prediction is borne out by fact.

So far I have established the following ranking among the constraints introduced:

(31) Overall constraint ranking:

*LO/ATR >> Parse-ATR >> Align-R, Align-L >> Lex-F, Lex-L

The following combined tableau shows the forms parallel to those in tableaux (28)-(30), but without underlying [+ATR]. In this tableau, the constraints Parse-ATR, Align-R, and Align-L are vacuously satisfied since these constraints refer to underlying [+ATR]. Also in these cases the relevant faithfulness constraint is Lex-Feat, which ensures that all surface features are underlying. I have included all other constraints here for the sake of completeness. Capital letters in the input represent mid and low vowels without ATR specification.

(32) Low vowel input without underlying [+ATR]

Input	Candidates	*LO/ATR	Parse-ATR	Align-Right	Align-Left	Lex-Feat	Lex-Link
O...A	ɛɔ̄ sɔ̄na						
	sɔ̄næ	*!				*	*
	sona					*!	*
	sonæ	*!				*	*
A...O	ɛɔ̄ dawɔ̄						
	dawo					*!	*
	dæwɔ̄	*!				*	*
	dæwo	*!				*	*
A...A	ɛɔ̄ awa						
	awæ	*!				*	*
	æwa	*!				*	*
	æwæ	*!				*	*

In the above combinations with low vowels, the crucial contenders are forms which do not violate *LO/ATR since this violation immediately rules them out. However we see that the most harmonic form is the one without a Lex-Feat violation, i.e. the form that is faithful to input representation.

3.1.3 Prefixed forms

Finally, I now briefly consider forms with prefixes. The interesting cases are the forms in which a low vowel intervenes between a mid or high vowel and the prefix. The interaction of the alignment constraints with *LO/ATR, *GAPPED, and Parse-ATR account for such forms. The generalization to account for is that the low vowel /a/ blocks the propagation of [+ATR]. The implication of this is that all such forms will result in the output iCaCi. This follows from the prohibition against linking [+ATR] to a low vowel by *LO/ATR, and the prohibition against skipping the intervening low vowel by *GAPPED. One interesting observation is that *GAPPED is never violated by underlyingly free features during alignment. The following tableau shows a disyllabic form with a prefix; giving the overall pattern ICACO.

(33) Input :l + dAwO; [+ATR].

Candidates	*LO/ATR	*GAPPED	Parse-ATR	Align-Right	Align-Left
idawo			*!		
ɛɛ idawo					*
idæwo	*!				*
idæwo	*!			*	*
idæwo	*!				
idawo		*!			
idæwo	*!			*	
idawo			*!	*	

In this tableau, five candidates violate one of the undominated constraints: *LO/ATR; and *GAPPED, and are thus ruled out. The interesting cases are those that violate Parse-ATR and the optimal candidate that violates an alignment constraint. The first candidate is ruled out because there is a possibility of parsing [+ATR] on the rightmost mora, a possibility which is not utilized. The last candidate is however interesting in another sense. This candidate violates Parse-ATR though [+ATR] is actually parsed! [+ATR] is parsed on the prefix vowel instead of the root, leading to an unnecessary disharmonic prefix.

4. Conclusion

In Akinlabi (1994), tonal as well as segmental evidence was provided in support of a central theme of Featural Alignment, that feature cooccurrence constraints force the violation of feature alignment. Tonal misalignment results from tonal cooccurrence constraints in Etsako; and labial misalignment results from labial co-occurrence constraints in Chaha. In this paper, I have provided additional support from vowel harmony for the same theme: [+ATR] misalignment results from the feature cooccurrence constraints *LO/ATR. In addition, I have demonstrated that Featural Alignment not only handles cases of featural affixation, but also cases of (free) morpheme level features. What is common to both cases is that such features are underlyingly free, i.e. underlyingly unlinked to any segment.

NOTES

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¹ Except where indicated, Kalabari examples will be given in the standard Kalabari orthography. Within this orthography, i = [i], e = [ɛ], o = [ɔ], u = [u], b = [β], d = [d], r = [r]. Tones are transcribed: ´ = high tone, ¯ = downstepped high tone, unmarked = low tone.

² The basic idea of employing alignment constraints for harmony was originally proposed by Kirchner (1993). The approach here differs from his account in two ways; featural alignment covers not just vowel harmony but the alignment of all 'prosodic' features (see Akinlabi 1994), and secondly we employ alignment constraints here only when the harmonic feature is underlyingly free. We do not however rule out the relevance of alignment constraints to cases where the feature is not underlyingly free.

³ This constraint should ideally be split into two constraints Align [+ATR] Left and Align [+ATR] Right accounting for the two edges. Since there is no evidence that either one is violated here, it will suffice to have only one constraint.

⁴ Kalabari pronominal clitics vary depending on gender and grammatical function, which Jenewari (1989:116) refers to as 'subject' or 'non-subject'.

⁵ Jenewari (1973:65) initially claimed that the past tense suffix harmonizes with the verb, taking the forms -mu/mu depending on the verb. He however notes in a footnote the same work that the suffix is usually pronounced as a syllabic nasal -m. In all subsequent works (including those in which he discussed vowel harmony), he has transcribed this suffix as -m without the harmony claim. I therefore assume that the suffix is indeed a syllabic nasal.

⁶ In the preceding section, we pointed out that a rule based account of Kanembu faces the arbitrary decision of deciding the direction of linking and spreading. David Odden has pointed out that a similar arbitrariness exists in a constraints based account such as the one proposed here: the choice between having one or two alignment constraints in Kanembu and Kalabari respectively. A solution to such a problem is to assume two alignment constraints in all cases.

⁷ Optimal forms in these cases will of course violate some FILL constraint. The assumption then is that such a constraint is dominated by Lex-Feat.

⁸ See Archangeli and Pulleyblank in press for details on grounding theory.

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DERIVATIONS AND RECONSTRUCTION

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A central goal of the Minimalist program (Chomsky 1991, 1993; Chomsky & Lasnik 1994; Lasnik 1993) is the elimination of S-structure conditions in favor of either representational constraints on LF, or derivational constraints applying without reference to specific levels. More generally, LF is the only designated level of representation within this model, with the levels D-structure and S-structure formally eliminated. Consequently, any representational syntactic filter or licensing principle can refer only to LF, if it refers to any level at all; let us call this the MINIMALIST REPRESENTATIONAL THESIS. My concern in this article is to identify certain problems in the theory of reconstruction effects presented by Chomsky 1993 and Lasnik 1993, and to offer an alternative account of reconstruction which nonetheless satisfies the representational thesis.

In the decade preceding the development of the minimalist system, one of the leading questions in syntax was which constraints apply at which level(s) of representation. The general picture emerging was that different principles were distributed across different levels of representation; this set of results themselves justified the postulation of distinct levels of syntactic representation. One particular case is the application of the binding principles, those constraints of grammar regulating anaphoric dependence between argument positions. A number of researchers concluded that these principles appear to apply at the level of S-structure. This result requires adjustment in the minimalist system, which has no level S-structure. The demonstration that the binding principles do not apply at D-structure is quite straightforward: movement processes deriving S-structure from D-structure feed the binding theory. To take one well-known type of example, NP-movement maps the D-structure (1a) onto the S-structure (1b); in the output representation, the anaphor *herself* is c-commanded by its antecedent *Mary*, whereas prior to movement this was not the case.

- (1) a. ___ seems to herself₂ [___ to be likely [Mary₂ to win]]
b. Mary₂ seems to herself₂ [e₂' to be likely [e₂ to win]]

Were Condition A to apply at D-structure, the sentence would be filtered out as ungrammatical, given the lack of c-command of the anaphor by its antecedent in (1a). Since the sentence is acceptable, Condition A does not apply at D-structure. Similar arguments have been advanced for Conditions B and C of the binding theory.

In addition, it is standard to view NP-trace as an anaphor, with its distribution partially dictated by principle A. Given this hypothesis¹, it is obvious that Condition A could not apply solely at D-structure, since otherwise Condition A would have no effect on the distribution of NP-trace.

This leaves S-structure, LF, or potentially both levels, as the candidate levels of representation at which the binding principles apply. Several researchers (Barss 1984, 1986, 1988, Brody 1979, Chomsky 1981, 1982) concluded that it is S-structure which constitutes the level of application of the argument anaphora conditions. The arguments developed are largely empirical in nature, since there is no a priori reason, within the LGB theory, to decide the question one way or another; there is no conceptual argument either way. The central body of data relevant to the S-structure vs. LF anaphora question involves movement operations which change the position of an NP between S-structure and LF (derivations in which there is no such change of position are obviously incapable of illuminating the question of which level is relevant to the binding theory). Because of the nature of the relevant data, and the fact that LF syntactic representations are (by definition) hidden from anything resembling direct observation, the resolution of this question requires establishing assumptions about the exact syntax of LF, and the movement operations deriving LF from S-structure. I shall assume here, until section 1.3, the standard view that LF is derived from S-structure by (i) WH-movement of in-situ WH-expressions to [+WH] Spec-C, and (ii) scope assignment of quantified NPs by adjunction to non-argument projections. In this I follow the foundational studies of Chomsky 1976, 1981, Higginbotham 1980, 1983, 1985, and Higginbotham and May 1981, Huang 1982, and May 1977, 1985. The alternative conception of LF movement operations outlined by Chomsky 1993 and Lasnik 1993 will be taken up in section 2.

The general schema of the data at hand are derivational pairs of the sort in (2) and (3), where α , β , are argument NPs related by an anaphoric dependency, π contains β , α c-commands β in the input representations ((2a, 3a)), and overt or covert movement either raises π to a position outside the c-command domain of α (as in (2b)) or to a position more locally c-commanded by α (as in (3b)). The (a) examples may be taken as D-structure representations, with overt movement yielding the (b) examples as S-structures; or the (a) examples may be taken as S-structures, with covert movement yielding (b) as the associated LF structures.

- (2) a. $[\Sigma \dots [[NP \alpha]_1 \dots [\pi \dots [NP \beta]_1 \dots]_2 \dots]]$
 b. $[\Sigma \dots [\pi \dots [[NP \beta]_1 \dots] \dots [[NP \alpha]_1 \dots e_2 \dots]]$
- (3) a. $[\Sigma \dots [[NP \alpha]_1 \dots [NP_2 \dots [\pi \dots [NP \beta]_1 \dots]_2 \dots]]]$
 b. $[\Sigma \dots [[NP \alpha]_1 \dots [\pi \dots [[NP \beta]_1 \dots] \dots [NP_2 \dots \dots e_2 \dots]]]$

The issue of which level of representation is relevant to the binding theory would seem to be settled simply by examining a sufficient range of such cases. However, all this depends on the specific assumption that particular movement processes apply in the LF component, a controversial topic. In the remainder of this section I will review both some central cases specifically instantiating derivations of the sort in (2) and (3), and the analyses of the general effect. As has been established in previous work, a near paradox arises, where, particularly in the case of anaphor binding, there seems to be a free choice as to which of the (a, b) structures above is the locus of application of the binding principles, if they are associated by overt (pre-SPELLOUT) movement. Resolving this dilemma is at the core of the reconstruction problem.

The "reconstruction problem" is actually a class of problems in the theory of anaphora, each showing an interaction between movement of a phrase π and possibilities for anaphoric construal of an element within π to an antecedent. Perhaps the most familiar case is that occurring with moved [+WH] arguments, illustrated in (4)-(5):

- (4) a. John wonders which pictures of himself Max said Sam saw where yesterday.
 b. John wonders where Max said Sam saw which pictures of himself yesterday.
- (5) a. Which book that John read did he give to which woman?
 b. To which woman did he give which book that John read?

Descriptively, the anaphor in (4a) may be anaphorically construed with any of the three names, while in (4b) only *Sam* is a licit antecedent. In (5a), *John* may be construed as the antecedent of the pronoun, while this construal is strongly blocked in (5b).

Three problems are exhibited in (4-5). First, construing either *Max* or *Sam* as the antecedent of the reflexive in (4a), the puzzle is why the antecedent apparently need not c-command the anaphor, as is usually required (the C-COMMAND PROBLEM). Second, the potential antecedents in (4a) are arguments of three distinct tensed clauses, at least superficially violating the locality requirement of English anaphors (the LOCALITY PROBLEM). I will refer below to this pair of problems—which typically go together—as the MULTIPLE ANTECEDENT EFFECT. And, finally, there is an apparent S-structure/LF asymmetry. On the classic assumption (defended in detail by Chomsky 1976, Huang 1982, Higginbotham 1983, 1985, 1993; May 1985) that in-situ WH phrases raise to Spec-CP in the LF component, (4a, b) will receive the LFs (6a, b):

- (6) a. John wonders where which pictures of himself Max said Sam saw yesterday.
 b. John wonders which pictures of himself where Max said Sam saw yesterday.

These LFs are nearly isomorphic, differing only in the local adjunction structure for the two WH-phrases. In both cases, the anaphor occupies roughly the same position, locally *c*-commanded by *John* and contained within a constituent which binds traces that are locally *c*-commanded by *Max* and *Sam*. The puzzle is why LF movement cannot increase binding domains (which would allow *John* or *Max* to antecede the anaphor in (4b/6b)), while overt movement (as in (4a/6a)) can. Let us refer to this as the LEVELS PROBLEM).

Turning to condition C effects, the levels problem arises as well. In (5a), overt movement has moved the name to a position outside the *c*-command domain of the pronoun, and coreference anaphora is possible between the pair (*John*, *he*). In (5b), where the name is *c*-commanded at S-structure by the pronoun, but will be moved outside the *c*-command domain of the pronoun by LF WH-movement, it is apparently the S-structure relationship between the two NPs which matters, blocking anaphora in this example. Were condition C to apply only at LF, it would seemingly not block anaphora in (5b), since the associated LF is (7), again assuming phrasal WH-movement in the LF component:

(7) [_{CP} [which book that John read]₁ [to which woman]₂ did he give e₁ e₂]?

Although there are numerous other reconstruction effects, I will concentrate principally on the multiple-antecedent effect and the levels problem here. Exploring them illuminates both the general way we should view the interaction of movement and binding, and general issues concerning the syntactic form and derivation of LF.

1. Previous analyses

1.1. S-structure filtering

Essentially three classes of analyses have been presented to account for these reconstruction effects. On the first analysis, binding principles are taken to apply at S-structure. The overt/covert movement asymmetry immediately follows (essentially by stipulation): Conditions A and C will apply to the S-structure representations in (4) and (5), forcing the choice of *Max* as the anaphor's antecedent in (4b), and allowing coreference in (5a) but blocking it in (5b). The odd case is the multiple-antecedent effect in (4a). The most extensive theory of this effect is presented by Barss 1986, 1988, building on insights of Cinque 1982. The core of this account is to replace *c*-command by a more complex geometric relation, one which makes crucial reference to chains. Essentially, the formulation of Condition A is as in (8):

(8) CONDITION A: an anaphor must be coindexed with a locally accessible antecedent at S-structure.

(9) A BINDING PATH P for X is an ordered sequence of nodes <N₁, ..., N_n> such that:

- i) N_j immediately dominates X;
 - ii) for all N_j in P, $i < n$, either N_{i+1} immediately dominates N_i , or there is a chain C such that N_{i+1} and N_i are members of C.
 - iii) N_n is the root node of a complete functional complex.
- (10) Y is ACCESSIBLE to X iff there exists a binding path P for X such that some node in P is a sister to Y.
- (11) Y is LOCALLY ACCESSIBLE to X iff, for some binding path P for X:
i) Y is accessible to X through P, and
ii) there is no Z accessible to X through a path P' which is a proper subsequence of P.

(9) and (10) together replace c-command in the application of Condition A, and (11) limits the class of antecedents to those which are local to the anaphor in the sense defined.

In (4a), the existence of the chain (WH, e', e) gives rise to several distinct binding paths, given in (12).²

(4a) [IP_a $John_1$ [I'_a [VP_a wonders [CP [NP which [N' pictures [PP of himself_{1/2/3}]]]]]]₄ [IP_b Max_2 [I'_b [VP_b said [CP e₄' [IP_c Sam_3 [I'_c [VP_c saw e₄ where yesterday]]]]]]]]]]

- (12) a. Path₁ = <PP, N', NP₄, VP_a, I'_a, IP_a>
b. Path₂ = <PP, N', NP₄, VP_b, I'_b, IP_b>
c. Path₃ = <PP, N', NP₄, VP_c, I'_c, IP_c>

Each of *John*, *Max*, and *Sam* in (4a) is accessible to the anaphor through a different path. *John* is accessible through Path₁ since it is a sister to I'_a; *Max* and *Sam* are accessible to the anaphor through Path₂ and Path₃ respectively. Since none of the paths properly contains the other, and since no other antecedent is accessible to the anaphor, all three are licit candidates. As a consequence, the three-way ambiguity of binding here is accounted for, as is the lack of ambiguity in the minimally distinct (13):

(13) [IP_a $John_1$ [I'_a [VP_a wonders [CP [NP who_{5se} [N' pictures [PP of himself_{5/*1/*2/*3}]]]]]]₄ [IP_b Max_2 [I'_b [VP_b said [CP e₄' [IP_c Sam_3 [I'_c [VP_c saw e₄ where yesterday]]]]]]]]]]

- (14) a. Path₁ = <PP, N', NP₄, VP_a, I'_a, IP_a>
b. Path₂ = <PP, N', NP₄, VP_b, I'_b, IP_b>
c. Path₃ = <PP, N', NP₄, VP_c, I'_c, IP_c>
d. Path₄ = <PP, N', NP₄>

In this case, *who(se)*₅ is accessible to *himself* through Path₄. Since Path₄ is a proper subpath of Paths 1, 2, and 3, none of *John*, *Max*, or *Sam* is locally accessible to the anaphor, explaining the lack of ambiguity in such cases.

This theory allows the anaphor-antecedent relation to be formally captured with respect to S-structure representations, consistent with the apparent S-structure application of the binding constraints reviewed above.

While this theory formally captures the multiple-antecedent effect, it does so at considerable theoretical cost: c-command is such a simpler and more natural relation than path accessibility that clearly something is being missed. Further, this theory must stipulate that the binding principles (including (8)) apply at S-structure. This stipulation is seemingly underivable, and is also obviously in conflict with the minimalist thesis on levels.

To note a final problem with this approach to reconstruction, observe that pronoun-name relations cannot be subject to the accessibility relation, since coreference is permitted in (5a). Were Condition C to work in a fashion parallel to Condition A, it would have a formulation essentially as in (15):

- (15) An R-expression α cannot be coindexed with an NP which is accessible to α at S-structure.

However, in (5a), the pronoun is accessible to the name through the path given in (16), incorrectly ruling the sentence ungrammatical with coreference.

- (5a) $[CP_a [NP \text{ which } [N' \text{ book } [CP_b \text{ that } [IP_b \text{ John read }]]]]_4 \text{ did } [IP_a \text{ he } [I'_a \text{ } [VP_a \text{ give } e_4 \text{ to which woman}]]]]?$

- (16) binding path for *John* = $\langle IP_b, CP_b, N', NP_4, e_4, VP_a, I'_a, IP_a \rangle$

Consequently, Condition C, under Barss' theory, must keep to its original formulation expressed in terms of c-command:

- (17) An R-expression α must not be coindexed with an NP which c-commands α at S-structure.

This is a puzzling asymmetry between Conditions A and C: why should Condition A be sensitive to the path-theoretic relation of path accessibility, while Condition C is not? Given the complexities of this theory, an alternative is desirable.

1.2 Cyclic Binding

The second type of approach to these problems is to take the binding principles to apply cyclically, as suggested by Belletti and Rizzi 1988, Jackendoff 1972, and Jacobson & Neubauer 1976. Continuing to assume that the levels problem indicates that the binding conditions cannot apply in the LF component, Condition A would have the form (18) on this view:

- (18) Condition A: an anaphor must be coindexed with a locally c-commanding NP at some derivational stage prior to SPELLOUT.

Focusing our attention first on the anaphor binding examples in (4), the multiple-antecedent effect is easily captured, without stipulation. Consider a derivation of (4a) as in (19):

- (19) a. $[IP_a \text{ John}_1 [I'_a [VP_a \text{ wonders } [CP [IP_b \text{ Max}_2 [I'_b [VP_b \text{ said } [CP [IP_c \text{ Sam}_3 [I'_c [VP_c \text{ saw } [NP \text{ which } [N' \text{ pictures } [PP \text{ of himself}_{1/2/3}]]]]]]]_4 \text{ where yesterday}]]]]]]]]]]$

1.3 LF Filtering

The third approach to these reconstruction effects is to postulate a sharp distinction between overt and covert movement, essentially giving up the symmetric theory of pre- and post-S-structure movement presented by Fiengo, Huang, Lasnik & Reinhart 1988, Higginbotham 1981, 1983, 1985, Huang 1982, May 1985, and assumed in much research in the standard GB model, under which in-situ WH-phrases are moved to appropriate A' scope positions in the LF component. The alternative view is simply that phrasal scope assignment processes do not exist in the covert component. An early version of this alternative is presented by Hornstein & Weinberg 1988, and is developed in considerable detail by Chomsky 1993 and Lasnik 1993.

Under this theory, LF scope assignment is done, not by moving the entire operator phrase (a WH-phrase or quantified NP) to scope position, but by only moving the interrogative or quantificational determiner. To illustrate, the LF representations associated with (4b, 5b) would be (22) and (23)³:

- (22) John wonders [_{CP} [_D which]₄ [_{PP} where]₂ Max said Sam saw [_{NP} e₄ pictures of himself]₃ e₂ yesterday].
- (23) [_{CP} [_D which]₄ [_{PP} to which woman] did [_{IP} he give [_{NP} e₄ book that John read]]]?

Let us refer to this hypothesis as the Determiner Movement (DM) theory of scope assignment. Under DM, the positions occupied by the anaphor in (4b) and the name in (5b) are unaffected by LF movement, since only the determiner moves. As a result, the apparent (pre-) S-structure application of the binding principles is illusory; the binding principles may apply solely at LF. By adopting this stipulated difference between overt and covert movement—by blocking any type of phrasal A' extraction at LF—the covert/overt asymmetry in binding is captured. But, of course, this movement difference remains a stipulation unless it can be derived from independent factors.

Turning to the multiple-antecedent effect with overt WH-movement seen in (4a), Chomsky 1993 treats movement as a copying operation, so that the full pre-SPELLOUT representation is actually (24):

- (24) [_{IP}_a John₁ [_{I'}_a [_{VP}_a wonders [_{CP} [_{NP} which [_{N'} pictures [_{PP} of himself]_{1/2/3}]]]]]₄ [_{IP}_b Max₂ [_{I'}_b [_{VP}_b said [_{CP} which [_{N'} pictures [_{PP} of himself]_{1/2/3}]]]]]₄ [_{IP}_c Sam₃ [_{I'}_c [_{VP}_c saw which [_{N'} pictures [_{PP} of himself]_{1/2/3}]]]]]₄ where yesterday]]]]]]]]]]]

The traces of movement are unpronounced copies of the WH-phrase. The redundancy in the representation is eliminated prior to LF by deleting all copies of *which* other than the one in scope position, and by deleting all but one copy of *pictures of himself*. The

material other than the determiner itself). The end effect (setting aside cases like (26) where a modifier is inserted into a previously extracted WH-phrase) of (28) and (28) is to give rise to LF structures of the general format (30), where β forms the scope of the extracted determiner α :

(30) [_{Det} α]_i [β ... [NP e_i N'] ...]

As we noted above, this minimalist treatment of reconstruction rests on the stipulation that LF scope-driven movement cannot be phrasal, but instead moves only bare interrogative and quantificational determiners.

Chomsky 1993 and Lasnik 1993 defend the view that this limitation on LF movement is indeed a derivable stipulation. They endorse a view under which the unmarked syntax for quantification and interrogation is schematically that in (30), where the scopal determiner is a sister to its scope domain, and the "residue" constituent—the phrase in which the determiner originates —remains inside the scope domain. They encode this view as an optimality constraint on LF syntax:

(31) Minimize the content of operator positions.

This theory keeps to the view that scope is syntactically encoded at LF, but sharply departs from previous work on the syntax of LF in assigning scope only to the determiner portion of an operator. (31) is the motivating force behind (29) and (30).

By (31), the LFs (32) and (33) count as more optimal than the LFs in (34) and (35), since in the former pair the operator position (Spec-C or IP-adjunction) contains less material than in (34, 35):

(32) John wonders [which₄ where₅ [Max said Sam saw [e₄ pictures of himself] e₅ yesterday

(33) [which₄ which₅ [did he give [e₄ book that John read] [to e₅ woman]]]??

(34) John wonders [which pictures of himself]₄ where₅ Max said Sam saw e₄ e₅ yesterday

(35) [[which book that John read]₄ [to which woman]₅ [did he give e₄ e₅]]

That is, the LFs (34/35) which would give rise to the illicit anaphoric construals for (4b, 5b) violate (31). Hence, these anaphoric construals are blocked, and the levels problem is explained away.

What lifts (31) above the level of a raw stipulation is that it fits in with the general minimalist view that all aspects of syntactic representation conform to a simplicity criterion: an LF structure, and the derivation creating it, must be the minimally complex one capable of expressing the same message, and licensing the same array of lexical items. Consequently, one might suppose that (31) itself derives from this minimalist consideration; if two LFs assign the same scope to the same operator, then the one in which the least lexical material is

involved in scope assignment is optimal. However, this argument is less convincing once we consider what it is for an LF representation to encode quantification or interrogation, and how it is that LF structures are mapped to appropriate interpretations. We will show in the next section that any theory of LF scope assignment which assumes (30) to be the regular syntactic expression of scope requires brute-force rules for interpreting quantifiers and interrogatives, and thus is at variance with the long-standing view that LF encodes the syntactic contribution to meaning. We will further show that the phenomenon of antecedent-contained deletion is quite problematic in a theory adopting (30).

2. Two Problems for DM

2.1 Logical Interpretation

The first problem arising under the theory sketched in the section above is essentially one of interpretation. It has been widely assumed since LF was introduced by Chomsky 1976 and May 1977 that its central function is to be the sole syntactic input to semantic interpretation. This view is retained explicitly in the minimalist system.

Natural language quantifiers are binary, in the sense that they combine with two formulae, each formula containing a variable bound to the determiner. Each formula denotes a set, and truth values are assigned to sentences expressing quantification as a function of the relationship between the two sets. We may view the quantificational determiner as either a function from ordered pairs of sets to truth values, or as functions from sets to functions from sets to truth values.⁴ For example, 'every' is interpreted via the schema (36), so that (37) is true just in case the (relevant) set of books is a subset of the set of things with covers:

(36) EVERY $X Y = 1$ iff $X \subseteq Y$

(37) Every book has a cover.

Similarly, 'most' is interpreted via (38), so (39) is true just in case the members of the greater part of the set of famous movie actors are also members of the set of things John has met:

(38) MOST $X Y = 1$ iff $|X \cap Y| > |X - Y|$

(39) John has met most famous movie actors.

The exact relation between the two sets varies from determiner to determiner, as a matter of lexical meaning (see Higginbotham and May 1981, May 1985 for discussion).

Granting the binary nature of natural language quantification, it is central to any theory of the syntax-semantics mapping that the three semantic constituents necessary to interpret quantification—the determiner itself, and the two set-denoting expressions—be identifiable in the syntax.

Under the classic theory of LF, in which the constituents moved to scope position are phrasal, the recovery of semantic constituency is straightforward, a point pressed by Higginbotham and May 1981, Higginbotham 1983, 1993, May 1985, and Neale 1990. The LF assigned to (39) is (40):

(40) [IP [NP most [N' famous movie actors]]_i] [IP John has met e_i]

Here the determiner, its N' sister, and the IP containing the trace of QR, are separated syntactically. Semantically, each matches up to one constituent of logical interpretation: N' to the first argument of the determiner, IP to the second argument, and the determiner to its lexical meaning.

However, under the minimalist theory of scope involving the alternative rule (28), the LF will be as in (41), with the determiner extracted on its own:⁵

(41) most_i [IP John has met [NP e_i [N' famous movie actors]]_i]

The problem is that it is not at all clear how (41) aligns with (38). There seems no way around the fact that the two sets in question are (i) the set of famous movie actors and (ii) the set of things that John has met. But the syntactic phrases which denote these two sets are not separated—one (the N-projection) is embedded inside the other. Clearly, the denotation of IP in (41) has to be this pair of sets, and the mechanism for establishing this denotation would seem to have to take essentially the form (42).

(42) In a structure of the form

[Det α]_i [β ...[NP e_i N']...]

- (a) interpret [NP e_i N'] as the first argument of α;
- (b) substitute a variable bound to α into the position occupied by [NP e_i N'] in β, to yield β'; and
- (c) interpret β' as the second argument of α.

(42) is clearly cumbersome, and lacks the transparency of interpretation afforded under the classic view of LF. This is the first technical drawback of the DE theory of scope.

2.2 Antecedent-Contained Deletion

The second problem with the DE theory of scope assignment is its incompatibility with observations of Sag 1976 concerning the interaction of quantifier scope and antecedent-contained deletion. Sag observes that (43) is exactly three-ways ambiguous, and crucially lacks a fourth reading on which the embedded QNP has narrow (de dicto) scope with respect to *want* and the antecedent of the ellipsis is understood to be the matrix VP. This reading surfaces when no ellipsis is present, as in (44):

(43) Sam wants Sally to visit [every city that Oscar does ∅]_i.

- a. Sam wants [for all cities x such that Oscar visits x] [Sally to visit x].

- b. [for all cities x such that Oscar visits x] Sam wants [Sally to visit x].
 - c. [for all cities x such that Oscar wants Sally to visit x] Sam wants [Sally to visit x]
 - d. # Sam wants [for all cities x such that Oscar wants Sally to visit x] [Sally to visit x]
- (44) Sam wants Sally to visit every city that Oscar wants her to visit.
- a. [for all cities x such that Oscar wants Sally to visit x] Sam wants [Sally to visit x]
 - d. Sam wants [for all cities x such that Oscar wants Sally to visit x] [Sally to visit x]

The dependency of ellipsis scope on the scope of the containing QNP has a natural explanation within QR theory, as is argued by Larson & May 1990, May 1985, and Fiengo & May 1994. Assuming that the ellipsis site is reconstructed⁶ under syntactic identity with its antecedent, the illicit reading (43d) could not arise, since the antecedent (matrix) VP still contains the ellipsis. Hence, as the authors cited argue, ellipsis scope can be no wider than the scope of the QNP.

Within theories of LF lacking long-distance QR, wide-scope ellipsis resolution (as in (43c)) must be effected by relaxing the identity condition. One such approach is developed by Brody 1993, who presents a theory of ellipsis essentially as in (45), where R is the material copied under partial identity into an ellipsis site:

- (45) Structure R is a licit reconstruction of antecedent A only if every constituent of R either:
- (i) has an identical correspondent in A, or
 - (ii) is a variable having a coindexed correspondent in A.

Applied to (43), (45) can target the matrix VP and reconstruct the ellipsis as (46):

- (46) Sam wants Sally to visit [every city that Oscar wants Sally to visit e_1]₁.

The ellipsis is resolved, eliminating the antecedent-containment problem. However, a problem arises: the reconstructed LF representation is now identical to (44), and so there is no longer an explanation for why the QNP must take wide (de re) scope if the ellipsis is resolved this way. If quantifier scope is determined solely by determiner movement, we must adopt something like (45), but we cannot explain Sag's generalization.

Consider a compromise position. Suppose we abandon (45), and grant that ellipsis forces phrasal movement of the ellipsis-containing NP outside the antecedent VP. But suppose we limit QR to just this case, and continue to adopt the minimalist proposal that in all other cases scope is assigned by bare determiner extraction. This makes a prediction that an anaphor inside an NP which also contains an ellip-

sis site can be construed long-distance with respect to its surface position. This prediction is apparently wrong, as the judgments on cases like (47) and (48) show.

- (47) Sam wants the students to remember every fact about themselves that Oscar does.
- (48) ?* The students₁ want Sam to remember every fact about themselves₁ that Oscar does.

(47) is essentially perfect, (48) has the status of a Condition A violation. This is the opposite of what is predicted under the compromise theory just outlined. (47) and (48) will have the LFs (49) and (50), respectively. In (49), the anaphor is outside the c-command domain of *the students*₁ while in (50) the anaphor is locally c-commanded by this NP.

- (49) (LF) Sam [_{VP} [every fact about themselves₁ that Oscar *wants the students*₁ *to remember* e₂]₂ [_{VP} wants the students₁ to remember e₂]
- (50) (LF) The students₁ [_{VP} [every fact about themselves₁ that Oscar *wants Sam to remember* e₂]₂ [_{VP} want Sam to remember e₂]

Were the binding theory to apply to these LF representations, the opposite judgments would arise.

Given the problems just noted for the minimalist theory of binding (with or without the retention of phrasal QR for ellipsis resolution), an alternative is warranted. It is important to note that all the problems discussed above stem from the DM hypothesis on scope assignment; and the sole motivation for DM is the placement of the binding conditions at LF, avoiding the need for reference to S-structure. If we can find a different way to account for the reconstruction effects, the DM hypothesis can be eliminated, along with its attendant problems.

3 Cyclicity Revisited

Both the S-structure and LF (minimalist) theories of binding encounter non-trivial technical problems, leaving the cyclic theory of binding as the remaining possibility. We noted in 1.2 that this approach has one central weakness, in that it must stipulate that the binding principles apply no later than S-structure, to account for cases like (4) and (5). What I suggest is that we can eliminate any reference to S-structure from the cyclic anaphora conditions, by adapting the Earliness Principle (EP) of Pesetsky 1989. The core notion of the EP is that filters must be satisfied as early as possible in the syntactic derivation. For a potential anaphoric dependency between two NPs α and β , the earliest point where that dependency could be filtered is the point at which they are both present in the representation. I assume, with Evans 1980, Fiengo and May 1994, Higginbotham 1983, 1985, that anaphoric dependencies are them-

selves formal objects of grammar. For cases where α is anaphorically dependent on β , I will write $D(\alpha, \beta)$. The EP, specifically encoded for the anaphora conditions, is given in (51); the anaphora conditions themselves take the form (52), (53):

(51) Optimality Condition on Dependencies (OCD):

- (a) For an LF Σ encoding the dependency $D_i = D\langle\alpha, \beta\rangle$, D_i must be formed at the first stage in the derivation of Σ in which α and β are constituents of the same phrase marker.
- (b) Filter dependencies immediately upon formation.

(52) For a dependency $D(\alpha, \beta)$, where α is an anaphor, β must locally c-command α .

(53) For a dependency $D(\alpha, \beta)$, where β is an R-expression, α cannot c-command β .

The OCD makes reference to S-structure unnecessary. Consider first the pair (4b), (6b), repeated here, with indexing indicating the unavailable construal of the reflexive:

(54) (=4b) John₁ wonders [_{CP} where₅ Max said Sam saw [which pictures of himself₁]₂ e₅ yesterday].

(55) (=6b) John₁ wonders [_{CP} [which pictures of himself₁]₂ where₅ Max said Sam saw e₂ e₅ yesterday].

By the OCD, the dependency (John, himself) must be formed at (or no later than) the derivational stage (54); it cannot be deferred to the later stage (55), since doing so would violate Earliness. The dependency is filtered (by (52)) immediately, and the structure is ruled out. In general, since the covert derivation is closed to lexical insertion (Chomsky 1993, Chomsky & Lasnik 1994), anaphoric dependencies between arguments can never be formed as late as LF, since there will always be an earlier point at which they could have been formed.

Exactly the same property of the derivation blocks coreference in (5b/7). (5b) is derivationally prior to (7); the dependency hence must be formed at point (5b), and the sentence violates Condition C at this point. In this way, we eliminate any reference to "S-structure" from the binding conditions; the overt structure simply represents an earlier derivational point than the LF structure constitutes.

Turning now to the other phenomena exhibited in (4) and (5), the OCD appears too restrictive, in that it would seemingly rule out the dependency $D(\text{he}, \text{John})$ in (5a) (as noted earlier), and block $D(\text{himself}, \text{John})$ and $D(\text{himself}, \text{Max})$ in (4a), assuming a standard movement derivation for the examples. In both cases, if the WH-phrase originates in argument position, those three dependencies would be formed at an early point where they would be ruled ungrammatical by the binding conditions.

However, this problem is illusory, if we take advantage of the particular model of the lexicon-to-LF derivation proposed by Chomsky 1993. Under that model, the various syntactic constituents ultimately comprising a single LF representation are built up separately, merged together by the general cyclic operation GT.

Now consider the three construals of the reflexive in (4a). For the dependency D(himself, Sam), the derivation works as in the standard model, with the WH-phrase originating in argument position, and the dependency formed on the lowest cycle. For the dependency (himself, Max), the WH-phrase will have to be composed separately, and then inserted into the main tree on the intermediate cycle. That is, the derivation will include the stages in (56) (with material to the left and right of ';' indicating separate representations not yet combined by GT):

- (56)
- a. ...
 - b. [which pictures of himself₃]₂ ; [C' [IP Sam saw e₂ where₅ yesterday]]
 - c. [CP [which pictures of himself₃]₂ [C' [IP Sam saw e₂ where₅ yesterday]]]
 - d. [V' said [CP [which pictures of himself₂]₂ [C' [IP Sam saw e₂ where₅ yesterday]]]]
 - e. [VP Max₃ [V' said [CP [which pictures of himself₃]₂ [C' [IP Sam saw e₂ where₅ yesterday]]]]]

If we permit such introduction of WH into A' positions (the unmarked assumption, given GT), this derivation will now permit the licit dependency D(himself, Max). The first point at which the dependency can be formed is (56e); the OCD forces the dependency to be formed at this point, and it (at this stage) satisfies Condition A. Further steps in the derivation add the additional material of the matrix clause, and move the WH to its surface position.

An entirely distinct derivation would give rise to the final dependency, with the anaphor bound to *John*₁, namely one in which the WH-phrase is inserted directly into its surface position, and is indeed not moved at all.

This treatment of the multiple-antecedent effect requires a nonstandard view of A' chain formation, but is otherwise exactly what we would expect under the specific theory of derivations presented by Chomsky 1993. The one additional mechanism needed is to suppose that A' chains can be formed in two distinct ways: under movement, and "representationally", without movement. I assume here, following Barss 1984, 1986, Cinque 1990, Rizzi 1986, and Chomsky 1982, 1986a, that this latter option for chain formation is available. It would appear in fact that this is the most general, and hence preferable, theory of chain formation—if chains are formed only under movement, we need to stipulate this constraint, while on the view taken here no such stipulation is needed. Chains are simply formed up, and filtered by independent principles. In all cases

(under the three derivations sketched here for (4a)), the chain (WH, e', e) will be formed, and so from the standpoint of chain structure they are indistinct. From the standpoint of licensing anaphora, they are distinct, advantageously so.

Finally, the apparent Condition C problem exhibited in (5a) has a natural account of the same sort. One derivation of (5a) will involve composing the entire WH-phrase separately from the matrix IP, and combining them together as the last overt derivational step:

- (57) a. ...
 b. [which book that John₁ read]₂ ; [C' [C +WH] [IP he₁ give e₂ to which woman]]
 c. [CP [which book that John₁ read]₂ [C' [C +WH] [IP he₁ give e₂ to which woman]]]

(57c) is the first point in the derivation where both *he* and *John* are constituents of the same phrase marker; thus it is the first point where D(*he*, *John*) can be formed, following (51). When the dependency is formed, it is filtered by Condition C, and this condition is satisfied, since the pronoun does not c-command its antecedent.

4 Conclusion

In this brief essay I have sketched components of a theory of cyclic anaphora. The approach outlined here, I believe, combines the best aspects of the theory of syntactic derivations and LF representations within the classical, pre-Minimalist theory, and those within the Minimalist theory. Like the approach to reconstruction presented by Chomsky 1993 and Lasnik 1993, the approach advocated here eschews any explicit reference to S-structure, and thus is fully consistent with the minimalist thesis on levels of representation. Moreover, we have eliminated several problems inherent in the LF-only theory of binding, particularly its commitment to an unwieldy theory of scope and ellipsis resolution. It should be noted that the theory I have developed here is not only consistent with the main technical and conceptual components of the minimalist system, it is critically dependent on them. Particularly, the notion that the derivation is structure building, and that specific constraints of grammar are governed by timing principles, has played a crucial role. The data considered here are necessarily a rather delimited set of the complex array of reconstruction effects. Extensions to a much fuller range of argument anaphora, as well as bound variable anaphora and reciprocity, are developed in Barss 1994.

NOTES

¹ See Barss 1986, 1988 for a contrasting viewpoint. In the theory of empty categories advanced there, all ECs are featureless with respect to the binding theory, their distribution constrained by principles other than the binding theory.

² The system developed in the sections reviewed here of Barss 1986, 1988 assumes IP to be the root of a CFC, following Chomsky 1986b. Given the VP-internal subjects theory, VP is the CFC root, but this modification is easily incorporated; the antecedents for the reflexive will be the VP internal trace of the raised subject. For ease of exposition I keep to the original set of assumptions here. See Barss 1986 for discussion.

³ Since Chomsky and Lasnik propose that (in all cases possible) all non-determiner material of an overtly moved WH-phrase is eliminated from the A' position to which it is overtly moved, the LF for (5b) is more accurately (i):

- (i) [_{CP} [_D which]₄ [_D which]₅ did [_{IP} he give [_{NP} e₄ book that John read] [_{PP} to [_{NP} e₅ woman]]]]]

I omit this additional complexity for ease of discussion. See Barss 1994 for critical discussion of this type of LF operation.

⁴ These two are logically equivalent. I draw here on the discussion of quantification in Higginbotham 1983, 1985, 1993; Higginbotham and May 1981; May 1985; McCawley 1981; and Neale 1990.

⁵ I am here extending the explicit system advanced by Chomsky and by Lasnik; their examples deal only with WH-operators, but I believe they intend the system to extend to all quantifiers. Lasnik 1993 observes that LF accusative Case assignment—A-movement of the direct object to Spec-Agr_o—will, in simple cases, take over the function of QR. While this is correct for clause-bounded quantification, it will not extend to the wide-scope examples discussed below.

⁶ I assume for ease of exposition that ellipsis reconstruction is copying of the material within the antecedent VP over into the ellipsis site. Fiengo & May 1994 present an alternative theory of ellipsis reconstruction, under which the elided material is syntactically projected at LF. The differences between the accounts are immaterial here.

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IAMBICITY IN THAI

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Evidence for iambic foot structure in Thai is of four kinds: bimoraic minimal word effects, the distribution of major and minor syllables, syllable shortening and lengthening to achieve iambic (LH) rhythm, and word final stress. These suggest 'monopody', an alignment between feet and prosodic words. The inventory of iambs and the specific facts of Thai can be derived within an Optimality Theoretic analysis by factoring iambicity into three components: right-headedness of syllables, heaviness of head-syllables, and foot disyllabicity. A constraint-based analysis can also account for iambic structure in multisyllabic Indic loans.

1. Introduction

Iambic metrical feet play an important role in Standard Thai. Iambic metrical feet are required for a cogent analysis of four distinct prosodic phenomena: (i) the minimal size of prosodic words in Thai, (ii) the distribution of major and minor syllables, (iii) lengthening and shortening of syllables in order to make better iambic feet, (iv) and word-level stress.

While describing the role of iambic metrical structure in minimal word effects and the other prosodic phenomena, I will proceed somewhat informally. Iambic structure in Thai can be readily formalized within Optimality Theory as the interaction of component constraints, though. In fact, no novel constraints, beyond those already proposed, are required. Whereas the constraint interactions responsible for the above-listed phenomena (i-iv) are fairly simple, more complicated ones are required to account for the behavior of polysyllabic Indic loan words.

The paper is organized as follows: §2 presents arguments for iambic foot structure in Thai: §2.1 first establishes that metrical foot structure is relevant to Thai, and §2.2 argues that metrical feet in Thai must be iambic. §3.1 formalizes the analysis of §2 in terms of Optimality Theory, and §3.2 then shows that the analysis of §3.1 explains coda epenthesis and stress in compound words. §3.4 sketches a prosodic analysis of Indic loan words, arguing that they constitute a single prosodic domain, and then extending the analysis of §3.1 to coda epenthesis within Indic loan words.

2. Iambic structure in Thai




2.1. Foot structure: prosodic word minimality

The purpose of this section is to establish that metrical feet (Ft) are needed in Thai. I claim that an analysis which incorporates metrical feet is able to explain facts about minimal word size in Thai, which must be stipulated in an analysis which does not make use of feet.

Recent approaches to the morphology-phonology interface, especially Prosodic Morphology and its heir, Optimality Theory (McCarthy & Prince 1986; McCarthy & Prince 1993a,b, Prince & Smolensky 1993), frequently attribute word minimality effects to the influence of metrical foot structure. These approaches view requirements that prosodic words consist of at least two moras or syllables as the effect of two interacting principles: first, *metrical feet consist of two moras or two syllables*; and second, *every prosodic word contains at least one foot*. Where these two principles are strongly active, monomoraic prosodic words are disallowed.

Thai displays exactly these sorts of word minimality requirement. The minimal prosodic word (PrWd) in Thai is a single bimoraic syllable, having one of the shapes in (1a-c), with a corresponding moraic structure (2a-c).¹ Note that each minimal prosodic word is exactly two moras long.²

- (1) a. $C_i (C_m) V C_f$ *tôn* 'stem' ต้น
 b. $C_i (C_m) V V$ *taa* 'eye' ตา
 c. $C_i (C_m) V V C_f$ *tòp* 'to reply' ตอบ

- (2) a.  b.  c. 

Furthermore, monomoraic syllables (i.e., light, open syllables) never appear as prosodic words.³ When underlying /CV/ syllables do occur in stressed position (either in isolation or word-finally), an epenthetic glottal coda augments the underlyingly monomoraic word to bimoraic respectability.⁴ Examples are given in (3), where outlined characters represent epenthetic material. This augmentation is a sort of *iambic lengthening*, as will be seen in §2.2.2.

- (3) a. /tó/ [tóʔ] 'table' โต๊ะ
 b. /dù/ [dùʔ] 'fierce' ดุ
 c. /kò/ [kòʔ] 'island' เกาะ

This pattern of minimally bimoraic prosodic words and disallowed monomoraic prosodic words is expected under the hypothesis that (i) Thai has metrical foot structure, (ii) light monosyllables are not licit feet, and (iii) every prosodic word must contain at least one foot. A theory under which Thai metrical structure does not include feet must simply stipulate these facts, though.

2.2. Iambic foot structure

Minimally bimoraic words suggest the presence of foot structure, but the heavy monosyllables seen thus far do not indicate what *kind* of foot defines the minimal word in Thai. Below, I present three lines of argument that foot structure in Thai is *iambic*.

The basic foot inventory of the languages of the world is still a matter of debate, but there is general agreement among authors on the inventory of licit surface feet (see Prince 1990, Hayes 1991 for closely related proposals, Kager 1993 for a different approach). Hayes (1991:61) proposes three basic types of feet: syllabic trochees, moraic trochees and iambs. Each type has a set of characteristic shapes (4). (L and H indicate light and heavy syllables, respectively; parentheses indicate foot boundaries.)

- (4) a. Syllabic Trochee: $\{(\acute{\sigma} \sigma)\}$
 b. Moraic Trochee: $\{(\acute{L}L), (\acute{H})\}$
 c. Iamb: $\{(L\acute{H}), (\acute{H})\}$

Of these three types, we can disregard syllabic trochees, which are disyllabic regardless of syllable weight. These plainly do not define the minimal word in Thai, where monosyllabic words abound. The heavy monosyllables seen so far (1-3) cannot decide between moraic trochees (4b) or as iambs (4c), since (H) forms a licit foot of either type.

Three lines of evidence support an analysis of Thai in terms of iambs, rather than moraic trochees. First, the iambic set accounts for the patterns of light/heavy syllables in one- and two-syllable words; second, syllables lengthen and shorten in order to conform to an iambic template (Prince's (1990) 'iambic quantitative dynamism'); and third, iambic feet account for the facts of word-level stress.

2.2.1. Heavy and light syllable placement

If iambic (rather than moraic trochaic) feet characterize prosodic words in Thai, we should expect to find both kinds of iambs as minimal prosodic words—i.e., both disyllabic (LH) sequences and heavy monosyllables (H). In fact, minimal words in Thai are of just these two shapes. As seen in §2.1, bimoraic monosyllables (H) make acceptable prosodic words. (LH) prosodic words are also common, in the form of minor syllable-major syllable sequences.

Southeast Asian languages commonly have a class of 'minor syllables' or 'presyllables' (Henderson 1965). Minor syllables never stand alone; they are typically unstressed, light and open; and their range of possible initial consonants, vowels, and tones, is sharply reduced. 'Major' syllables have none of these restrictions. (5) provides examples of $\sigma_{\text{minor}}\text{-}\sigma_{\text{major}}$ words in Thai. Inasmuch as major syllables are bimoraic (cf. 2) and minor syllables, being light and open, are monomoraic, these are straightforward examples of (LH) prosodic words.

- | | | | | |
|-----|----|-----------------------------|----------------|--------|
| (5) | a. | <i>ka.t^hiʔ</i> | 'coconut milk' | กะทิ |
| | b. | <i>ta.puu</i> | 'nail' | ตะปู |
| | c. | <i>sa.nùk</i> | 'fun' | สนุก |
| | d. | <i>la.mút</i> | 'sp. fruit' | ละมุด |
| | e. | <i>pra.t^hêet</i> | 'country' | ประเทศ |

In contrast, and (LL) sequences, which we would expect to find if moraic trochaic feet were a feature of Thai prosody, are unacceptable as prosodic words.⁵ /CVCV/ inputs, like /CV/ words, are augmented by an epenthetic glottal stop coda (6). ((LH) sequences thus qualify as 'minimal words', despite their greater bulk than (H) minimal words.)

- | | | | | | | |
|-----|----|-----------------------|------------------------|------------------------|-----------------|-------|
| (6) | a. | /ka.t ^h í/ | *[ka.t ^h í] | [ka.t ^h íʔ] | 'coconut milk' | กะทิ |
| | b. | /pra.cù/ | *[pra.cù] | [pra.cùʔ] | 'to fill up' | ประจุ |
| | c. | /ra.já/ | *[ra.já] | [ra.jáʔ] | 'space, period' | ระยะ |

Thus, syllabic trochees and moraic trochees do not describe the distribution of heavy and light syllables in disyllabic words, but iambic feet do. We may note in passing that by having minimally iambic prosodic words, Thai stands against Spring's (1990:79, n. 29) speculation that iambs do not characterize the minimal word of any language.

2.2.2. Iambic lengthening and shortening

A crucial claim of the theory of foot structure developed by Prince 1990 and Hayes 1991 is that the constituents of trochaic feet are preferentially balanced, but those of iambs are preferentially unbalanced. That is, (quantity-sensitive) trochees consist of two balanced moras, but the preferred iambic foot is an unbalanced (LH) sequence. Prince 1990 shows that iambic systems frequently adjust the weight of syllables within feet to achieve this imbalance, a process he calls 'iambic quantitative dynamism' (7).⁶

(7) Iambic Quantitative Dynamism

In a rhythmic unit (W S) [where *W* = 'weak' and *S* = 'strong']

- | | | |
|----|--------------|-----------------------------------|
| a. | Lengthening. | <i>S</i> should tend to lengthen. |
| b. | Shortening. | <i>W</i> should tend to shorten. |

Both lengthening and shortening are attested in Thai.

2.2.2.1. Iambic lengthening: [L] → [H], [LL] → [LH]

The first sort of iambic dynamism lengthens the input in order to make a better iambic foot. Glottal coda epenthesis, which we have already seen in connection with word minimality, is in fact a kind of iambic lengthening. It is visible in four contexts: one-syllable inputs, two-syllable inputs, lexical items which lengthen under stress, and 'isolative style' alternations.

One- and two-syllable inputs: CV → CV?

As seen above, coda epenthesis gives underlyingly monomoraic words two surface moras, so that they form acceptable (H) iambs. (3a) is repeated for convenience.

- (3) a. /tó/ [tóʔ] 'table' โต๊ะ

Similarly, /CVCV/ inputs are augmented to [CV.CV?], resulting in an acceptable (LH) iamb. (6a) is repeated.

- (6) a. /ka.tʰí/ *[ka.tʰí] [ka.tʰíʔ] 'coconut milk' กะท'

(6) demonstrates that neither mere binarity nor moraic trochee foot structure is sufficient to define minimal words in Thai, for *[ka.tʰí] is binary on both the moraic and syllabic level. It ought to form a perfect moraic trochee, but it is unacceptable as a prosodic word.

Lexical CV ~ CV? alternations under stress

Iambic lengthening is strikingly evident in /CV/ lexical items which are used both as prefixes and independent words, of which the prefix *p^hrǎ* พระ 'sacred, royal' provides the clearest example. When prefixed to a major syllable, *p^hrǎ* appears as a monomoraic 'minor syllable' (8); but as an independent, stressed prosodic word *p^hrǎ* appears with a glottal coda (9).

- (8) a. p^hrǎ.câaw 'sacred-lord, God' พระเจ้า
 b. p^hrǎ.ʔong 'sacred-CLF' พระองค์
 c. p^hrǎ.raam 'Rama' พระราม
- (9) a. p^hrǎʔ 'lord; monk; Buddha image' พระ
 b. p^hrǎʔ.p^ha.mâa 'Burmese monk' พระพม่า

We can account for this alternation by observing that, as a prefix, *p^hrǎ-* is able to form a (LH) foot with the following syllable. As an independent word, though, *p^hrǎ-* becomes subject to the requirement that all prosodic words contain at least one foot. Having only one mora underlyingly, /p^hrǎ/ is augmented by glottal epenthesis to [p^hrǎʔ], a licit (H) iamb.

The compound (9b), *p^hrǎʔ.p^ha.mâa* 'Burmese monk' conforms to the same pattern if we view compounds as being composed of constituent prosodic words (10) (cf. McCarthy & Prince 1993a:5 and below). Recall the hypothesis (§2.1) that every prosodic word must contain at least one foot. If this requirement applies to each constituent prosodic word of a compound, the augmentation of /p^hrǎ/ in (9b) is predicted: because it forms a separate prosodic word, it must meet foot structure requirements.

- (10) [PrWd [PrWd (p^hrǎʔ)] [PrWd (p^ha)(mâa)]] 'Christian priest'

CV ~ CV? alternations in the 'isolative style'

Alternation under stress is not limited to a small class of lexical items. Gedney 1947 notes that 'any Thai expression may be pronounced with a pause at every point of syllable juncture; this pro-

nunciation is a common device for making one's speech very clear or very emphatic'. In this 'isolative style', every /CV/ syllable is augmented by a glottal coda (11).

- (11) a. /p^hrá-câaw/ [p^hráʔ.câaw] 'sacred-lord' พระเจ้า
 b. /p^hrá-ʔoŋ/ [p^hráʔ-ʔoŋ] 'sacred-CLF' พระองค์
 c. /tâpuu/ [tâʔ.puu] 'nail' ตะปู
 d. /pràt^hêet/ [pràʔ.t^hêet] 'country' ประเทศ

Henderson 1949 observes that each syllable of a multisyllabic word pronounced in isolative style '[conforms] in structure to the pattern appropriate to monosyllables uttered in isolation'. I take this to mean that each syllable must form a prosodic word. Given that prosodic words must be minimally iambs, it follows that each syllable in isolative style must be an iamb—specifically (H), which is the only licit monosyllabic iamb. /CV/ syllables therefore receive a glottal coda, boosting them to [(H)] iambic prosodic words.

2.2.2.2. Iambic shortening: [HH] → [LH]

The flip side of iambic quantitative dynamism is iambic shortening, where the first syllable of an (HH) sequence is shortened to match the (LH) template. Shortening occurs in a number of unanalyzable polysyllabic words, mostly Indic loans (12). These words, underlyingly /HH/, are shortened to (LH) in normal speech (Henderson's (1949) 'connective style'), but not in the isolative style.

- | (12) | UR | Normal | Isolative | | |
|------|------------------------|------------------------|-------------------------|------------|---------|
| a. | /p ^h aasǎa/ | [p ^h a.sǎa] | [p ^h aa.sǎa] | 'language' | ภาษา |
| b. | /ʔaacaan/ | [ʔa.caan] | [ʔaa.caan] | 'teacher' | อาจารย์ |
| c. | /ʔaahǎan/ | [ʔa.hǎan] | [ʔaa.hǎan] | 'food' | อาหาร |

These are genuine vowel shortenings. That (12a-c) are underlyingly /HH/, not /LH/, is shown by their isolative pronunciations. As just seen, underlyingly light, open syllables receive a glottal coda in isolative speech (11). If (12a) were underlyingly /p^hasǎa/, we would expect its isolative pronunciation to be *p^haʔ.sǎa. This is not the case, though; the isolative pronunciation of (12a) shows no glottal epenthesis. The first vowel of (12a) must therefore be underlyingly long.

The normal, shortened pronunciations in (12) can be explained if disyllabic words prefer to form iambic feet: shortening the first vowel makes the word an optimal (LH) iamb.⁷ Thai thus exhibits iambic shortening as well as iambic lengthening (§2.2.2.1). Iambic foot structure neatly explains both, but a theory which posits trochaic foot structure, or which does not incorporate foot structure at all, must stipulate these facts.

2.2.3. Word stress

Thai places a single stress on the final syllable of unanalyzable one-, two- and three-syllable words in normal, 'connective' pronunciation (Haas 1964, Duryea 1991); and while iambic metrical structure does

not entail word-final stress, word-final stress is most straightforwardly analyzed in terms of iambic feet. (13) gives foot structures for unanalyzable one- to four-syllable words. (Words of three and four syllables are rare among the non-Indic portion of the vocabulary.)

- | | | | |
|---------|-----------------------------|-----------|--------|
| (13) a. | [('taa)] | 'eye' | ตา |
| b. | [(ta.'puu)] | 'nail' | ตะปู |
| c. | [k ^h a(ra.'háʔ)] | 'fortune' | คราะห์ |
| d. | [(ʔa.,waj)(ja.'waʔ)] | 'organ' | อวัยวะ |

See §3.4 for further discussion of (13c-d).

Right-headedness is manifested at the prosodic word level as well the foot level (and also, as Duryea 1991 notes, at the phrase level). In (13d), where the PrWd contains two feet, the head syllable of the leftward foot takes a secondary stress. A similar pattern is visible in compound words. Compounds have word-final stress, with secondary stress on the head syllables of leftward compound elements (14).

- | | | | |
|---------|-------------------------------------|------------------------------------|------------|
| (14) a. | <i>nam</i> + <i>p^huŋ</i> | 'water' + 'bee' = 'honey' | น้ำผึ้ง |
| b. | <i>plaa</i> + <i>kra.póŋ</i> | 'fish' + 'can' = 'sardines' | ปลากระป๋อง |
| c. | <i>sa.nùk</i> + <i>sa.'baaj</i> | 'fun' + 'at ease' = 'happy & well' | สนุกสบาย |

Recursive PrWd structure in compounds, appealed to above to explain coda epenthesis in (9b), can also explain the distribution of secondary stress. Being PrWd's, the constituents of compounds must all have their own iambic foot structure; and given that PrWd's are right-headed, primary stress will fall on the rightmost element, and secondary stress on the preceding ones, as in (15).

- (15)
- ```

 PrWd
 / \
 PrWd PrWd
 | |
 Ft Ft
 / \ / \
 σμ σμμ σμ σμμ
 | | | |
 sa, nùk. sa. baaj

```

It might be countered that since word-level stress falls so regularly on the final syllable of the word, we could just write a rule to 'stress the last syllable of a word' and do without metrical feet. Such a rule would be descriptively adequate, but would fail to express any connection with the other points developed so far: (i) that Thai requires at least one bimoraic syllable in each prosodic word; (ii) that the distribution of heavy and light syllables in one- and two-syllable words matches the inventory of iambic feet developed in Prince 1990 and Hayes 1991; and (iii) that adjustments to the weight of syllables in disyllabic words through glottal epenthesis and first-syllable shortening result in better iambic feet. Iambic foot structure links them all in a more unified theory of Thai prosody.



### 2.3. Monopody

The account developed here demands a different understanding of 'monosyllabicity' in Thai. Southeast Asian languages, Thai among them, are commonly called 'monosyllabic'; the common notion of monosyllabicity, that 'every word is one syllable long', is plainly wrong, though, for polysyllabic lexical items are common in Thai and most other 'monosyllabic' languages of Southeast Asia.

In connection with Thai, Lehman (1973:532) proposed a prosodic formulation of monosyllabicity:

a monosyllabic language is one where, by language-specific convention of the phonology, syllable boundaries function as [phonological] word boundaries at the point where morphemes enter a phrase marker in a sentential derivation.

—that is, monosyllabic languages enforce strict identity between syllables and lexical words. In view of the active role of iambic foot structure in Thai, though, this strict monosyllabicity cannot be maintained. I suggest that Thai is actually *monopodic*, enforcing alignment between *feet* and prosodic words. Iambic lengthening and shortening especially support this notion: where a prosodic word can be made into a foot by the addition or subtraction of a mora, Thai does so. While I believe that monopody has wide implications for Southeast Asian languages, I will not develop the notion formally in §3.

### 3. Iambicity & Optimality

The account developed so far, while convincing as narrative, is not sufficiently formalized to explain why Thai behaves as it does rather than another way which would achieve substantially similar functional goals. Why should a licit iamb be formed by adding an epenthetic coda to /kat<sup>h</sup>i/ rather than deleting the final vowel, since \*[kat] is as much a licit iamb as [kat<sup>h</sup>iʔ]? In order to provide a more explicit explanation, in this section I develop an account of the Thai facts within Optimality Theory (OT). OT is a constraint-based, declarative model of phonology which views phonological phenomena as the result of the interaction of ranked constraints on surface representations, not as rules which operate on underlying representations (see Prince & Smolensky 1993, McCarthy & Prince 1993a,b and references therein).

My goal, then, is to derive the Thai facts from the interaction of surface constraints. Among other things, these constraints will derive the inventory of acceptable iambs. My strategy is straightforward: to decompose iambicity in component parts, and identify each component with a constraint. All the constraints needed have been proposed in earlier work. I intend to show how they combine to produce iambic foot structure.<sup>8</sup>

I will not try to define here a single set of constraints capable of deriving all Thai morphological alternations. In particular, I will not

attempt a comprehensive treatment of Indic loans and compounds, since they form a distinct subset of Thai morphology, parallel in many ways to the Latinate vocabulary of English (Gedney 1947).

### 3.1. Deriving iambic feet in Thai

Hayes 1991 observed that the defining characteristic of iambic feet, both (LH) and (H), is the presence of a heavy syllable at their right edges. (Of course, (H) iambs have a heavy syllable at the left edge of the foot as well, but this is incidental.) Since (H) is a licit iamb as well as (LH), disyllabicity is not required, though we shall see that it is preferred. Three constraints express this state of affairs: (i) right-headedness; (ii) head-syllable heaviness; and (iii) disyllabicity, or foot binarity at the syllable level.

#### 3.1.1. Right-headedness

Trochees are united *vis à vis* iambs by leftward placement of the head syllable or mora. McCarthy & Prince 1993a point out (n. 6) that Prince & Smolensky's (1993) constraint RHYTHM TYPE=TROCHAIC can be expressed as an alignment constraint (16).<sup>9</sup>

(16) RHYTHM TYPE=TROCHAIC

ALIGN (H(Ft), L, Ft, L)

'Align the left edge of every foot head with the left edge of a foot'.

In contrast, iambs as a class are distinguished by *rightward* placement of the head syllable, an alignment-theoretic formulation of RHYTHM-TYPE=IAMBIC natural extension of McCarthy & Prince's suggestion is to formulate as an alignment constraint also (17).

(17) RHYTHM-TYPE=IAMBIC

ALIGN (H(Ft), R, Ft, R)

'Align the right edge of every foot head with the right edge of a foot'.

Since Thai word stress is uniformly word-final (§2.2.4), the constraint RHYTHM-TYPE=IAMBIC must be undominated in Thai.

#### 3.1.2. Head-syllable heaviness: the Stress-to-Weight Principle

RHYTHM TYPE=I ensures that the head or stressed syllable will lie at the right edge of an iamb. This does not adequately express Hayes' observation, though, that iambs have heavy syllables at their right edges. We can neatly express Hayes' observation by capitalizing on RH-TYPE=I, which requires that the head of every iamb lie at its right edge. From this we can restate the basic observation: *iambs show a close connection between head syllables and syllable weight*.<sup>10</sup>

The augmentation of /CV/ syllables under stress (as in /kat<sup>h</sup>í/ → [ka.t<sup>h</sup>íʔ]) shows that Thai requires stressed syllables to be heavy. This inflexible heaviness of stressed syllables can be expressed as the Stress-to-Weight Principle (18). (The name is due to Prince 1990,

who introduces the Stress-to-Weight Principle as the converse of his Weight to Stress Principle (19).)

(18) Stress-to-Weight Principle (SWP): 'If stressed, then heavy'.

(19) Weight-to-Stress Principle (WSP) (= Prince's (3)): 'If heavy, then stressed'.<sup>11</sup>

The SWP can be expressed as an alignment constraint (20)—here formulated in terms of right edges, though directional specification is not crucial.

(20) Stress-to-Weight Principle (alignment version)

ALIGN (H(Ft), R,  $\sigma_{\mu\mu}$ , R)

'Align the right edge of every foot head with the right edge of a heavy syllable'.

Prince 1990 considered the Stress-to-Weight Principle SWP to be a principle of grammar 'with a different [i.e., less important] position than Weight to Stress in the ranking of rhythmic priorities' (fn. 6). His comment finds natural expression in OT, where there is no difficulty in considering the SWP as a constraint of the grammar, with its own place in the constraint hierarchy.<sup>12</sup> If ranked above FILL- $\mu$  (21), the SWP is can motivate FILL violations—that is, epenthesis—in the interests of a head syllable heaviness. (FILL- $\mu$ , a member of a large family of constraints, is specified here because §3.4 requires a separate ranking for FILL- $\sigma$ .) I assume that the glottal quality of the epenthesis is a matter of phonetic implementation.<sup>13</sup> (22-23) illustrate its effect on both /CV/ and /CVCV/ inputs. <sup>14</sup>

(21) FILL- $\mu$ : 'Do not add mora nodes which are not included in UR'

| (22) | Input: /tó/                            | RH-TYPE=I | SWP | FILL- $\mu$ |
|------|----------------------------------------|-----------|-----|-------------|
| a.   | $[(t^h \acute{o} \text{ } \acute{r})]$ |           |     | *           |
| b.   | $[(t^h \acute{o})]$                    |           | *!  |             |

| (23) | Input: /kat <sup>h</sup> í/               | RH-TYPE=I | SWP | FILL- $\mu$ |
|------|-------------------------------------------|-----------|-----|-------------|
| a.   | $[(ka.t^h \acute{i} \text{ } \acute{r})]$ |           |     | *           |
|      | $[(ka.t^h \acute{i})]$                    |           | *!  |             |

Undominated RH-TYPE=I ensures that the rightmost syllable is head of the foot, and the SWP favors those candidates with heavy head syllables. The epenthetic codas of (22a) and (23a) violate the lowly-ranked FILL- $\mu$ , but since (22a) and (23a) satisfy both RH-TYPE=I and the SWP, they are selected as the optimal outputs.

I note in passing that factoring out head-syllable heaviness in the form of the SWP suggests a way to treat the few attested quantity-insensitive iambic systems: perhaps in these systems, the SWP is lowly-ranked, so that foot heads need not be heavy.

### 3.1.3. Disyllabicity

Thai forms disyllabic feet when possible, even at the expense of underlying moras not being parsed into syllables—as seen in the shortening of /ʔaahaan/ to [ʔa<a>.haan] in (12c) (pointed brackets <> indicate unparsed material).<sup>15</sup> This results from a constraint which favors disyllabic iambs dominating one which requires all underlying moras to be parsed into syllables. The former we may take to be some form of FOOT BINARITY at the syllable level (24), the latter (25) a member of the PARSE family of 'Faithfulness' constraints. Their interaction is shown in (26).

- (24) FOOT BINARITY (= Prince & Smolensky's (61), p. 47)  
 Feet are binary at some level of analysis ( $\mu, \sigma$ ) [i.e., over moras or syllables].
- (25) PARSE- $\mu$   
 Moras should be parsed into syllables.

(26)

| Input: /ʔaahǎan/ | FT-BIN ( $\sigma$ ) | PARSE- $\mu$ |
|------------------|---------------------|--------------|
| a. [(ʔaa)(hǎan)] | *!                  |              |
| b. [ʔa<a>.hǎan]  |                     | *            |

On the other hand, disyllabicity is not a *necessary* condition on iambs in Thai, since both (H) and (LH) are licit feet. Thai shows no inclination to augment underlying one-syllable words to two syllables; /taa/ does not surface as, e.g., \*[ʔa.taa].<sup>16</sup> FOOT BINARITY ( $\sigma$ ) is not so highly ranked as to cause the epenthesis of entire syllables, and we may rank it below FILL- $\sigma$  (27).

(27)

| Input: /taa/  | FILL- $\sigma$ | FT-BIN ( $\sigma$ ) |
|---------------|----------------|---------------------|
| a. [(taa)]    |                | *                   |
| b. [(ʔa.taa)] | *!             |                     |

### 3.2. Compound forms

Augmentation within compounds can also be explained by means prosodic structure and the SWP. As above, glottal augmentation supplies the essential evidence.

The unanalyzable one- and two-syllable forms considered so far constitute single domains for foot structure, as do prefixed forms such as *p<sup>h</sup>ra.cǎaw* (11). Foot structure may not be built across compound constituents, though. The frequent minor-syllable formative *pra-* ปฺรา supplies an example. *pra-* has no definable semantic content, but it has a homophone, meaning 'to sprinkle'. The minor syllable prefix *pra-* never takes a glottal coda (in normal pronunciation) (28), but *praʔ* 'to sprinkle' bears an epenthesized coda even when collocated with another verb (29).

- (28) a. [pra.t<sup>h</sup>êet] 'country' ประเทศ  
 b. [pra.cùʔ] 'to fill' ประจุ  
 c. [pra.paa] 'water supply' ประปา
- (29) a. [pràʔ.praaj] 'to sprinkle' + 'to scatter' ประปราย  
 b. [pràʔ.p<sup>h</sup>rom] 'to sprinkle' + 'to sprinkle' ประพรม

The recursion of PrWd in compounds, as in (9) and (15) above, provides the basis for an explanation of this persistence of glottal codas in (30). Because compound words are composed of constituent PrWd's, each element of /pra+praaj/ must have its own foot structure. Presumably a constraint ensures that both /pra/ and /praaj/ are parsed as PrWd's. Prince & Smolensky's (1993:43) LX≈PR constraint ('every lexical word is a prosodic word') suggests itself. The Stress to Weight Principle now requires that head syllables of feet be heavy. [(praaj)], being heavy, satisfies the SWP as is, but [(pra)] does not. Parsing /pra/ as [(pràʔ)] satisfies the SWP, though, at the modest cost of a FILL- $\mu$  violation (30).<sup>17</sup>

(30)

| Input: /pra+praaj/              | RH-TYPE=I | LX≈PR | SWP | FILL- $\mu$ |
|---------------------------------|-----------|-------|-----|-------------|
| a. $\text{[[(pràʔ)][(praaj)]]}$ |           |       |     | *           |
| b. $\text{[[(pra)][(praaj)]]}$  |           |       | *!  |             |
| c. $\text{[(pra. praaj)]}$      |           | *!    |     |             |

### 3.3. Taking stock

The constraints developed so far and their known rankings are given in (31):

- (31) a. RHYTHM-TYPE=IAMBIC, LX≈PR: undominated  
 b. SWP » FILL- $\mu$   
 c. FOOT BINARITY ( $\sigma$ ) » PARSE- $\mu$

Note, by the way, that we now have an explanation for the isolative style. Isolative utterances are truly monosyllabic in Lehman's (1973) sense, for each syllable constitutes a prosodic word. This can easily be expressed by an alignment constraint (32).

- (32) ALIGN ( $\sigma$ , L, PrWd, L)  
 'Align the left edge of every syllable with the left edge of a PrWd'

If (32) is undominated in the constraint hierarchy associated with isolative speech, it will produce exactly monosyllabic alignment of  $\sigma$  and PrWd; in contrast, the constraint hierarchy for normal speech ranks ALIGN ( $\sigma$ , L, PrWd, L) so low that it has no visible effects.

### 3.4. Longer prosodic domains

Iambic metrical structure is also relevant to the analysis of longer prosodic domains. Because of the morphological complexity of multi-syllabic words and constraints of space, I can only present the outlines of an analysis and comment on relevant portions.





syllable patterns of light and heavy syllables are attested, of course. The question remains, though, why two consecutive light syllables are tolerated, but three are not.

I propose that the influence of FOOT BINARITY ( $\sigma$ ) is responsible. Prosodic words of the shape [L(LH)], with an unfooted light syllable, can be tolerated in trisyllabic PrWd's. But two adjacent unfooted light syllables, [LL(LH)], cannot be tolerated, for the LL pair can form a foot without violating FOOT BINARITY ( $\sigma$ ). The second syllable of the foot thus formed must receive an epenthetic coda in order to satisfy the SWP, though—hence the iambic lengthening of (13d), but not (14c). (34-35) present constraint tableaux; superscript numbers in brackets refer to notes on the tableaux below.

(34)

| Input: /k <sup>h</sup> araha/                                                    | RH-TYPE | LX <sub>≈</sub> PR | SWP | PARSE-FEAT <sup>[1]</sup> | FT-BIN | PARSE- $\sigma$ <sup>[2]</sup> | FILL- $\mu$ |
|----------------------------------------------------------------------------------|---------|--------------------|-----|---------------------------|--------|--------------------------------|-------------|
| a. $\text{[k}^{\text{h}}\text{a}(\text{ra.ha}^{\text{?}})]$ [3]                  |         |                    |     |                           |        | *                              | *           |
| b. $[(\text{k}^{\text{h}}\text{a.ra.ha}^{\text{?}})]$                            |         |                    |     |                           | *!     |                                | *           |
| c. $[\langle \text{k}^{\text{h}}\text{a} \rangle (\text{ra.ha}^{\text{?}})]$ [4] |         |                    |     | *!*                       |        |                                | *           |
| d. $[(\text{k}^{\text{h}}\text{a}^{\text{?}})(\text{ra.ha}^{\text{?}})]$ [5]     |         |                    |     |                           | *!     |                                | **          |
| e. $[(\text{k}^{\text{h}}\text{a.ra}^{\text{?}})(\text{ha}^{\text{?}})]$         |         |                    |     |                           | *!     |                                | **          |

(35)

| Input: /ʔawajawa/                                                   | RH-TYPE | LX <sub>≈</sub> PR | SWP | PARSE-FEAT | FT-BIN | PARSE- $\sigma$ | FILL- $\mu$ |
|---------------------------------------------------------------------|---------|--------------------|-----|------------|--------|-----------------|-------------|
| a. $\text{[(}^{\text{?}}\text{a.wa)}](\text{ja.wa}^{\text{?}})$ [6] |         |                    |     |            |        |                 | **          |
| b. $[(^{\text{?}}\text{a.wa.ja.wa}^{\text{?}})]$ [7]                |         |                    |     |            | *!*    |                 | *           |
| c. $[^{\text{?}}\text{a.wa}(\text{ja.wa}^{\text{?}})]$              |         |                    |     |            |        | *!*             | *           |
| d. $[(^{\text{?}}\text{a.wa})(\text{ja.wa}^{\text{?}})]$            |         |                    | *!  |            |        |                 | *           |

- [1] PARSE-FEAT: a constraint to the effect that all underlying features should be parsed into prosodic structure. Cf. PARSE- $\sigma$ , which favors syllable nodes in prosodic structure being parsed into feet.
- [2] The ranking of FT-BIN ( $\sigma$ ) with respect to PARSE- $\sigma$  determines whether (34a) or (34b) is deemed optimal, the choice is not crucial: either way, a [LLH] sequence is tolerated. I have arbitrarily chosen FT-BIN ( $\sigma$ ) » PARSE- $\sigma$ .
- [3] The optimal parse has an unfooted light syllable, violating PARSE- $\sigma$ , but it conforms to FOOT-BIN ( $\sigma$ ).
- [4] Leaving the first syllable unparsed (36c) would satisfy FOOT-BIN ( $\sigma$ ), but the dominating constraint PARSE-FEATURES does not allow it.
- [5] (34d,e) seek to avoid unparsed syllables and trisyllabic feet by parsing the first or third syllable as a second foot, with an epenthetic coda where required. Doing so accrues FILL- $\mu$  viola-



tions, though, and (34d,e) fare worse than (34a,b) no matter how FOOT BINARITY ( $\sigma$ ) and PARSE- $\sigma$  are ranked.

- [6] As with other cases of iambic lengthening, the epenthetic codas in (35a) are motivated by the SWP. Notice that the epenthetic coda in the second syllable of is a copy of the following initial consonant; this is in contrast to the glottal stop seen previously. I suspect that this difference of behavior is linked to the presence or lack of an adjacent PrWd boundary—roughly, glottal stop appears when there is no following consonantal material in the same prosodic word.
- [7] Parsing /ʔawajawa/ as a quadrisyllabic foot accrues FOOT BINARITY ( $\sigma$ ) violations; similarly, a foot with two unparsed syllables (35c) accrues PARSE- $\sigma$  violations.

The constraint-based account of iambic foot structure developed in previous sections can be extended to explain the distribution of coda epenthesis in three- and four-syllable cases, although some aspects of the above analysis remain ambiguous. A fuller treatment of the Indic portion of Thai morphology and phonology is needed, of course, but it cannot be given here.

#### 4. Conclusion

The impetus for this study lies largely in Henderson's (1965) observation that 'among the features which have suggested themselves as typologically characteristic of a South East Asian linguistic area...are...syllabification patterns, i.e. the comparative structures of "tonic" and pre-tonic or post-tonic syllables, or "major" and "minor" syllables'. Among those Southeast Asian languages which distinguish 'major' and 'minor' syllables, most by far place minor syllables to the left of a major syllable. Why should this be? I have sought to answer this broad typological question for Thai, within a formal theory of phonological and morphological structure.

In fact, iambic metrical structure explains not only the leftward placement of minor syllables in Thai, but the acceptability of both (LH) and (H) sequences as minimal words, iambic lengthening and shortening, and word-level stress as well. Hayes' (1991) typology of iambic feet of may be derived in an Optimality Theoretic framework from the interaction of previously proposed constraints; among these are Prince's (1990) Stress-to-Weight Principle. An iambic metrical analysis, armed with the formalisms of OT, can be extended to explain iambic lengthening in multisyllabic Indic loan words, and may have application to other aspects of Indic loan words' complicated behavior.

Finally, in light of Henderson's observation above, I would like to suggest that iambic metrical structure and 'monopody'—the alignment of feet and prosodic words—may have a wide application in Southeast Asian languages. Whether an iambic metrical analysis is extensible to all the languages of Southeast Asia which show leftward

placement of minor syllables will require much further work to say, but I put it forward as a promising line of inquiry in the substantive typology of the Southeast Asian linguistic area.

### NOTES

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<sup>1</sup> For concreteness, (2) links initial consonants directly to the syllable node, and the final consonant of *tɔ̌ɔ̌p* (2c) to the second mora. Nothing that follows depends crucially on these links, though.

<sup>2</sup> The distribution of contour tones provides another line of evidence for bimoraic structures in (2). Contour tones can appear on open or closed syllables with long vowels, and short-voweled syllables with sonorant codas—CVV(X) and CVC<sub>son</sub>, respectively. Closed syllables with obstruent codas (CVC<sub>obstr</sub>) bear only level tones, though. If sonorant moras are the tone bearing units of Thai, these facts have a straightforward explanation: See Lehman 1973 for further discussion of the distribution of Siamese contour tones across nuclear and coda elements.

<sup>3</sup> Certain CV sentence-final particles are apparent exceptions: *k<sup>h</sup>á*, *k<sup>h</sup>â*, *ná*, *nâ*, *lá*, *lâ*. However, Gedney 1947 notes that these 'usually terminate in a roughly breathed, unvoiced vowel sound rather than in a glottal stop'. This ending (phonetically [h]?) appears to be a manifestation of a broader, tonally conditioned prosodic pattern.

<sup>4</sup> Whether glottal stops in Thai are underlying or epenthetic has been debated for many years (see Udom 1967 for a précis of earlier authors' views; more recently, Duryea 1992 sides with those who analyze all glottal stops as epenthetic). The status of syllable-initial glottal stops is debatable, but (*pace* Udom) distributional facts show syllable-final glottal stops to be unambiguously epenthetic. [ʔ] appears as a coda only on stressed syllables with short vowels; [ʔ] is never a coda after long vowels, diphthongs or stressless CV syllables. In contrast, oral stops can be codas after short vowels, long vowels, and diphthongs. If [ʔ] is underlyingly present in CVʔ syllables, we must infer either a set of unexplained gaps in the lexicon, or posit a rule of glottal deletion which to convert underlying /CVVʔ/ into surface [CVV]. No independent evidence exists for such a rule, though, and the apparent lexical gaps vanish if [CVʔ] is underlyingly /CV/.

<sup>5</sup> Prince 1990 observes that the other logical possibility, (HL) is generally disfavored.

<sup>6</sup> Prince attributes Iambic Lengthening to the effects of his 'Grouping Harmony', and Shortening to Grouping Harmony and the Weight-to-Stress Principle. In §3 I propose a different mechanism to account for lengthening and shortening.

<sup>7</sup> These data are complicated by the fact that some /HH/ Indic loans can also pronounced with two long, stressed syllables (e.g., *raac<sup>h</sup>aa* ราชอาณาจักร 'king'). I propose that in such words are treated as compounds, composed of two feet, i.e., [[[raa]][[c<sup>h</sup>aa]]].

Burmese provides a somewhat parallel case: the first syllable of *tǎj.ká* 'small change' is typically reduced to schwa, but it can also be pronounced unreduced, *taj.ká*. This unreduced form is clearly a compound, for it reduplicates according to the same pattern as compounds, *taj.taj.ká.ká* (Lehman, p.c.).

<sup>8</sup> In decomposing iambicity into component factors, I am not challenging Hayes' (1991) 'Iambic/Trochaic Law', that elements contrasting in *intensity* naturally form groupings with initial prominence (i.e., trochees), and elements contrasting in *duration* naturally form groupings with final prominence (i.e., iambs). Hayes defends his asymmetric foot inventory (4 above) on the basis of this proposed law, which he supports by appealing to broader perceptual studies. Unlike Kager 1993, I do not see any difficulty with appealing to extra-linguistic cognitive faculties to explain linguistic phenomena, but I propose to show how the extra-linguistic trend expressed by the Iambic/Trochaic Law may be formally implemented in a way that effectively handles the data at hand.

<sup>9</sup> Hayes 1991 argues against a symmetrical, parameterized formulation of foot types in terms of left/right-headedness and quantity sensitivity/insensitivity. I do not dispute Hayes' main contention, that the inventory of feet is asymmetric; but I derive the asymmetry from the influence of the Stress-to-Weight Principle (*q.v. infra*).

<sup>10</sup> A more direct, brute-force formulation would be simply, 'Iambs have heavy syllables at their right edges'. While this appears to be a species of alignment constraint, it specifies foot type, moraic constituency of syllables, and directionality—not readily expressible in the algebra of generalized alignment. In contrast, the Stress-to-Weight Principle (below) requires no reference to foot type.

<sup>11</sup> As Prince notes, 'stressed' in the WSP is systematically ambiguous between 'head of the foot' and 'prominent on the grid'.

<sup>12</sup> If the SWP is a constraint like the WSP, why are its effects not seen outside iambic systems? I suspect it has to do with the generally disfavored status of (HL) feet, stemming from the Iambic/Trochaic Law of Hayes 1991. A trochaic system which includes an undominated constraint against (HL) feet will mask all effects of the SWP. I take no position on whether the badness of (HL) feet is de-

rived from other principles (as in Prince 1990), or is simply stipulated by the grammar (à la Prince & Smolensky's (1993:59) RHYTHMIC HARMONY constraint).

<sup>13</sup> It may prove possible to connect this glottal quality with other features of Thai phonetics and phonology, in particular the unreleased quality of codas generally.

<sup>14</sup> The constraint tableaux which follow observe the typographical conventions of Prince & Smolensky 1993, to which the reader is referred for a complete explanation.

<sup>15</sup> I take no stand here on whether long vowels bear one or two moras underlyingly.

<sup>16</sup> Unlike some languages, e.g., Axininca Campa (McCarthy & Prince 1993b:25ff).

<sup>17</sup> Recursive PrWd structure suggests a line of explanation for 'pseudo-iambic shortening' in compounds. In many compounds, a long vowel in the first constituent is shortened, e.g., *pâak* 'mouth' + *kaa* 'crow' → *pâk.kaa* 'pen' (Duryea 1991). Such shortening makes the whole compound more iamb-like, since the first constituent's vowel is shortened. Both constituents of the compound may still be bimoraic, though.

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## THE OCP AND GRADIENT DATA\*

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English has OCP effects on identical consonants separated by a suffix boundary and a vowel, as well as on homorganic consonants separated by a vowel within monomorphemic words. These effects are gradient, not absolute: violations occur but are statistically underrepresented, and are sensitive to the stringwise distance between the consonants. An Optimality Theory treatment of the data is examined; it is found that variable constraint rankings are needed, but that the variable rankings must be tied to specific lexical items, creating a stipulative and complicated grammar.

### 1. Introduction

The Obligatory Contour Principle, or OCP, has been defined by McCarthy (1988:88) as shown in (1):

(1) Adjacent identical elements are prohibited.

This paper presents evidence for an OCP effect that occurs in English across morpheme boundaries, affecting consonants that are separated by a vowel. This effect is similar to that found in monomorphemic monosyllables (Berkley 1994).

The major empirical finding, a general restriction on cooccurrence of homorganic consonants separated by a short vowel in English, is true both across suffix boundaries, and also within monomorphemic monosyllables (Berkley 1994), where in the past it has been assumed that homorganic, and even identical, consonants cooccur freely (Sanchez 1990, Davis 1991, Lamontagne 1993). The effect is weakened in proportion to the amount of material intervening between the two homorganic consonants.

In the next section I will present the data on which the study is based. In Section 3 I will discuss some of the theoretical implications of the data. Section 4 will contain an Optimality Theory analysis of the data, together with a critique of that analysis. It will be seen that, although the insight of Optimality Theory that constraints may be violable is useful in analyzing gradient OCP effects, ultimately this Optimality Theory analysis is unable to handle that kind of data.

## 2. The data

### 2.1. The OCP in English monomorphemic monosyllables.

Berkley 1994 presented gradient OCP effects within monomorphemic monosyllables in English. Although, as was mentioned above, it is generally assumed that monosyllables with homorganic consonants occur freely, statistical analysis of these words shows that they are below expected levels of occurrence, as shown in Table 1. That is, although monosyllables containing two homorganic consonants separated by a vowel (such as *king* /kɪŋ/ or *skunk* /skʌŋk/) do occur their number is lower than would be expected if the consonant pairs in monosyllables were distributed at random according to the frequency of each place of articulation in onset or rime. Note that coronals also participate in this underrepresentation. Coronals are divided into separate identity classes for obstruents and sonorants; such a division has also been used elsewhere for other languages, for example by Padgett 1991 or Pierrehumbert 1993.

**Table 1: Distribution in monosyllables of consonant pairs separated by exactly one segment**

examples: **king** /kɪŋ/  
**skunk** /skʌŋk/

|                 |               | <u>C2</u>       |                 |               |                 |
|-----------------|---------------|-----------------|-----------------|---------------|-----------------|
|                 | <u>labial</u> | <u>cor.obs.</u> | <u>cor.son.</u> | <u>dorsal</u> |                 |
| <u>labial</u>   | <b>26</b>     | 99              | 157             | 42            | <u>observed</u> |
|                 | <b>64.9</b>   | 90.7            | 113.8           | 54.6          | <u>expected</u> |
| <u>cor.obs.</u> | 75            | <b>67</b>       | 124             | 62            | <u>observed</u> |
|                 | 65.7          | <b>91.8</b>     | 115.2           | 55.3          | <u>expected</u> |
| <u>cor.son</u>  | 129           | 143             | <b>94</b>       | 98            | <u>observed</u> |
|                 | 92.9          | 129.8           | <b>163.0</b>    | 78.2          | <u>expected</u> |
| <u>dorsal</u>   | 22            | 43              | 67              | <b>10</b>     | <u>observed</u> |
|                 | 28.4          | 39.7            | 49.9            | <b>23.9</b>   | <u>expected</u> |

(N=1258; Chi square = 118.11, p < .00001)

Monosyllables with homorganic consonants separated by more than one segment, whether they are all vowels or some combination of vowels and consonants, are also below expected levels of occurrence. Table 2 shows the ratio of actual occurrences of homorganic consonant pairs to the number that would be expected if they occurred at random. The ratios are categorized by place of articulation and by the number of segments intervening between the homorganic consonants. A lower ratio means a stronger OCP effect, since in a lower ratio the observed value is small relative to the expected value.<sup>1</sup>

**Table 2: Ratio of observed values to expected values for homorganic consonant pairs**

|                  | number of intervening segments |            |              |                     |
|------------------|--------------------------------|------------|--------------|---------------------|
|                  | <u>one</u>                     | <u>two</u> | <u>three</u> | <u>four or more</u> |
| <u>labial</u>    | .40                            | .52        | .57          | n/a                 |
| <u>cor. obs.</u> | .73                            | .74        | .87          | .89                 |
| <u>cor. son.</u> | .58                            | .63        | 2.14         | n/a                 |
| <u>dorsal</u>    | .42                            | .73        | .56          | n/a                 |

The general finding evidenced in Table 2 is that the underrepresentation of homorganic consonants in monomorphemic monosyllables decreases as distance between them increases.

## 2.2. The OCP in English suffixed words

The OCP effect in monomorphemic monosyllables was originally found in the context of exploring the possibility of an OCP effect across suffix boundaries in English. In a collection of words ending in *-ity* from several on-line dictionaries and corpora, it was observed that very few of the stems end in /t/.<sup>2</sup> Other factors that might account for such a gap were explored. These factors included the latinate/nonlatinate status of the stem (*-ity* does not generally attach to nonlatinate stems); undesirable phonological effects (such as stress shift) that might make speakers prefer to use *-ness*; blocking of an *-ity* word by some other already existing word; and the number of syllables in the stem.

In order to find out if these other factors could account for the observed lack of *-ity* words with stems ending in /t/, statistical analysis was done on the word list, with the words divided by whether or not they took *-ity* or *-ness*. (Some stems took both suffixes, and thus were included in both categories.) Very few nonlatinate stems take *-ity* (out of 1257 words with *-ity*, only 11 have nonlatinate stems). So the other factors would only be relevant in the context of latinate stems, which occur freely with both suffixes. The two categories of stems (those that could take *-ity*, and those that could take *-ness*) were accordingly reduced to only their latinate members. The two resulting categories were then tested for the statistical significance of whether or not the stems ended in /t/. The results are shown in Table 3, where it can be seen that stems ending in /t/ are highly underrepresented with *-ity*.

**Table 3: Distribution of latinate stems by suffix**

|                   | <u>stem ends in /t/</u> | <u>stem doesn't end in /t/</u> |
|-------------------|-------------------------|--------------------------------|
| <b>-ity</b>       | 3<br>78.8               | 1243<br>1167.2                 |
| <b>-ness only</b> | 119<br>43.2             | 563<br>638.8                   |

(N=1928; Chi square = 220.19, p <.00001)

Similar tests, controlling for each of the other factors mentioned above, were also done. In each case no significance was found for any other factor. For example, a statistical test was run controlling for whether or not stress shift would be caused if *-ity* were affixed. It was found that stems taking *-ity* and also ending in /t/ are underrepresented both when stress shift would occur, and also when it would not (although the underrepresentation is not statistically significant in the former case). Therefore the underrepresentation of stems ending in /t/ that take *-ity* cannot be related to stress shift.

Under the hypothesis that this underrepresentation was an OCP effect, words ending in other English suffixes were collected from two on-line dictionaries, and the resulting word lists were examined to see if there was any restriction on the acceptability of stems ending in a suffix's first consonant. It was found that many English suffixes avoid stems whose last consonant is identical to the first consonant of the suffix when the two identical consonants, on either side of the morpheme boundary, would be separated at most by a vowel if affixation occurred (see Appendix.) For example, out of 118 stems that take the suffix *-ish*, none ends in /ʃ/; \**fishish* is an unacceptable word, as opposed to *fishy*. Similarly, *scale* does not take the suffix *-al*, but rather its allomorph *-ar*, to form *scalar* instead of *scalal*.<sup>3</sup>

In summary, the data show that OCP effects are found in English across suffix boundaries as well as in monomorphemic monosyllables.

I will now turn to a discussion of the theoretical issues raised by the data.

### 3. Theoretical issues

#### 3.1. Intervening feature specifications.

In much current literature, it is assumed that the OCP applies solely to segments or feature specifications that are strictly adjacent on some tier (e.g. McCarthy 1988). In particular, the OCP has often been held to apply to consonants separated by a vowel only in languages with nonconcatenative morphology, such as Semitic languages. This is because it is the nonconcatenative morphology of such languages that motivates the separation of consonant and vowel melodies onto different tiers.

In languages with concatenative morphology, consonants separated by a vowel are not held to be adjacent for purposes of the OCP, since there is presumed to be no relevant reason to represent consonant melodies on a different tier from that of the vowels. Thus in Cambodian, clusters consisting of homorganic consonants are forbidden, but homorganic consonants separated by a vowel occur freely (Yip 1989).<sup>4</sup>

Yip 1989 discusses the fact that cooccurrence restrictions in different languages vary in whether the two segments in question are required to be adjacent stringwise, or merely at the root node, or

just present within the same morpheme. However, she argues that 'at some level adjacency is always involved, and that apparent non-adjacent instances *always* involve separation of consonant and vowel melodies underlyingly....' (Yip 1989:352).

The data presented here do not support this view. In the English case, identical, or even merely homorganic, consonants are underrepresented when separated by a vowel. The OCP apparently considers identical consonants in a CVC sequence to be adjacent enough to be undesirable. According to Yip, this should indicate that English has underlying separation of consonant and vowel melodies. However, an OCP effect depending critically upon non-separation of consonant and vowel melodies has been claimed for English: the case of the English plural, third person singular present tense, and possessive morphemes, and the English past tense morpheme (Yip 1988). These morphemes are pronounced as a single /z/ or /d/ respectively (without taking into account voicing assimilation), except when the stem ends in a 'like coronal' (a sibilant in the first case, an oral stop in the second). In that event, a vowel is inserted between the two consonants, as in (2). Crucially, it is the presence of the vowel that keeps the word from being an OCP violation.

- |                            |                        |
|----------------------------|------------------------|
| (2) /wIz/ + /z/ -> /wIzəz/ | /bʌd/ + /d/ -> /bʌdəd/ |
| whiz / pl.                 | bud / past             |
| 'whizzes'                  | 'budded'               |

Separation of consonant and vowel melodies appears therefore to be orthogonal to the way the OCP works.

To account for OCP effects across a vowel, it might seem that the standard assumption of privative articulator features on individual tiers (e.g. McCarthy 1988, Clements & Hume to appear) would be useful. If place features are indeed privative, and the OCP is active in English in prohibiting like adjacent place-of-articulation features, then words like \**beb* have two adjacent specifications for [labial]. The intervening vowel is not a problem; the OCP is automatically able to see past it. Privative tiers for place features would also explain how words like \**bleb* and *cling* can be OCP violations. In \**bleb*, no [labial] specification intervenes between the [labial] specifications of the two /b/'s, and in *cling* no [dorsal] specification intervenes between the [dorsal] specifications of the /k/ and /ŋ/.

However, while privative features might explain why the place features of nonadjacent consonants constitute an OCP violation, another aspect of the data is left unaccounted for. This is the fact that the OCP effect loses strength as more and more segments intervene between the homorganic consonants. If the OCP is only looking at the articulator tiers, it should not be able to see that any segments intervene at all; the two [coronal] features in *sit* /sIt/ and *swift* /swIfIt/ should be equally adjacent, as shown:



|     |           |           |           |  |           |           |           |           |           |
|-----|-----------|-----------|-----------|--|-----------|-----------|-----------|-----------|-----------|
| (3) | s         | I         | t         |  | s         | w         | I         | f         | t         |
|     |           |           |           |  |           |           |           |           |           |
|     |           |           |           |  |           |           |           |           |           |
|     |           | [Vplace]  |           |  |           | [Vplace]  |           | [labial]  |           |
|     |           |           |           |  |           |           |           |           |           |
|     |           |           |           |  | [dorsal]  |           |           |           |           |
|     |           |           |           |  |           |           |           |           |           |
|     | [coronal] | [coronal] | [coronal] |  | [coronal] | [coronal] | [coronal] | [coronal] | [coronal] |

Yet words such as *sit* are more highly underrepresented than words such as *swift* (Table 2). Privative features may thus also be irrelevant to the way the OCP works. Strict adjacency on a single tier is not sufficient to explain the effects of distance, nor does it seem to be necessary in order for the OCP to notice two identical or similar items. This idea gains support from Bybee & Slobin 1982, who present evidence that verbs ending in coronal stops are underrepresented with the regular past tense morpheme *-ed*, despite the fact that schwa is inserted in such cases. For example, many verbs ending in /t/ or /d/, such as *hit* or *bid*, undergo no phonetic change to form the past tense. So although the insertion of schwa may be a way of 'rescuing' a word that would otherwise constitute an OCP violation, the fact that forms such as *budded* are underrepresented indicates that two /d/'s separated by a schwa are still close enough to each other to be themselves OCP violations.

Furthermore, Pierrehumbert 1993 shows that nonadjacent elements may exhibit an OCP effect even across intervening feature specifications on the same tier. Arabic has a strong OCP effect on identical consonants and a somewhat weaker OCP effect on nonidentical homorganic consonants.<sup>5</sup> One aspect of the OCP effects is that root morphemes with two identical consonants separated by a third different consonant are underrepresented, indicating that the OCP notices the two identical consonants. Since an OCP effect against identical segments targets segments that are identical on every tier, an intervening segment with any distinct feature specification ought to block this 'total' OCP, or at least reduce its strength to that of the OCP effect on place of articulation alone. However, verbal roots with two identical [-sonorant] consonants separated by a [+sonorant] consonant are underrepresented, and the effect is stronger than that on two homorganic but nonidentical [-sonorant] consonants separated by a [+sonorant] consonant. So the intervening feature specification is not enough to block the OCP on total identity.<sup>6</sup>

Because of such findings, the assumption that the OCP applies only to adjacent specifications on the same tier must be reexamined. It is apparent that the OCP is more complex than has been previously assumed. One hypothesis might be that the OCP can also sense phonetic timing, and that at least two factors, adjacent identical feature specifications and phonetic adjacency, are crucial to OCP violations. Perceptual similarity (as argued in Pierrehumbert 1993) may also turn out to be a factor. Further research in this area is needed.



### 3.2. The OCP and underspecification of coronals.

An additional theoretical implication of the data concerns the underspecification of coronals. This is because words with two coronal consonants that are relatively adjacent to each other are underrepresented in English, as shown by the data in Table 2. Although coronals are less underrepresented than labials and dorsals, they follow the same general pattern of decreasing underrepresentation as distance between the consonants increases. This underrepresentation means that these consonants must be specified for coronal place of articulation, since the OCP can see that both consonants have the same place specification.<sup>7</sup> The data thus present a challenge to theories relying on underspecification of [coronal], and provide support to theories featuring full specification, as in Broe 1993.<sup>8</sup>

I will now turn to an attempt to treat the data with an Optimality Theory analysis.

## 4. An Optimality Theory treatment of the data

### 4.1. Optimality Theory and the OCP.

Optimality Theory (Prince & Smolensky 1993) is a theory of constraint interaction involving violable constraints. There are neither rules nor derivations as usually understood. Instead, a set of universal constraints is ranked by each language from most important to least. A constraint may be violated when its satisfaction would depend on violation of a higher-ranked constraint.

Surface forms arise in the following manner. A component of the grammar called Gen associates an abstract representation of a linguistic object (such as a morpheme or a syllable) with all possible surface outputs. These outputs are evaluated in parallel by H-eval, a function that compares the outputs for their success in satisfying the constraints. If an output violates a constraint, it receives a mark that indicates this. Any outputs that violate the highest constraint are discarded, and the remaining outputs are evaluated against the next highest constraint. Evaluation continues until only one output 'wins'. Lower-ranked constraints do not contribute anything to the evaluation if they are too low to make a difference. That is, unlike connectionist models, Optimality Theory does not allow candidate outputs to compete on scores based on their total satisfaction of all constraints, but only on their satisfaction of constraints high enough to be relevant to the particular evaluation in progress.

To account for the OCP effect found, we can use the constraint in (4):

(4) OCP(Place)

Adjacent homorganic consonants are prohibited.

In order to explain the effects of distance shown in Table 2, this constraint needs to be exploded into a family of related binary constraints, as is often done in Optimality Theory. In this case, the

OCP(Place) family will consist of member constraints that each deal with homorganic consonants separated by a specific number of segments. For example, the constraint OCP(Place)-2 will prohibit homorganic consonants separated by two segments.

Interacting with this constraint family are two other constraints that play a large role in Optimality Theory: Fill and Parse, defined in (5) and (6):

- (5) FILL: Syllable positions must be filled with underlying segments (Prince & Smolensky 1993:85).  
 (6) PARSE: Underlying segments must be parsed into syllable structure (Prince & Smolensky 1993:85).

In order for words containing OCP violations, such as /tat/ (*tot*), to survive, OCP(Place) must be ranked lower than both Fill and Parse. The constraint tableau in (7) illustrates this.

|        | Fill | Parse | OCP(Place)1 | OCP(Place)2 |
|--------|------|-------|-------------|-------------|
| (7)    |      |       | *           |             |
| -> tat |      |       |             |             |
| ta t   | *!   |       |             | *           |
| ta<t>  |      | *!    |             |             |

#### 4.2. Variable rankings.

Note that it is the violability of constraints in Optimality Theory that allows us to account for the occurrence of forms containing OCP violations. However, there are problems. The most notable concerns the fact that monosyllables with homorganic consonants are underrepresented. The ranking in (7) explains the existence of such words, but it does not explain their underrepresentation.

One way of accommodating the Optimality Theory account to this fact would involve allowing constraint rankings to be variable (as in Kiparsky 1993). That is, instead of statements such as 'The constraint OCP(Place) dominates the constraint Fill', a language may need to use statements such as 'The constraint OCP(Place) tends to dominate the constraint Fill'.

Such 'soft' constraint rankings would work in the following manner for the OCP effect under discussion. For a minority of inputs, OCP(Place) will be dominated by Fill and Parse, as shown in (7), but most of the time OCP(Place) will dominate one or both of them. When the more usual ranking is in effect, the outcome for an input monosyllable with two homorganic consonants, such as /beb/ (*\*beb*), will be as shown in the following tableau:

|         | OCP(Place)1-lab | OCP(Place)2-lab | Fill |
|---------|-----------------|-----------------|------|
| (8)     |                 |                 |      |
| beb     | *!              |                 |      |
| -> be b |                 | *               | *    |

When Fill is ranked below the OCP, a parse with an epenthetic segment (such as perhaps [beib] *babe*?) will beat the more faithful parse

[bɛb]. Assuming that /bɛb/ really is the input for *babe*, this is the desired outcome.

### 4.3. Optimality Theory, the OCP, and English suffixed words.

It may be objected that constraints are not the proper way to handle lexical data in Optimality Theory, and that instead the OCP effect is in place before the candidates are sent to H-eval by Gen. However, the OCP effect found in this study concerns not only monomorphemic monosyllables, but also suffixed words. Matters pertaining to affixation are regularly handled by constraints in Optimality Theory (Prince & Smolensky 1993). But the English heteromorphemic data poses even greater problems for the Optimality Theory account presented here.

Although most English suffixes avoid stems ending in the same consonant as the first consonant of the suffix, words such as *chastity* and *molal* do occur. Ranking OCP(Place) below Parse and Fill accounts for the occurrence of these forms, as it did for words such as *tot*. However, a change in rankings does not account for their underrepresentation, as it did in the case of monomorphemic monosyllables. This is because forms such as \*'*distincteety*' /dɪs.tɪŋk.tɪy.tɪ/ do not occur at all, as they would if OCP(Place) were ranked above Fill (in a manner analogous to (8)).

If, in order to account for the underrepresentation of words like \**beb*, some of the constraints in the OCP(Place) family must sometimes be ranked above Fill, then something else must be preventing words such as \*'*distincteety*' from occurring for input /distinct + ity/, or indeed, preventing any output at all from occurring for this input, or for inputs such as /scale + al/ (compare *molal* and *scalar*). Prince & Smolensky 1993 claim that when something is absolutely ill-formed, it means that the 'null parse' (no phonetic realization at all of the input) has actually been the optimal candidate. Thus it is necessary to find a constraint ranked even higher than Fill, Parse, and OCP(Place), which is violated by all parses of /distinct + ity/ but which is not violated by the null parse, or by outputs such as [tat] for input /tat/ (see (7) above). So far the only constraint violated by \*'*distincteety*' is OCP(Place)<sub>1</sub>, which is also violated by [tat]. Since [tat] is the correct output, OCP(Place)<sub>1</sub> cannot be the constraint we need.

One way to rescue this analysis is to posit another family of OCP constraints that refers specifically to OCP violations across a suffix boundary:

(9) OCP(Place)-SUFFIX (OCP(Place)-Sfx):

Identical consonants separated by a suffix boundary are prohibited.

If OCP(Place)-Sfx is ranked above Parse, then the null parse will beat any parse of /distinct + ity/, no matter what the ranking of OCP(Place)-Sfx is relative to Fill or OCP(Place). This is shown in the following tableau.

|      |              |                |    |    |       |
|------|--------------|----------------|----|----|-------|
| (10) |              | OCP(Place)-Sfx |    |    | Parse |
|      |              | 0              | 1  | 2  |       |
|      | ->           | <distinctity>  |    |    | *     |
|      |              | distinct<i>ty  | *! |    | *     |
|      |              | distinctity    |    | *! |       |
|      | distinct ity |                |    | *  |       |
|      | etc.         |                |    |    |       |

In order to account for the occurrence of forms like *chastity*, OCP(Place)-Sfx must occasionally be ranked below both Fill and Parse:

|      |           |            |       |                |   |   |            |   |   |
|------|-----------|------------|-------|----------------|---|---|------------|---|---|
| (11) |           | Fill       | Parse | OCP(Place)-Sfx |   |   | OCP(Place) |   |   |
|      |           |            |       | 0              | 1 | 2 | 0          | 1 | 2 |
|      |           | <chastity> |       | *!             |   |   |            |   |   |
|      |           | chast<i>ty |       | *!             | * |   | *          |   |   |
|      | ->        | chastity   |       |                |   | * |            | * |   |
|      | chast ity | *!         |       |                | * |   |            | * |   |

If we wish to accept variable constraint rankings, we have now arrived at what seems to be a technically workable, though stipulative, solution to account for all the data in this study. However, this solution is not even that good. For one thing, variable constraint rankings will pose the problem of ensuring that the rankings are the same every day for every speaker for every particular input. That is, the null parse would always have to be the optimal output of /distinct + ity/ for every English speaker on every day. So, when the input /distinct + ity/ enters Gen, the constraints would always have to be ranked such that OCP(Place)-Sfx dominates Parse, but whenever the input /chaste + ity/ enters Gen, since *chastity* is always the optimal output, Parse and Fill would always have to be ranked above OCP(Place)-Sfx for every English speaker on every day. Otherwise for some speakers *\*distinctity* would be well-formed, and some might find *chastity* ill-formed.

Furthermore, having separate constraints, one for the OCP effect in monomorphemic monosyllables and one for suffixed words, misses the generalization that the effect of them both is generally the same—avoidance of similar elements in proximity. In this respect, Optimality Theory does not represent an advance over the theory of lexical phonology. Linguists working in lexical phonology noted that lexical phonological rules tended to give to derived forms the same phonological regularities already found in underived forms. They therefore worked towards unifying these two types of phenomena. For example, Kiparsky 1982 proposes that morpheme structure rules and phonological rules are really all one type of object: lexical phonological rules. He argues that what appear to be morpheme structure rules are merely the feature-filling applications of phonological rules to underspecified lexical items. Later in the phonology, the same rules may apply in a feature-changing manner to derived forms.

The Optimality Theory account presented here needs a much more complicated grammar. To handle the gradient OCP data, the Optimality Theory analysis needs one constraint family avoiding identical elements across a suffix boundary, and another avoiding similar elements in monomorphemic monosyllables. These constraint families must also be ranked independently of each other, with independent ranking variations. It is more difficult to see within Optimality Theory that the constraint family affecting monomorphemes and the constraint family affecting suffixed words are actually two different facets of the OCP than it was to have unified effects on both monomorphemic and derived forms within lexical phonology.<sup>9</sup> Optimality Theory researchers would do well to follow the lead of lexical phonologists and examine the representation and cause of the resemblance between morpheme structure conditions and the outcome of phonological rules on derived forms.

## 5. Conclusion

The data presented in this paper provide evidence for a revised understanding of the OCP, as argued in Berkley 1994. Although the statement in (1), repeated here as (12), is generally accepted, it is incorrect in two respects.

(12) Adjacent identical elements are prohibited.

First, identical elements need not be adjacent in order to be noticed by the OCP. Instead, the OCP suppresses identical elements separated by intervening segments, and even by a morpheme boundary in addition to an intervening segment. Second, the cooccurrence of similar elements is not prohibited. Instead, relatively adjacent identical elements do cooccur, but the number of such occurrences is lower than expected.

The debate between privative and equipollent features was argued to be orthogonal to this type of OCP effect. That is, although privative features can explain OCP violations across intervening segments, they do not explain why the underrepresentation of OCP-violating consonant pairs decreases as the stringwise distance between them increases. There are, instead, hints in the data that the OCP may refer to phonetic adjacency in time. The relationship of the OCP to phonetic representations, and to perception of similarity, as explored in Pierrehumbert 1993, is undoubtedly in need of further study.

The Optimality Theory analysis presented in this paper has shown that constraint violability, an important feature of Optimality Theory, is useful in accounting for OCP violations.

However, it is not Optimality Theory specifically, but the concept of violable constraints, that is supported by this paper, although Optimality Theory is indeed based upon such a concept. The Optimality Theory analysis given above was unable to account for the underrepresentation of words containing OCP violations without a modification to the theory in the form of violable rankings of constraints, a modi-



fication which was shown to be problematic. And even the reranking solution was unable to account for the OCP effects on suffixed words without positing a separate OCP constraint, also subject to reranking. This separation of constraints misses the generalization that the suffixed words and the monomorphemic words are both subject to the OCP. Moreover, since ranking of constraints is how Optimality Theory explains linguistic phenomena, arbitrary variation in the rankings is actually inimical to Optimality Theory. It appears from the data presented here that Optimality Theory's inviolable constraint rankings are inadequate for gradient data.

### NOTES

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<sup>1</sup> In Table 2, 'n/a' indicates that no occurrences were found.

<sup>2</sup> This phenomenon had already been noted by Anshen et al. 1986.

<sup>3</sup> Statistics were not done on these data for the present paper. In order to have statistics similar to those for *-ity* and *-ness*, it would be necessary to again compare two suffixes similar in meaning, subcategorization, and selectional restrictions, but with different first consonants. Such a study could be undertaken, but would require much time to sort out other factors such as latinateness. It is thus left for future research.

<sup>4</sup> Yip does not state that she has done a statistical analysis on Cambodian consonant cooccurrence. If such an analysis has not been done, it is possible that the cooccurrence of homorganic consonants is not completely free in Cambodian, but is instead underrepresented as in English.

<sup>5</sup> Pierrehumbert 1993 actually argues that all Arabic's OCP effects are due to one unified OCP whose strength increases with both increased proximity and increased perceived similarity. The limiting case of similarity is total identity; thus the OCP effect on identical consonants is strongest.

<sup>6</sup> See also Pierrehumbert (in press), where it is shown that medial clusters in monomorphemic words of English are underrepresented if the first and third consonants are identical. This paper provides additional evidence for nonadjacent OCP effects in English. Moreover, the paper contains experimental evidence for the 'psychological reality' of the effect.

<sup>7</sup> Paradis & Prunet 1991 argue that an OCP effect involving coronal place of articulation does not necessarily entail that [coronal] is specified. Rather, they suggest that in languages such as Arabic, where the OCP disallows two coronals in the same root, the OCP con-



siders two adjacent gaps on the place tier to be a violation (see also a similar suggestion in Kiparsky 1985). They reconcile this assumption with the claim of Davis 1991 that English /s/CVC words with homorganic consonants are underrepresented only when the consonants are not coronal, by suggesting that whether or not the OCP notices adjacent gaps is a parameterizable option, and that English does not take the gap option. For arguments against gaps as 'features', see Broe 1993.

<sup>8</sup> See McCarthy & Taub 1992 for further arguments against coronal underspecification.

<sup>9</sup> Nonetheless, it appears that lexical phonology is also unable to account for the specific OCP effects presented here. This is because the effects of the OCP cannot be represented as the output of rewrite rules, since there is no one way of resolving an OCP violation. That is, an OCP violation may be resolved in many ways, for instance by epenthesis between the offending consonants, by deletion of one of the offending consonants, or by blocking the violating form altogether.

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## ON EXPERIENCERS AND SUBJECTS OF PERFECT PREDICATES

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### 1.0 Introduction

In Kashmiri finite clauses we find subjects marked by one of the three Cases: nominative (1a), dative (1b), and ergative (1c).

- (1) a. lark ch-u yi kitaab par-aan  
boy(N) prs-m,sg this(A) book(A,f,sg) read-NPerf  
'The boy is reading this book.'
- b. lark-as ch-a yi kitaab khar-aan  
boy(D) prs-f,sg this(N) book(N,f,sg) hate-NPerf  
'The boy hates this book.'
- c. laRk-an ch-a yi kitaab par-mets  
boy(E) prs-f,sg this(N) book(N,f,sg) read-Perf Part-f,sg  
'The boy read this book.'

The evidence for the subjecthood of the NP "boy" in (1a)—(1c) is well-established [Control PRO, ECM, S-S-R (Bhatt 1993)]. The different instantiations of Case is explained by assuming that both (1b) and (1c) are unaccusative structures, and that dative and ergative are lexically-assigned by the verb; the nominative Case in (1a) is assigned by Infl in SPEC-HEAD configuration (Bhatt 1993).<sup>1</sup> This Case-theoretic account subsumes two different D-Structures for (1): (2a) for (1a) and (2b) for (1b and 1c).

- (2) a. [CP [C' [IP [I' [VP [VP laRk [v' yi kitaab paraan] chu]]]]]] (=1a)  
b. [CP [C' [IP [I' [VP [VP e [v' laRkas/laRkan yi kitaab kharaan/parmets] cha]]]]]] (=1b, 1c)

The proposal (2b), although widely assumed in Indo-Aryan Syntax within GB framework (cf. Mahajan 1990), is fraught with serious problems. Assuming the same D-Structure (2b) for both ergative and dative subject constructions leaves several of their distributional properties unexplained. First, given (2b), it is not clear why dative Case-marked subjects cannot passivize whereas ergative Case-marked subjects can. In fact, with respect to passivization, ergative subject construction patterns with nominative subject constructions; they both can have passive counterparts. Second, it is not clear why nominalization of ergative subject constructions is possible, but nominalization of dative subject constructions is not. And finally, third, it is not clear why ergative subject constructions can be causativized by a general process of suffixing the causative morpheme *-inaav* to the main verb whereas dative subject constructions fail to undergo causativization.

In this paper I follow Grimshaw (1990) and claim that ergative subjects are external (Agents) arguments generated as D-Structure subjects in the same way as other agentive subjects. I propose (2a) to be the D-Structure of ergative constructions in Kashmiri, which gives a straightforward account of why ergative subjects and dative subjects behave differently with respect to syntactic operations such as passivization, nominalization, and causativization. I will also argue that ergative Case is not lexically assigned by the verb, but rather by an aspectual (functional) head. The paper is organized in the following manner: First, in section 2.0, I discuss data to show that ergative constructions behave differently than dative constructions with respect to passivization, nominalization, and causativization. In section 3.0, I use Grimshaw's (1990) framework to account for the data in section 2.0. In section 4.0, I propose a more articulated theory of Case, following some recent works of Sigurðsson (1991), Marantz (1991), Cowper (1988), among others. In section 5.0, I draw conclusions and explore some consequences of my proposal.

## 2.0 The data

### 2.1 Passivization

The passive in Kashmiri is expressed by suffixing the passive morpheme (-*ni*) to the verb root, and adding a periphrastic auxiliary *yun* "to come," as shown in the active-passive pair below. The oblique *by* phrase in Kashmiri is preferably omitted.

- (3) a. laRk ch-u kor-yan kitaab div-aan  
 boy(N) prs-m,sg girls(D) book (A,f,sg) give-NPerf  
 'The boy gives a book to the girls.'
- b. kitaab ch-a kor-yan di-ni yiv-aan  
 book(N,f,sg) prs-f,sg girls(D) give-Pass came-NPerf  
 (laRk-as athyi)  
 boy(D) by  
 'The book was given to the girls (by the boy).'<sup>2</sup>
- c. kor-yan ch-a kitaab di-ni yiv-aan  
 girls(D) prs-f,sg book(N,f,sg) give-Pass came-NPerf  
 (laRk-as athyi)  
 boy(D) by  
 'The girls were given the books (by the boy).'

Kachru (1973:353) notes the existence of intransitive passives in Kashmiri. It turns out that only unergative verbs can passivize—giving rise to the so-called impersonal passive (-looking) constructions. However, unaccusative verbs do not passivize, as the contrast between (4) and (5) shows.<sup>3</sup>

- (4) a. laRk oos kamr-as manz nats-aan  
 boy(N) was room(D) in dance-NPerf  
 'The boy was dancing in the room.'
- b. laRk-as athyi oos kamr-as manz nats-ni yiv-aan  
 boy(D) by was room(D) in dance-Pass come-NPerf  
 'It was in the room danced by the boy.'
- (5) a. shuryi chI yath umr-yi manz jal-jal baD-aan  
 kids are this(D) age(D) in very fast grow-NPerf  
 'The kids grow very fast at this age.'
- b. \*shury-an athyi chu yath umr-yi manz jal-jal  
 kids(D) by is this(D) age(D) in very fast  
 baD-ni yiv-aan  
 grow-Pass come-NPerf  
 'At this age it is by the kids very fast grown [Lit.: 'At this age to the kids comes very fast growth.]'

A plausible hypothesis to account for the contrast in (4) and (5) is to assume that in Kashmiri, operations such as passives require an external argument. This will straightforwardly explain why passivizing an unaccusative verb results in ungrammaticality (5b, above); there is no external argument in these structures.

If the above hypothesis is correct, and assuming dative predicates to be unaccusatives, we expect constructions with dative Case-marked subjects to result in ungrammaticality when they are passivized. Indeed, the ungrammaticality of (6b) supports our hypothesis.

However, constructions with ergative Case-marked subjects can easily passivize, as shown in (7). If we maintain our hypothesis, we must assume that the subject of the perfect predicate is an external argument. Clearly, with respect to passivization, ergative subject construction patterns with nominative subject constructions (3 above); they both can have passive counterparts.

- (6) a. laRk-as ch-a yi kitaab khar-aan  
 boy(D) prs-f,sg this book(N,f,sg) hate-NPerf  
 'The boy hates this book.'
- b. \*yi kitaab ch-a khar-ni yiv-aan  
 this(N) book(N,f,sg) prs-f,sg hate-Pass come-NPerf  
 'This book is being hated.'
- (7) a. laRk-an par yi kitaab  
 boy(E) read-Perf-f,sg this book(N,f,sg)  
 'The boy read this book.'
- b. yi kitaab aa-yi par-ni  
 this(N) book(N,f,sg) come-Perf-f,sg read-Perf-Pass  
 'This book was read.'

Next we look at some more data which leads to the same conclusions; that subjects of dative predicates are internal arguments whereas subjects of perfect predicates are external arguments.

## 2.2 Nominalization

One of the most productive ways of deriving nominals from verbs is by suffixing the gerundive [-*un*] (homophonous with the infinitive marker) to the verb root. The resulting deverbal noun takes all the arguments taken by the verbs they are derived from. Thus, nominalizing (8a) this way yields (8b).<sup>4</sup>

- (8) a. laRk chu dohay baat gyavaan  
 boy(N) prs daily songs sing-NPerf  
 'The boy sings songs everyday.'
- b. [laRk-sund dohay baat gyav-un] chu-na mastar-as  
 boy(G) daily songs sing-ing prs-Neg teacher(D)  
 pasand  
 like  
 'The teacher does not like the boy's singing of the songs everyday.'

As with passivization, nominalization of ergative predicates is possible; I show this in (9a). The nominalization of psych predicates, however, yields ungrammaticality; I show this in (9b).

- (9) a. laRk-sanz yi kitaab par-in  
 boy(G) this book read-Nominalizer  
 'The boy's reading this book...'
- b. \*laRk-sinz yi kitaab khar-in  
 boy(G) this book hate-Nominalizer  
 'The boy's hating this book...'

Once again, to account for the contrast between (8) and (9), we can maintain our hypothesis and claim that the underlying structure of nominative subject constructions must be the same as ergative subject constructions; specifically, that both have an external argument, which is lacking in the dative subject constructions.

And, as a final piece of evidence, I provide data from causativization in Kashmiri to show that ergative subject constructions patterns with nominative subject constructions forcing an account of perfect predicates that must assume an underlying structure (2a), shown above.

## 2.3 Causativization

In Kashmiri, causative constructions are formed by a general process of suffixing the causative morpheme *-inaav* to the main verb, as shown in (10a) and (10b). The causer (generally the agent) has some intermediary (causee), marked with the same postposition (*athyi* "by") as the passive *by*-phrase, to actually perform the action for it.



- (10) a. *su ch-u me mastar-as athyi hindi*  
 he(N) prs-m,sg me(D) teacher-(D)-by hindi(A)  
*par-inaav-aan*  
 read-Cause-NPerf  
 'He is having the teacher teach me Hindi.'
- b. *su ch-u mohnyu-as-athyi kaam kar-inaav-aan*  
 he(N) prs-m,sg servant-(D)-by work(A) do-Caus-NPerf  
 'He is having the servant do the work.'

As is the case with other (oblique) adjunct phrases, the oblique causee can be omitted; I show this in (11) below.

- (11) *su ch-u kaam kar-inaav-aan*  
 he(N) prs-m,sg work(A) do-Caus-NPerf  
 'He is having the work done.'

The ergative subject constructions can be causativized by a general process of suffixing the causative morpheme *-inaav* to the main verb, as shown in (12a), whereas the dative subject constructions fail to undergo causativization, as the ungrammaticality of (12b) suggests.

- (12) a. *asyi kar-inaav swa laRk-as-athyi kaam*  
 we(E) do-CAUSE she boy(D)-by work  
 'We had her do the work by the boy.'
- b. \**asyi khar-inaav swa kaur laRk-as-athyi*  
 we hate-CAUSE that girl(N) boy(D)-by  
 'We had her hated by the boy.'

I suggest that the contrast in (12a) and (12b) follows from the underlying structural differences between perfect predicates and dative predicates; perfect predicates have the structure (2a), whereas dative predicates have the structure (2b).

## 2.4 Summary

To sum, I have presented evidence to show that ergative subjects and dative subjects behave differently with respect to syntactic operations such as passivization, nominalization, and causativization. If, as has been previously suggested (Bhatt 1993, 1994, Mahajan 1990), we posit the same underlying structure for experiencers and subjects of perfect predicates, namely, the unaccusative (2b), then the data in (4) through (12) receives no explanation, within of course the current assumptions of the framework (Chomsky 1986, 1991). In the next section I provide an explanation of the differential behavior of ergative and dative constructions.

## 3.0 The account

I explain the data presented in section 2 by hypothesizing that ergative subject constructions have the same D-Structure as nominative subject constructions, i.e., (2a). Assuming Grimshaw's (1990) theory of argument structure, I suggest that ergative subjects are "external arguments": thematically and aspectually most prominent, with the Agent theta-role. The suggestion that ergative subjects are Agents is

corroborated by the compatibility of agentive adverbs with ergative and nominative subjects (13a,b), and their inability to occur with dative subjects (13c).

- (13) a. laRk-an kar       tsuur        zaanith-maanith  
 boy(E) did-Perf theft(N,f,sg) deliberately  
 'The boy stole (something) deliberately (to prove a point).'
- b. laRk    ch-u       tsuur    kar-aan   zaanith-maanith  
 boy(N) prs-m,sg theft(f,sg) do-NPerf deliberately  
 'The boy steals deliberately (to perhaps get attention).'
- c. \*laRk-as ch-a     swa     kuur   khar-aan   zaanith-maanith  
 boy(D) prs-f,sg that(N) girl(N) hate-NPerf deliberately  
 'The boy deliberately hates the girl.'

By assuming the structure (2a) for ergative subject constructions, a straightforward account of the data (4-12) is possible. Following Grimshaw (1990), I propose that the Passive morpheme specifies in its argument structure the "suppression" of the external argument, which, referred to as a(argument)-adjuncts (licensed as arguments but not theta marked), are realized as oblique (by) phrases. It follows, then, that the ergative nominal by virtue of being an external argument, by hypothesis, can be morphologically suppressed yielding passive constructions (7).

Now, external arguments in the theory of Grimshaw (1990) must be both thematically as well as aspectually most prominent. Experiencer subjects of psych predicates may well be thematically most prominent arguments, but they are not aspectually most prominent, and as such do not qualify for the external argumenthood. The failure of Passive of dative subject constructions (6) then follows from the fact that psych verbs, as shown in (2b), do not have external arguments that can undergo morphologically specified suppression.

With respect to nominalization possibilities, I suggest that the reason ergative, and crucially not dative, subject constructions can have nominalized counterparts is that nominalized clauses are productively formed only by the suppression of an external argument (cf. Grimshaw 1990: 107-151). This explains the failure of dative Case-marked subjects to nominalize since the psych predicates do not have argument structures with external arguments. As in Passive, only verbs with external arguments (which can be lexically suppressed) will undergo nominalization. The perfect predicates have an external argument, whence the nominalization of these predicates becomes possible.

With respect to causativization, we noticed earlier that the **causee** in such constructions, expressed as an oblique adjunct, is an agent unaffected by the causing agent. I propose that the causative *-inaav* involves the passivization of the embedded verb (cf. Baker 1988): The external argument (causee) is suppressed and is realized as an optional oblique phrase. Ergative constructions can therefore causativize for the base verb has an external argument, while the

transitive dative subject constructions fail to causativize because they lack an external argument.

#### 4.0 Ergative case

So far I have argued that the ergative subject is an external argument. But what about its Case? Is it not quirky? I claim that ergative Case (assigned only to Agents) is **NOT** quirky/lexical; it is in fact conditioned by factors which are NOT represented in the predicate argument structure; factors such as Aspect (or Tense [PAST] in Pashto, Kurdish, etc.). I suggest that ergative Case is assigned by the functional head, Aspect. This aspect must be specified [+Perf] in order to assign ergative Case. In what follows I am going to suggest a proposal of Case, which is able to account for the Case arrays presented in (1).

It is now fairly well-established that bearing a Grammatical Function (abstract Case) and being marked with a particular kind of morphological (m-) Case are two different things (Zaenen, Maling and Thrainsson 1985 [ZMT], Holmberg 1986, Cowper 1988, Maling and Zaenen 1990, Sigurðsson 1991, Marantz 1991, Bhatt 1993, 1994). This approach to Case is sometimes referred to as "Double Case Approach." In other words, I suggest that argument NPs are licensed if they have, or, are "checked" for, both abstract Case and morphological Case, see (14) below.

(14) An A-chain is licensed iff:

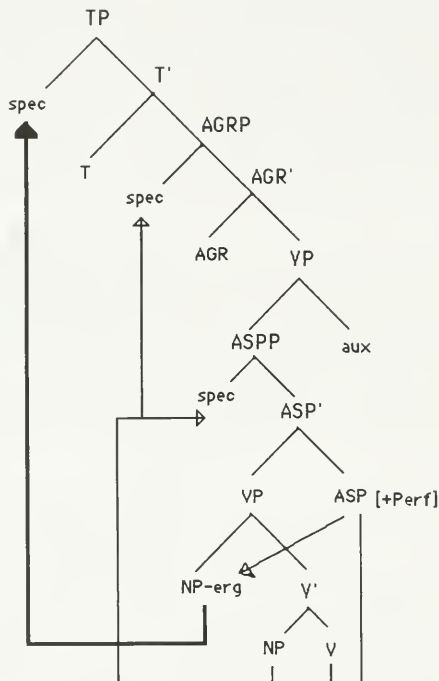
- (a) it is Case Licensed at LF (i.e., it is assigned abstract Case);  
and
- (b) it is Case Identified before "spell out" (i.e., it is assigned morphological (m-) Case).

Abstract Case licenses lexical argument NPs in the Specs of functional heads either before "spell out", formerly S-Structure, or at the LF-interface. This is consonant with the minimalist Case-checking theory, where grammatical functions are licensed in Specs of AGRs. The morphological (m-) Case identifies/specifies the content of the Case (= "PF Identification"). Verb agreement is, in my theory, a reflex of m-Case assignment in Spec-Head configuration of AGR projection. This assumption is supported elsewhere in Bhatt (1993, 1994), where it is argued that nominative objects, which trigger verb agreement, must appear outside VP, specifically in the AGRP-Spec.

With this background, let me explain how the theory works. Following Travis (1991), I will assume full X'-theoretic projection of aspect (ASPP) within VP (see (16) below). This assumption follows from the fact that in Kashmiri, verb incorporates into Aspect. I suggest ASPP-Spec licenses objects (checks abstract Case) at LF. Accusative objects in Kashmiri, which do not move overtly in syntax (Bhatt 1993, 1994), presumably move to ASPP-Spec at LF to be Case licensed. The agentive subject moves via AGRP-Spec triggering agreement (m-Case) and lands in the TP-Spec where it is assigned

abstract Case. Alternatively, for movement to TP-Spec, I can make the standard "minimalist" assumption that Tense in Kashmiri, like English, has a strong NP licensing feature, which forces syntactic movement of subject to TP-Spec for "checking" purposes.

(16)



Getting back to ergative subjects, we noticed earlier that ergative subjects appear with transitive perfective clauses, such as (1c) above, repeated below as (17).

- (17) laRk-an **ch-a** yi **kitaab** par-mets  
 boy(E) prs-f,sg this(N) book(N,f,sg) read-Perf Part-f,sg  
 'The boy read this book.'

In (17) I assume that the verb fails to assign morphological accusative to the object, and the V+Asp complex assigns morphological ergative to the Spec of VP, as indicated in (16) above. The object moves via ASPP-Spec to AGRP-Spec to get morphological Case, nominative. As a result of nominative assignment the whole chain is assigned nominative, triggering predicate agreement at the Specs of the chain, viz., AGRP and ASPP.

Now, there may seem to be a correlation between ergative assignment and the lack of accusative assignment, but as it turns out,

perfect predicates do assign morphological accusative to their direct complements in Kashmiri.<sup>5</sup> Consider (18), for example:

- (18) a. laRk-an **parnaav** **kuur** hisaab  
 boy(E) taught-f,sg girl(N) math(A,m,sg)  
 'The boy taught the girl math.'  
 b. \*laRk-an **parnaav** hisaab **kuur**  
 boy(E) taught-f,sg math(A,m,sg) girl(N)  
 'The boy taught the girl math.'

The grammaticality contrast between (18a) and (18b) can be explained by assuming that the object *girl* in (18b) is not in a position where it can be assigned the morphological nominative, in the AGRP-Spec, which is occupied by the accusative object. The structure is therefore ruled out due to the lack of morphological Case on the object *girl*. The apparent correlation between ergative subject and nonaccusative objects is illusory, and therefore, the claim that perfect predicates belong to the unaccusative class of verbs is untenable.

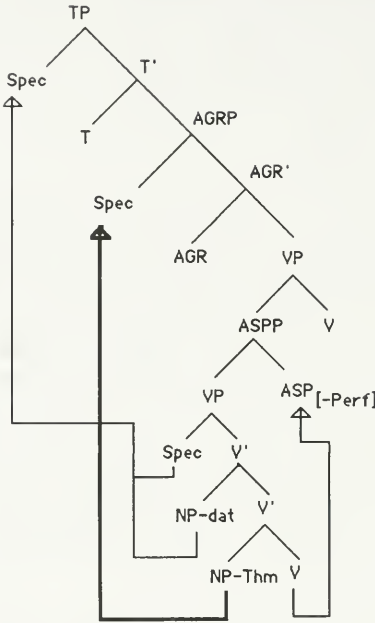
Although admittedly we do not yet have a theory which distinguishes verbs from perfect participles, at least in terms of categorial features, I can only speculate that the perfect morpheme, much like the passive morpheme, is able to optionally block the assignment of morphological accusative. This property of perfect participles to block accusative Case, of course, is, in a sense, lexical.

Dative case, on the other hand, is lexically-assigned (therefore "quirky") to an internal (EXP) argument, which then must move to TP-Spec to get abstract Case, whereas the Theme argument must move to AGRP to get abstract Case (licensed) as well as morphological nominative Case (identified), as shown on the next page in (19).

## 5.0. Conclusions

The proposal outlined above also explains a cross-linguistic generalization that, unlike ergatives, quirky subject Cases are not assigned to Agents, but to Experiencers and Themes (Levin and Simpson 1981). I have argued that just as certain predicates assign morphological accusative to the position they govern (=c-command), perfect predicates assign morphological ergative to the position they govern, the VP-Spec which host Agents. On the other hand, the realization of Experiencer arguments is not specified due to the prominence mismatches between thematic and aspectual dimensions (cf. Grimshaw 1990:93-40), and therefore other mechanism of argument realization must be sought. One plausible alternative, of course, is lexical specification, accomplished by the assignment of lexical dative Case. The assignment of an additional morphological ergative to these arguments by perfect psych predicates is prevented by some language specific Case-conflict resolution. The proposal does allow for the possibility of double morphological Case assignment, which is attested in languages such as Korean, where a subject can appear with two morphological Cases, e.g., dative-nominative (Gerdtts and Youn 1990).

(19)



And finally, I conclude with some comments on Mahajan's (1993) account of ergativity. Mahajan assumes that ergative subjects are generated as oblique subjects, i.e., subjects appear with an unincorporated P (adposition). I agree with Mahajan that the morphological form, ergative, is tied to the lexical properties of the perfective morphology. However, I am concerned with some aspects of his analysis deriving ergativity, though, he does admit that his account does not readily extend to Kashmiri. But there is yet another problem, which has to do with his assumption that ergative is assigned (as a constructional Case) by non-Case assigning predicates. As I have demonstrated earlier in (18), perfect predicates in Kashmiri do indeed assign morphological accusative. Now it is possible that Kashmiri is unique among Indic languages in this sense; certainly more research needs to be done. Further, in order to account for Kashmiri/German facts of ergativity, Mahajan needs to appeal solely to the 'Incorporation-blocking' theory, namely that object-Aux agreement blocks P incorporation, yielding ergativity. Given the French and Hindi data, it seems to work, and it works for Kashmiri. The word order/adjacency conditions on incorporation simply do not work for German and Kashmiri.



## NOTES

<sup>1</sup> And for other related Indo-Aryan languages which show the same phenomena as (1), see Mahajan 1990 and Davison 1985.

<sup>2</sup> There are two other agentive markers (*by*-phrases) in Kashmiri: *zaryi*, and *dasyi*. There is very little difference, if any, in the use of the three oblique agentive markers. Thus we could form a passive using any combination, as shown in (i-iii) below:

(i) tas athyi aayi palav chal-ni  
 he(D) by came clothes wash-Pass  
 'The clothes were washed by him.'

(ii) tasing dasyi aayi palav chal-ni  
 he(G) by came clothes wash-Pass  
 'The clothes were washed by him.'

(iii) tasing zaryi aayi palav chal-ni  
 he(G) by came clothes wash-Pass  
 'The clothes were washed by him.'

<sup>3</sup> The same contrast obtains in other Indo-Aryan languages as in the data below:

|                                                      |                                                                                                               |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| (i) a. bacca so-yaa<br>boy slept<br>'The boy slept.' | b. bacce se soyaa gayaa<br>boy by slept went<br>'It was slept by the boy.'<br>[Lit.: 'By the boy was slept.'] |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|

|                                                     |                                                                           |
|-----------------------------------------------------|---------------------------------------------------------------------------|
| (ii) a. bacca gir-aa<br>boy fell<br>'The boy fell.' | b. *bacce se giraa gayaa<br>boy by fell went<br>'It was fell by the boy.' |
|-----------------------------------------------------|---------------------------------------------------------------------------|

<sup>4</sup> These gerundive (*-ing*) nominals are generally believed to be complex events (Grimshaw 1990).

<sup>5</sup> Besides, there are certain intransitive perfect predicates that regularly take ergative subjects, e.g. verbs such as *asun* "to laugh", *vadun* "to cry", etc., which do not have "purposive" meaning as one finds in Hindi (T. Mohanan 1990).

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**THE RESURRECTION: RAISING TO COMP?  
SOME EVIDENCE FROM OLD IRISH\***

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Much recent work on deriving VSO word order has moved away from using a verb raising to C° analysis to an analysis using raising to the left edge of the inflectional complex. We argue using facts from enclisis, prosody, and morphology alternations that Old Irish had both raising to C° and raising to the left edge of inflection in its word order derivation.

**0. Introduction**

There are two schools of thought over the derivation of VSO order in the generative paradigm. One holds that the verb raises to the highest complementizer position of the matrix clause, in a manner familiar from the V2 languages. The other holds that the verb is not in C° at all, rather it appears on the highest head of the inflectional complex, and the subject appears in some lower structural position. The first of these approaches was popular in the early work in the Government and Binding Framework (Stowell 1989, Deprez & Hale 1986, Hale 1989). The latter approach has gained popularity in more recent work (Chomsky 1992, Bobaljik & Carnie 1992, Carnie 1993, Rouveret 1991, Guilfoyle 1990, 1993, Duffield 1990, 1991, Pyatt 1992, McCloskey 1992a, among many others). In this paper we would like to reopen the question of whether  $V \rightarrow C^\circ$  movement can be present in VSO languages. We will argue, on the basis of evidence from Old Irish, that both  $V \rightarrow \text{INFL}$  and  $V \rightarrow C^\circ$  can be present in a single language. We will argue that Old Irish had a "filled C°" requirement, giving  $V \rightarrow C^\circ$  movement, but also had  $V \rightarrow \text{INFL}$  movement in clauses with filled complementizers.

**1. Two approaches to VSO order:**

German and Dutch stand as typical examples of V2 languages. In tensed clauses without an overt complementizer, the verb must appear in "second position" in these languages. The first position in the sentence is occupied by any constituent. In example (1) below (data from Haegeman 1991), the verb *kaufte* always appears in the second position, any of the other constituents (the subject *Karl*, the object *dieses Buch*, or the temporal adverb *gestern*) can appear in the first position. The remaining constituents follow the verb.

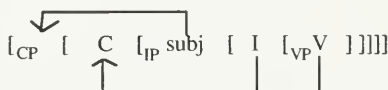
- (1) a. Karl kaufte dieses Buch gestern  
 Karl bought this book yesterday  
 'Karl bought this book yesterday'  
 b. Dieses Buch kaufte Karl gestern  
 this book bought Karl yesterday  
 'Karl bought this book yesterday'  
 c. Gestern kaufte Karl dieses Buch  
 yesterday bought Karl this book  
 'Karl bought this book yesterday'

In clauses with overt complementizers, by contrast, there is no V2 ordering. The verb appears in final position:

- (2) Ich dachte daß Karl gestern das buch gekauft hat  
 I thought that Karl yesterday the book bought had  
 'I thought that Karl had bought the book yesterday'

The standard analyses (see, e.g., McCloskey 1992b) of V2 hold that there is a requirement that the complementizer position be filled in tensed clauses. The verb raises to the empty complementizer position in matrix clauses. There is then an additional requirement that the specifier of a matrix complementizer be filled by some element giving the V2 orderings.

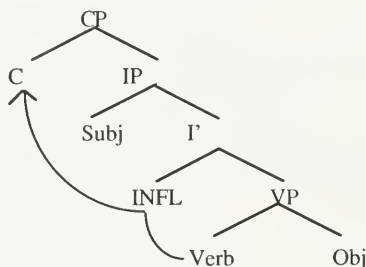
(3)



In embedded clauses, however, the complementizer position is filled (possibly with a phonologically null complementizer), and the verb cannot raise to it. Thus V2 ordering is blocked.

An obvious extension of this approach is to posit a set of "V1" languages where the requirement on filling the specifier of CP is not imposed, giving a VSO ordering<sup>1</sup>. In this analysis, a Modern Irish VSO sentence like (4a) would have a derivation as in (4b).

- (4) a. Leanann an t-ainmní an bhriathar i nGaeilge  
 follow.PRES the subject the verb in Irish  
 'The subject follows the verb in Irish' (Modern Irish)  
 b.



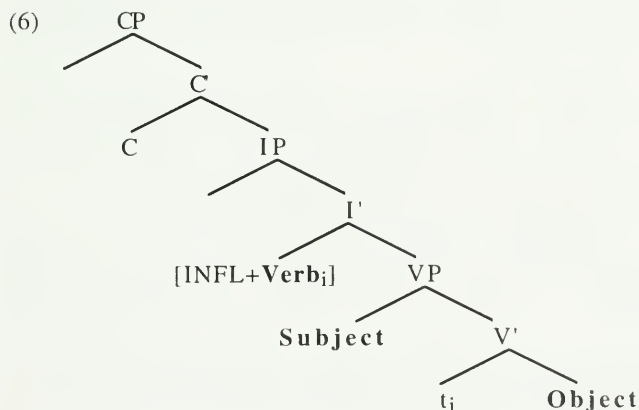
The verb raises through its inflectional complex to  $C^\circ$  and all the other arguments stay in their canonical positions. VSO order, under this approach, is thus a 'weak V2' phenomenon:

(5) **The Weak V2 Hypothesis** ( $V \rightarrow C^\circ$ )

VSO order is derived via head movement of the verb to  $C^\circ$ .

There is a requirement that  $C^\circ$ s in VSO languages be filled, but the specifier of CP need not be filled

The alternative approach to VSO order has suggested that the verb does not appear in  $C^\circ$ , but rather appears at the left edge of the inflectional complex. In Sproat (1983) this is obtained by the adjunction of the verb to IP. In later work (e.g. Bobaljik & Carnie 1992), this is achieved by head movement of the verb to the highest inflectional projection, with shorter movement of the subject to some lower specifier. In this paper we will use INFL as shorthand for the inflectional complex, and leave the subject in the specifier of the VP. This is meant only as shorthand, as we remain agnostic on the actual placement of the subject.



The exact details of how such an approach works are not crucial here and we refer the reader to the above-mentioned works for more details. It is sufficient to note, however, that in an expanded INFL syntax, the verb need not raise to  $C^\circ$  to be initial in its clause; instead it can raise to the highest inflectional category with its arguments in the specifiers of lower inflectional phrases. We will call this approach the "left edge of inflection hypothesis":

(7) **The Left Edge of Inflection Hypothesis** ( $V \rightarrow \text{INFL}$ )

VSO order is derived via head movement of the verb to the highest inflectional head (AgrS). Arguments appear in surface positions lower than this head. There is no (overt) raising to  $C^\circ$ .

We will argue that, in Old Irish, at least, both the "Weak V2" system and the "left edge of INFL" system are present. Firstly, however, we

present the evidence that has led to the abandonment of the weak V2 derivation for languages like Modern Irish.

## 2. Against the weak V2 Hypothesis

There is a strong set of arguments against using the weak V2 approach for deriving basic VSO order in Modern Irish. Firstly, there is the question of word order in embedded clauses with complementizers. Recall that in German, when a clause is embedded, the complementizer position is filled, and V2 order does not arise. If Irish were to have a comparable analysis, then we would expect the order C°-SOV or C°-SVO in embedded clauses. This prediction is immediately falsified by the facts of Irish. In fact we only get C°-VSO order. The verb still must raise:

- (8) Ceapaim [ go bhfaca sé an madra ]  
 think.PRES.1s [ that see.PST.DEP he.NOM the dog ]  
                   COMP V                   Subj   Obj  
 'I think that he saw the dog.'

The motivation for this verb-first ordering cannot be an obligatorily filled C° requirement, since there is a filled complementizer, thus the verb should not have to raise.

McCloskey (1992b) presents a more complicated argument using the behavior of adverbs showing that the verb is no higher than the left edge of IP in Modern Irish. In English, there is a set of adverbs and adverbial clauses which appear to the right of complementizers but to the left of subjects (data from McCloskey 1992b):

- (9) a. That **in general** he understands what is going on seems fairly clear  
 b. It's surprising that **most of the time** he understands what is going on.

These adverbial elements can never appear to the left of the complementizer in English (the following sentence is to be read with the adverb having scope only over the embedded clause, as in the sentence in (9)):

- (10) \*It's surprising **in general** that he understands what is going on.

McCloskey (1992a) argues that the pattern seen above follows from the Adjunction Prohibition of Chomsky (1986):

- (11) **Adjunction Prohibition** (after McCloskey 1992b)  
 Adjunction to a phrase s-selected by a lexical head is ungrammatical.

Under this principle, adverbials are allowed to adjoin to IPs that are complements to C°, a functional head. However, they are forbidden to adjoin to CPs that are selected by a verbal head, a lexical category. In this sense, then, the adverbials shown above in (9) and (10) can be called IP adjoined adverbs. In contrast, in matrix clauses, where



there is no lexical selection of CPs, these same adverbials can appear to the left of a wh-complementizer:

- (12) a. **When you get home**, what do you want to do?  
 b. **Next Christmas**, whose parents should we go see.

In Irish, surprisingly, the order of adverbials and complementizers is different. Adverbials appear to the left of both complementizers and subjects in both matrix and embedded CPs (data again from McCloskey 1992b):

- (13)                                      Adverb                                      C      V      S  
 Líonaim d'eagla **d á dtógfainn m o radharc dóibh** go  
 Fill.Is    of fear if lift-1s.cond my sight            from.3.s that  
 dtitfinn  
 fall.1.s  
 'I fill up with fear that, were I to take my eyes off, then I would fall'

At first glance, it might appear that Irish lacks the Adjunction Prohibition. However, under closer examination it becomes apparent that this is not the case. Irish does have restriction on adjunction to embedded CPs. Consider the following example (data from McCloskey):

- (14) \*Ní bhfuair siad amach ariamh **an bhliain** **sincé** a  
 Neg found they out ever that year            who C°  
 bhí ag goid a guid móna  
 was prog steal their turf  
 'They never found out who was stealing their turf that year'

In this case, a selected wh-interrogative CP, where you have both a C° and a wh-head marking the left edge of CP, the adverb is illicit to the left of the wh-word. For this case, then, the Adjunction Prohibition holds. This must be accounted for.

McCloskey suggests that the solution to this paradox is that the adverbs in (13) are IP adjoined, despite the fact they appear to the left of the complementizer. He claims that the C° in Modern Irish lowers to attach to the verb<sup>2</sup> because it requires support as a clitic, as illustrated in (15).

- (15)
- $$[_{CP} C [_{IP} Adv [_{IP} I+V [ \dots ]]]]$$
- 

The important and relevant conclusion here, however, is that since these adverbs are IP adjoined and they appear to the left of the inflected verb, then the verb must be no higher than the left edge of the inflectional complex. This serves as fairly strong evidence against the weak V2 hypothesis.

### 3. Old Irish: a language with two kinds of raising.

Although the complex arguments from adverbial interpretation are not available for Old Irish, there is strong evidence that Old Irish has raising to I°, just like Modern Irish. Old Irish has VSO word order in declarative sentences (16)<sup>3</sup>:

- (16) Beogidir in spirit in corp  
vivifies-3s the spirit the body  
'The spirit vivifies the body'

As in Modern Irish, when the complementizer is filled with a particle, the verb is still otherwise clause initial:

- (17) Ní beir in fer in claideb  
Neg.C° carries-3s-conj the man the sword  
'The man does not carry the sword.'

This being the case, Old Irish must be a language with raising to INFL in its derivation of VSO order.

We claim, however, that Old Irish also has a filled C° requirement, using evidence from the placement of enclitic pronouns and phonological behavior of certain verbal elements. This requirement can be met by complementizers, by verbs, or by subparts of morphologically complex verbs. Thus Old Irish is a language that has both raising to C° and raising to the left edge of IP.

#### 3.1 The cast of characters

A major difference between Old Irish and Modern Irish lies in the complexity of the verbal system. The morphology of the Old Irish verb includes verbal roots, inflectional endings and a series of preverbal particles. The preverbal particles are of three types: conjunct particles (C), preverbs (P) and object enclitics (E). These particles, the verb and its person/number endings form what is called the "verbal complex". Excluding the enclitics for the moment, there is a strict ordering to these forms (18b). An example of a maximal verbal complex is given in (19).

- (18) Old Irish Verbal Complex
- Conjunct Particles (C)**—negation, question marker, C°s  
**Preverbs (P)**—Alters verb meaning, adds perfective aspect  
**Verb (V)+Subject inflection (S)**—The verb root itself and person agreement.  
**Enclitics (E)**—Object clitics and relative markers
  - C > P > V-S
- (19) Ní-m• accai (Ní + m + ad + ci+3sng)  
Neg-me•see-3s C (E) P V-S  
'he does not see me'

Following Duffield (1991), we assume the conjunct particle position (C) corresponds to the C° position. This explains why it must be

ordered before the other preverbal particles. In Modern Irish, the conjunct particles form phonological units with overt complementizers (see Duffield 1991 for discussion):

- (20) **go** 'that' + **ní** 'neg' → **nach** 'neg.comp'  
**go** 'that' + **níor** 'neg-past' → **nár** 'neg.past.comp'

Similar facts are found in Old Irish, thus we will assume that the conjunct particles correspond to  $C^\circ$  in the older form of the language as well.

Given this cast of characters, we will show how certain morphological, phonological and syntactic processes argue for having both raising of verb to the left edge of IP and to  $C^\circ$ .

### 3.2 Deriving absolute vs. conjunct forms

In Old Irish, the verb and its inflection take two different forms depending upon whether or not it is in absolute initial position. These two forms are called absolute and conjunct (21) (examples taken from Strachan 1949):

- |      |                 |                 |               |
|------|-----------------|-----------------|---------------|
| (21) | <u>Absolute</u> | <u>Conjunct</u> |               |
|      | berid           | -beir           | 'he carries'  |
|      | beirait         | -berat          | 'they carry'  |
|      | marbfa          | -marbub         | 'I will kill' |
|      | midimmir        | -midemmar       | 'we judge'    |

The absolute form is used when the verbal root is in absolute first position in the sentence, that is when the inflected verb is not preceded by any conjunct particles, preverbs or pronouns (22). The conjunct form is used when the verb is preceded by a conjunct particle or a preverb (23).

- (22) Beirid                    in fer        in claideb                    (Absolute)  
 Carries-3s-abs the man the sword  
 'The man carries the sword.'
- (23) Ní beir/\*beirid                    in fer        in claideb                    (Conjunct)  
 If carries-3s-conj/\*abs the man the sword  
 'If the man carries the sword'.

Interestingly, the appearance of a verb in its conjunct form is not necessarily a function of the presence of the preverbs or conjunct particles. Rather, the conjunct form is found anywhere that the verb is not in absolute first position. This is the so-called Bergin's law.<sup>4</sup> This principle is especially true in some poetic forms where strict VSO order is not obligatory. Take for example the following lines from the *Énna Labraid Luad Cáich* as cited in Carney (1978):

- (24) ... srethaib sluag soí Crimthan Coscrach cing céit  
 ... with lines of hosts won Crimthan victorious hero hundred  
 catha, ...  
 battles  
 'With lines of hosts, Crimthan the victorious hero, won a hundred battles'  
 (absolute: \*soid)

Conjunct verbal inflection then is a feature of non-initial position.

We claim that this distribution is definable in a systematic way: when the verb has raised to C° it takes the absolute morphology. When the verb is in any other position (either at the left edge of IP or in SVO order as in the poem fragment above), it takes the more basic conjunct form.

In (23) above, the C° has been filled with the conjunct particle *ní* 'neg' thus blocking the raising of *beir* "carries-3s-conj" to C°. The verb raises through the inflectional heads to the left edge of INFL just like it would in Modern Irish; the inflected verb is thus realized as *beir*. The resultant S-structure is seen in (25).

- (25) [CP Ní [IP *beir*<sub>i</sub>+INFL [IP in fer [VP *t*<sub>j</sub> in claideb]]]

In (22), by contrast, there is no overt complementizer or any other type of preverbal particle. Thus the filled C° requirement forces the verb to raise from INFL to C° (26).

- (26) [CP *Berid*<sub>i</sub>+C° [IP *t*<sub>j</sub> [VP in fer [V' *t*<sub>j</sub> in claideb ]]]

When the inflected verb *beir* "carries" raises to C°, it actually is incorporating into a null C°. This C-INFL-V complex is then realized as *berid* instead of *beir*. An interesting variation to this pattern occurs in relative clauses. If the null C° is [+wh], then a third form of the verb is used in lieu of the absolute form (27). For example, in the sentence below, the inflected verb of the relative clause *gaibid* "grabs" surfaces as *gaibes*, the relative form of the verb.

- (27) Is oinfe<sub>i</sub> [CP Ø<sub>i</sub> gaibes<sub>j</sub> [IP *t*<sub>j</sub> búaid]]  
 cop one-man Op. grabs-3s-rel victory  
 'It is one man who grabs victory.'

The differences between the relative form and the absolute form show that the morphology of the absolute is used to signal which null C° ([±wh]) is present in the complementizer position. Since the verb forms in absolute initial position vary depending upon what type of complementizer is present in the clause, it lends support to the theory that these verbs are in fact in C°.

### 3.3 Compound verbs and preverbal particles

The preverbs are the prepositional components of Old Irish compound verbs. For example, given the basic verb *berid* 'carries', the addition of a preverbal particle shifts the meaning in unpredictable ways: *as·berid* means "says" (literally "out-carry"). Similar forms, such as *shine/outshine* and *blow/blow up*, are occasionally

found in English. In Old Irish, however, the use of these particles is quite common, and help to form a large class of Old Irish verbal morphology. We claim that depending upon what other elements appear in the complex, these preverbal particles can behave as if they were either in  $C^\circ$  or as if they were combined with the verb in INFL. In particular, it seems that given a compound verb with no conjunct particle, a preverbal particle satisfies the filled  $C^\circ$  requirement.

Consider the following compound verb: *as•beir* "says-3s". This is composed of the preverbal particle *as-* and *beir* "carries". However, when this verb comes after a conjunct particle *ní* "neg", the form of the verb is radically changed. In the example below, the form for "say-1s" is *as•biur* when there is no conjunct particle (28), but *epur* when it follows a conjunct particle like *ní* (29).

(28) **as•biur** in so  
say-1s this  
'I say this.'

(29) *Ní epur/\*as•biura* n-anman sund  
Neg say-1s their names here  
'I do not say their names.'

Despite the obvious differences between these forms, there is no suppletion here. Instead, rules of stress shift, syncope, provection, reduplication and lenition all interact to muddy the forms.

The domain of application of these phonological rules provides evidence for our analysis. The entire verbal complex forms a single phonological unit that cannot be broken apart by adverbs and other intrusive material. This grouping we will call the "clitic group" - (k). However, there is a smaller phonological unit, the word (w) which is the domain of stress and syncope. Consistently, conjunct particles (C) and enclitic pronouns stand outside the phonological word (30a). Preverbal particles (P) on the other hand vary in their position, depending upon what other material is in the clitic group (30b).

(30) a. [<sub>k</sub> C [<sub>w</sub> P (P) (P) V]]  
b. [<sub>k</sub> P [<sub>w</sub> P (P) (P) V]]

For concreteness let us consider the example of stress. Stress in Old Irish is always on the leftmost syllable in the word. This is true of absolute verbs, nouns, and adjectives. When the verb is complex however, either with a conjunct particle or with a preverb, the stress falls on the second non-enclitic morphological unit:

(31) a. C • P (P) (P) V  
b. C • V  
c. P • P (P) (P) V  
d. P • V

There thus appears to be a special "pre-tonic" slot in initial position for a preverb or conjunct particle, which does not participate in the metrical structure of the rest of the verbal complex. We will indicate

the division between the pre-tonic position and the rest of the complex with the use of the symbol <•> (following Thurneysen 1946). Usually, the enclitic and any syllabic material it brings with it will be part of the pre-tonic. We can thus describe the distribution of the elements as follows:

- (32) i. Conjunct particles are always pretonic  
 ii. If there is no conjunct particle, then the first preverb is pretonic

If we add a conjunct particle to a verb with preverbs, then the previously pretonic preverb joins the rest of the verbal complex and participates in its metrical structure, causing stress pattern to change as seen in (33) below.

- (33) a. **as•biur** "say-1s" /as.b 'ur /  
 b. •**epur** "say-1s" /'e.bur/;

The underlined syllable is the one that receives the stress. In (33a) the preverb *as* appears in pretonic position and does not participate in the metrical structure of the verb (stress falls on *biur*). When the conjunct particle is added, the preverb behaves as if it is part of the second element in the complex, and takes main stress. The other phonological alternations (/a~/e/ and /sb~/b/) follow from this shift in metrical structure. See McCone (1987) for more details.

As the conjunct particles always fall in the pretonic position, we conclude that the pretonic position is associated with the complementizer head. Since one preverb is required to be pretonic when there is no conjunct complementizer, it follows that a preverb can satisfy the filled C° requirement. When there is no overt complementizer, only the preverb, not the entire inflected verb, raises to C° to satisfy the Filled-C° requirement.

Let us consider a derivation of this type. We will assume that the preverbal particles are reflexes of a Hale & Keyser (1991) type complex VP, or of a Pesetsky (forthcoming) style stacked PP structure. For the purposes of diagramming only, we use a Hale & Keyser type format. We will consider the sentence in (28) with the base form in (34)

- (34) [CP [Ø] [IP [INFL] [VP *pro* [V' *as* [V' *buir* [ADVP in so]]]]]]

The preverb *as* raises to C° to satisfy the filled C° requirement. The verbal root *buir* raises to I°, as in modern Irish, accounting for the difference in phonological domains, the two domains correspond to distinct heads: INFL and C°.

- (35) [CP [asi] [IP [buirj] [VP *pro* [V' t<sub>i</sub> [V' t<sub>j</sub> [ADVP in so]]]]]]

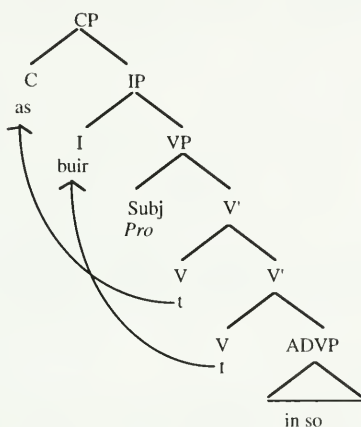
When a conjunct particle complementizer like *ní* "neg" is present however, the preverb remains in INFL with the rest of the verb putting it into the same metrical unit with the root verb. (36)



- (36) [<sub>CP</sub> Ní [<sub>IP</sub> [I° epur (← as +buir) ] a n-anman sund]]  
 Neg say-1s their names here  
 'I do not say their names'.

The reader will have noticed that in allowing the two verbal heads (the preverb and the verbal root) to raise to separate functional categories, we have created a violation of the Head Movement Constraint (HMC). Consider (37)

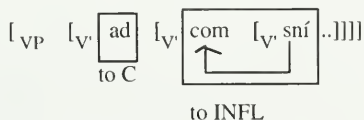
(37)



It appears as if the verbal root skips the intermediate preverb on its way to INFL. Similarly, the preverb seems to skip the intermediate Inflectional heads on its way to C°.

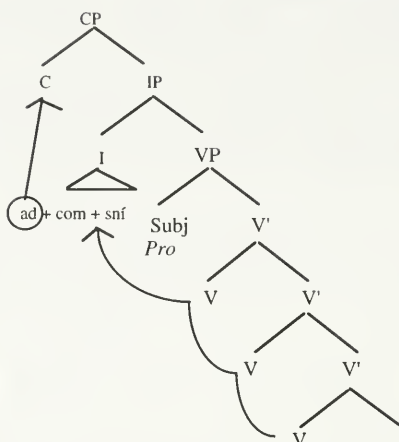
This problem is especially acute in the cases where more than one preverb appears, as in (38). In *ad·cosnai* "strives after" (*ad·com·sní*), the first preverb moves to the C° head, but the other preverb is incorporated with the verbal root (*com + sní* → *·cosnai*). This type of example shows that there are cases where the verbal root *does* incorporate into a preverb.

(38)



This incorporation suggests a solution to the HMC violation. The verb head-moves from preverb to preverb, skipping none (in compliance with the HMC) incorporating each preverb as it raises. After the verb has raised to the highest projection in the inflectional complex, the filled C° requirement is still not met. In order to satisfy this requirement the first preverb in the string (the least embedded preverb) excorporates and moves into C°. This is illustrated in (39).

(39)



This excorporation account satisfying the requirement on filled C<sup>o</sup>s, gives good empirical coverage of the phonological distribution of the preverbs.

### 3.4 Placement of enclitics

which include object pronouns, relative pronouns, and conjunctions. The enclitic pronouns are always found after the first morphological element in the verbal complex (40). The following examples are taken from Strachan (1949):

- (40) a. Ní-m•accai (Ní+ m+ ad+ cí-3sng)  
 Neg -me see-3s C E P V-S  
 'she does not see me'
- b. aton•cí (ad + (do)n + cí -3sng)  
 P-us see -3s P E V-S  
 'she sees us'
- c. bertaigh-i<sup>5</sup> (bertaigh -th + i)  
 shake-3s.abs-him V- S E  
 'he shakes him'

The distribution of enclitics is somewhat puzzling from a syntactic perspective; sometimes they precede the verb (when there is a pre-verb or conjunct particle), however, other times they follow the verb (when the verb is absolute). This distribution is transparent when we assume that Old Irish had a filled C<sup>o</sup> requirement. Once we make this claim, then the distribution of enclitic pronouns is straightforward:

(41) Enclitics (E) adjoin to C<sup>o</sup>.<sup>6,7</sup>

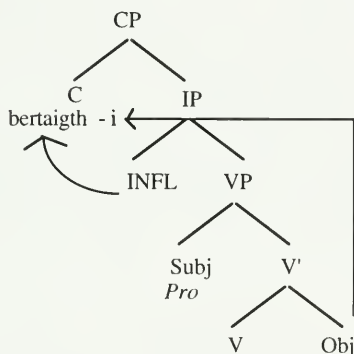
This is true of whether the C is filled by a conjunct particle, a pre-verb or an absolute verb form.

Let us consider a few derivations. The underlying structure and verb to INFL raising of *bertaigh-i* "he shakes him" is shown in (42).

- (42) [ [Ø] [ [INFL] [ [v' bertaigh i]]]]
- 

The verb raises to the left edge of IP, satisfying its feature-checking requirements. However, the filled C° requirement must still be met, as must the requirement on object pronominal encliticization. So the verb raises to C°, and the object clitic adjoins to it (43):

- (43)



With this structure, then, we get the correct absolute inflectional marking and the correct object enclitic placement. Let us now consider the more complicated example of a verb with a preverb such as *aton·cí* "he sees us". The underlying structure will look like (44):

- (44) [CP[Ø] [IP [INFL] [VP *pro* [v' [ad] [v [cí] (obj-n-) ]]]]]]

The C° requirement is met by raising the preverb *ad-*. The verb raises, through all of the inflectional heads to the left edge of IP (AgrS), and the object cliticizes to C° (45):

- (45) [CP [C<sub>+V+E</sub> **ad-i-onj**] [IP [I<sub>+V+V</sub> t<sub>i</sub> +**cí**] [v<sub>p</sub> *pro* [ t<sub>i</sub> t<sub>j</sub> ]]]]

Finally, let us consider the complicated case of a verb with both a preverb and a Conjunct particle: *Ní-m· accai* "he does not see me"). The underlying structure:

- (46) [CP[Ní] [IP [INFL] [VP *pro* [v' [ad] [v [cí] (obj-m-) ]]]]]]

The conjunct particle occupies C° and satisfies the filled C° requirement. The pronominal object cliticizes to C°. The verb first incorporates with its preverb then proceeds through the inflectional heads (47) to the left edge of IP:

- (47) [CP [C<sub>+E</sub> **Ní-t**] [IP [I<sub>+V+V</sub> **ad +cí**] [v<sub>p</sub> *pro* [...]]]

#### 4. Conclusion

In this short paper, we have attempted to account for the complex and intricate behavior of verbs, preverbs, particles and clitics in the Old Irish verbal complex. We have argued that, contra most current theories of VSO ordering, Old Irish makes use of raising to C° due to a filled C° requirement. The fact that the pretonic and the rest of the complex behave metrically like two words rather than one follows from the fact that the two elements are in different structural positions in the sentence, forming a "clitic group" rather than a single phonological word. The distribution of absolute inflection is now definable in a systematic way: when the verb has raised to C° it takes different morphology. Finally, the position of enclitics is now uniformly accounted for. They always attach to C°, whether this be a preverb, conjunct particle, or the verb itself. The fact that this analysis provides a systematic account for these facts is a strong argument for the raising to C° analysis. Raising to the left edge of INFL is also still required to account for the fact that the verb still precedes its subject even when there is an overt complementizer. The filled-Comp requirement, not active in Modern Irish, thus explains many facts about the Old Irish verbal complex that would otherwise remain mysterious.

#### NOTES

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<sup>1</sup> We are assuming here, (after McCloskey 1983, Sproat 1983, Duffield 1991, Bobaljik and Carnie 1993) that VSO order is a derived order and that the underlying order of Modern Irish is SVO.

<sup>2</sup> See Bobaljik (1993) for an alternative analyses of these facts.

<sup>3</sup> Throughout this paper we will use the traditional spelling system of Old Irish. We refer the reader to Thurneysen (1980) for the complete details of how Old Irish is pronounced. The old Irish examples have been taken from Strachan (1949), Strachan (1944), McCone (1987) and Thurneysen (1980) who take them from various primary sources.

<sup>4</sup> Bergin's law is usually not phrased exactly this way. In Thurneysen (1980:§513) for example it is articulated as "Simple and compound verbs may be placed at the end of the clause; the form then have conjunct flexion...". However, Carney (1978) argues that the formulation adopted in the text above is more accurate since verbs can appear medially in some poetic registers.

<sup>5</sup> This form is later replaced by *no-s•mbertaigeadar*. However, the absolutive form continues to be used when there is no object pronoun. We will be concerned mainly with the period when object clitics adjoined after the main verb.

<sup>6</sup> An equally empirically adequate account, consistent with the analysis of verb movement to C° proposed here, is found in Duffield (1994). He proposes that there is an extra position between the highest Inflectional position and the C°. This is the "Wackernagalian" head. The pronominal clitics could occupy this position in Old Irish and still be consistent with the analysis of verb movement presented here.

<sup>7</sup> Old English clitics have been analyzed as marking the left edge of IP in a similar manner, see, e.g. Pintzuk (1991).

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## AN OPTIMAL DOMAINS THEORY OF HARMONY\*

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In this paper we propose an alternative to the autosegmental view of assimilation as spreading. Adopting the non-derivational, constraint-based grammars of OT, we model harmony in terms of harmony domains—structures which are defined by universal constraints, and which are explicitly encoded in phonological representation. Transparency and opacity develop from the interaction between constraints that align harmony domains and constraints on the occurrence of the harmony feature within the domain. The proposed analysis assumes privative features, and avoids the stipulatory use of feature underspecification or feature geometry which characterizes many autosegmental accounts of opacity and transparency.

### 1. Introduction

Since the advent of Autosegmental Phonology (AP), the prevailing model of harmony has been that of autosegmental spreading. Underspecification is central to the analysis, serving to distinguish targets and transparent segments from opaque segments. Yet the disparate and often contradictory patterns of transparency and opacity across harmony systems resist a unified treatment in AP. There have been a variety of proposals to extend AP by manipulating feature geometry or underspecification on a language-by-language basis, in an attempt to preserve the basic claim of the AP approach, namely that harmonic behavior, including transparency and opacity, follows from the properties of the representation. There have been some recent positive developments, such as Archangeli & Pulleyblank's (1993) work on the role of feature co-occurrence constraints in harmony systems, but overall, AP has not yet provided a unified, principled account of harmony that is sufficiently general to yield fruitful analyses of the full range of harmony systems.

The AP analysis of harmony is inherently derivational, and typically relies on extrinsic rule ordering in which harmony spreading is ordered between redundancy rules that fill out underspecified representations. As such, it provides an analysis of harmony that cannot be directly incorporated in non-derivational frameworks, such as Optimality Theory.

In this paper we propose an alternative to the AP analysis. Adopting the constraint-based grammars of OT, we model harmony in terms of harmony domains—structures which are defined by uni-

versal constraints, and which are explicitly encoded in phonological representation. This approach is termed OPTIMAL DOMAINS THEORY, or ODT. ODT provides a general characterization of transparency and opacity that yields interesting new analyses for a wide variety of harmony systems. A core motivation for ODT is our rejection of the AP claim that given the "right" representations, the properties of harmony systems follow. In our view, AP has failed to deliver sufficiently motivated principles of feature specification and feature geometry that are needed to select the "right" representations. ODT does not invoke underspecification or feature geometry as key factors in the analysis of harmony systems. More specifically, ODT departs from (standard) AP in adopting the following assumptions:

- Features are privative (Steriade 1993). A partial set of features used in the ODT analysis of harmony include: Round, Palatal ([-back]), Velar ([+back]), High, Low, Non-peripheral ([-high, -low]), Nasal, Sonorant, Obstruent.
- In underlying representation, segments are fully specified, to the extent that there is any evidence at all for an underlying underspecification.<sup>1</sup>
- There is no need for multiple association between anchors and features in the analysis of transparency and opacity. From this it follows that harmony is not modelled as autosegmental spreading.
- Feature geometry is not explicitly encoded in the phonological representations which define underlying and surface forms. Feature geometry may exist as a part of the theory, but it does no work in the ODT analysis of harmony. A corollary of this assumption is that only terminal features harmonize.<sup>2</sup>
- Features are anchored in prosodic units of timing, such as the X-slot or mora.<sup>3</sup>

## 2. The principles of the ODT approach

The ODT account of harmony involves the following two claims:

- (1) **Harmony is the requirement that a feature [F] be uniformly realized on anchors in a F-domain.**
- (2) **F-domains are explicit aspects of phonological structure, with the same status as structures for the syllable, foot, word, etc.**

Two basic questions the theory must address are: What principles give rise to licit F-domains? What principles govern the realization of a feature in its F-domain? The answers to these questions determine the particular details of the constraint grammars for harmony systems. But beyond the mechanics of the analysis, we also attempt to answer the more fundamental question of what functional and phonetic factors motivate harmony in the first place. This broader question is forced, in a sense, by the requirements of OT, since only universal constraints can be invoked to derive the domain structures

and feature insertion of the ODT analysis, and the constraints should ideally be grounded in basic considerations of the physical and functional requirements of speech.

Before laying out the basic constraint grammar for harmony, we summarize a few key points of OT.<sup>4</sup> A grammar in OT consists of a set of universal constraints, present in every language, which define surface well-formedness. **Gen**(erator) is a function which maps each underlying form to an (unbounded) set of candidate surface forms, by freely inserting features, freely parsing or failing to parse material (structure and features), and freely generating domain structure of every type. Gen is constrained by the Faithfulness conditions \***Insert** and \* $\langle \alpha \rangle$ , which prohibit insertion and underparsing of phonological material. Constraints are violable, and thus reflect only general trends and tendencies in a phonological system, rather than absolute truths about surface well-formedness. Constraints are ranked, and ranking determines which of two constraints will be upheld when they impose mutually incompatible requirements.

Within ODT, harmony occurs when a constraint that builds a wide harmony domain is ranked above a constraint that builds a narrow domain. More generally, we claim:

- (3) **Harmony reflects the optimization of constraints on the structure of F-domains with other constraints on the realization of [F].**

In a language with no harmony, the F-domain for the feature [F] is properly aligned with the underlying F-bearing anchor by a set of constraints termed **Basic Alignment**, given in (4). BA says that every SPONSORING anchor of [F] (Anchor-s) is aligned with the edge of a F-domain. An anchor SPONSORS [F] if it is affiliated with [F] in underlying representation. Non-sponsoring anchors are those anchors that come to be affiliated with [F] in the mapping form underlying to surface form, by the operations of Gen.<sup>5</sup> Sponsors may be X-slots or moras, for so-called "linked" features, or morphological constituents, for so-called "floating" or morpheme-level features.

- (4) **Basic Alignment:**  
**BA-left** Align(Anchor-s,L; F-domain,L)  
**BA-right** Align(Anchor-s,R; F-domain,R)

Harmony occurs when BA is violated in favor of constraints which dictate larger F-domains. Before stating those alignment constraints, we pause to consider their underlying motivation. What factors drive the existence of larger F-domains? We offer the following two principles:

- (5) **Perceptibility:** Features should be perceptible.  
**Articulator stability:** Minimize changes from the neutral, steady state of the articulators.

Perceptibility derives from the fact that features serve to mark contrast, and must be perceptible to fulfill their function. Many proper-

ties of phonology and phonetics can be attributed to the goal of enhancing perceptibility. Articulator Stability reflects that fact that features are implemented by an articulatory system which imposes its own constraints on the realization of features. Both principles are best satisfied whenever a feature is realized over a relatively long span, which is expressed in the principle of Extension.

- (6) **Extension:** Extend a feature over longer stretches of sound in order to maximize Perceptibility and Articulator Stability.

There is an inherent tension between the principle of Extension and the functional role of a feature to mark contrasts, since when an F-domain is extended, the possibility of contrast between [F] and its absence is eliminated in all positions within the extended domain. We believe that languages resolve this tension differently, through the ranking of harmony-inducing constraints on F-domains with Faithfulness constraints that preserve underlying contrasts, giving rise to the complex typology of harmony systems.

The principle of Extension is realized in the constraint-grammar by the family of constraints we term **Wide Scope Alignment** (WSA), which extend an F-domain to the edge of a morphological or prosodic constituent. For example, in languages with rightward [F]-harmony, the WSA-right constraint is ranked above BA-right; leftward harmony ranks WSA-left above BA-left; and bidirectional harmony ranks both WSA constraints above both BA constraints.

- (7) **Wide Scope Alignment** (WSA)

WSA-left    Align(F-domain,L; P-Cat/M-Cat,L)

WSA-right    Align(F-domain,R; P-Cat/M-Cat,R)

Harmony domains are licensed by the alignment constraints, but alignment alone does not force the realization of the harmony feature within the domain. That job is done by an independent constraint termed Expression.<sup>6</sup>

- (8) **Expression:** [F] must be affiliated with every anchor in an F-domain.

Like all constraints, Expression may be violated. Violations derive from restrictions on the insertion or affiliation of [F]. The most basic constraint of this sort is \*Insert [F].<sup>7</sup> Harmony occurs when a language ranks Expression over \*Insert [F]. With the opposite ranking, no harmony will be possible at all, though the domains may be constructed.<sup>8</sup>

- (9) Harmony:        WSA, Expression >> \*Insert [F]  
 No Harmony:    \*Insert [F] >> WSA, Expression

Expression may also be violated in the presence of highly ranked constraints on feature occurrence. For example, constraints such as [ATR]→[vocalic] impose distributional restrictions on the realization of features, in this case restricting [ATR] to vowels. In an ATR harmony system, this feature occurrence constraint would serve to

identify only vowels as potential anchors for ATR. Another type of constraint is the feature co-occurrence constraint, termed **CLASH** constraint here, which marks certain feature combinations as ill-formed. For example, \*[ATR, Low] disfavors low, ATR vowels, and can prevent ATR from being inserted on an anchor which is specified Low, and vice-versa.

In short, wide F-domains arise when a language ranks WSA over BA. The harmony feature is realized in the F-domain due to the Expression constraint, which must be ranked over \*Insert [F]. Feature occurrence constraints may also be ranked over Expression, creating situations in which some elements in the P- or M-domain for harmony will not undergo harmony. We claim that it is this situation which derives transparency and opacity in ODT. Specifically, we propose that transparency and opacity follow from the following constraint rankings:

- (10) Transparency: F-Occurrence, WSA >> Expression  
 Opacity: F-Occurrence, Expression >> WSA

### 3. Transparency and opacity in tongue root harmony

The ODT approach to harmony sketched above is illustrated here with the analysis of opacity and transparency in two tongue root harmony systems. We contrast the behavior of two languages, Idealized Pulaar and Idealized Kinande, which have in common an underlying inventory of nine vowels in which the features ATR/RTR are contrastive only among the non-low vowels: [ATR] /i,e,o,u/ and [RTR] /ị,ẹ,ọ,ụ/ and /a/.<sup>9</sup> The absence of an ATR, low vowel in both languages can be attributed to the CLASH constraint \*[ATR,Low]. In both languages, ATR extends leftward from a high or mid vowel to the beginning of the word. In Idealized Pulaar, ATR harmony is blocked by a low vowel, as shown in examples (e,f) in the following data:

- (11) Idealized Pulaar: opaque /a/
- |    | <u>underlying</u> | <u>surface</u> |                                       |
|----|-------------------|----------------|---------------------------------------|
| a. | pẹẹc-i          | peec-i         | 'fente' Pl.                           |
| b. | pẹẹc-ɔ̣n        | pẹẹc-ɔ̣n     | 'fente' Dim.Pl.                       |
| c. | dọg-ɔ̣ọ-ru      | dog-oo-ru      | 'coureur' Sg.                         |
| d. | dọg-ɔ̣-w-ɔ̣n     | dog-ɔ̣-w-ɔ̣n   | 'coureur' Dim.Pl.                     |
| e. | bọọt-aa-ri      | bọọt-aa-ri   | 'dîner'(*bootaari, *bootaari)         |
| f. | pọọf-aa-li      | pọọf-aa-li   | 'respirations' (*poofaali, *poofaali) |

This system can be characterized with the following constraint grammar:



## (12) Constraint grammar for Idealized Pulaar:

CLASH: \*[Low,ATR]

BA-rt: Align(Anchor-s,R:[ATR]-domain,R)

Express: Express[ATR]

WSA-lf: Align([ATR]-domain,L; Word,L)

BA-lf: Align(Anchor-s,L:[ATR]-domain,L)

ranking: CLASH, BA-rt, Express &gt;&gt; WSA-lf &gt;&gt; BA-lf

The following tableaux illustrate the evaluation of an underlying sequence with an opaque vowel (the first candidate set), and a fully harmonizing sequence (the second candidate set), based on the grammar in (12). Note that the sponsoring anchor (the trigger for ATR harmony) is the rightmost vowel in both words.

## (13) Evaluation: Idealized Pulaar

| UR: C <sub>y</sub> C-a-C <sub>v</sub>     | CLASH | BA-rt | Express | WSA-lf | BA-lf |
|-------------------------------------------|-------|-------|---------|--------|-------|
| # a. C <sub>y</sub> C-a-(C <sub>v</sub> ) |       |       |         | *      |       |
| b. (C <sub>v</sub> C-a-C <sub>v</sub> )   | !*    |       |         |        | *     |
| c. C <sub>y</sub> C-a-C <sub>y</sub>      |       | !*    |         |        | *     |
| d. (C <sub>v</sub> C-a-C <sub>v</sub> )   |       |       | !*      |        | *     |
| UR: C <sub>y</sub> C-v                    |       |       |         |        |       |
| # a. (C <sub>v</sub> C-v)                 |       |       |         |        | *     |
| b. C <sub>y</sub> C-v                     |       | !*    |         |        | *     |
| c. (C <sub>y</sub> C-v)                   |       |       | !*      |        |       |
| d. C <sub>y</sub> C-(v)                   |       |       |         | !*     |       |

In the first candidate set, the (a) candidate wins—even though it violates Wide Scope Alignment, it is the only candidate to satisfy the three more highly ranked constraints. In the (b) candidate the low vowel undergoes harmony, violating CLASH. The (c) candidate has no harmony, and there is no domain for the underlying ATR feature. The (d) candidate allows the low vowel to be transparent in the middle of a harmony domain, violating Expression. In the second candidate set, the winning candidate fully satisfies Wide Scope Alignment and all three of the highest-ranked constraints.

In Idealized Kindande, the low vowel is transparent to ATR harmony, as the following forms show (tone is omitted, and capital vowels are used to represent vowels with undetermined underlying values for ATR/RTR):

## (14) Idealized Kinande: transparent /a/

|    | <u>underlying</u> | <u>surface</u> |                     |
|----|-------------------|----------------|---------------------|
| a. | tU-kā-kI-lim-a    | tukakilimā     | 'we exterminate it' |
| b. | tU-kā-kI-lim-a    | tukakilimā     | 'we cultivate it'   |
| c. | tU-kā-kI-huk-a    | tukākihukā     | 'we cook it'        |
| d. | tU-kā-mU-hum-a    | tukāmuhumā     | 'we beat him'       |



Transparency in Idealized Kinande can be accounted for with the following grammar:

## (15) Constraint grammar for Idealized Kinande:

- CLASH: \*[Low,ATR]  
 BA-rt: Align(Anchor-s,R:[ATR]-domain,R)  
 WSA-lf: Align([ATR]-domain,L; Word,L)  
 Express: Express[ATR]  
 BA-lf: Align(Anchor-s,L:[ATR]-domain,L)  
 ranking: CLASH, BA-rt, WSA-lf >> Express >> BA-lf

The tableaux below illustrate evaluation for two schematized examples: the first set with an underlying transparent low vowel, and the second set with no transparent vowel. In both examples, the sponsoring anchor of [ATR] is again the rightmost vowel.

## (16) Evaluation: Idealized Kinande

| UR: CV-k̄a-Cv    | CLASH | BA-rt | WSA-lf | Express | BA-lf |
|------------------|-------|-------|--------|---------|-------|
| # a. (Cv-k̄a-Cv) |       |       |        | *       | *     |
| b. (Cv-k̄a-Cv)   | !*    |       |        |         | *     |
| c. Cv-k̄a-Cv̄    |       | !*    |        |         | *     |
| d. Cv-k̄a-(Cv)   |       |       | !*     |         |       |
| UR: CV-Cv        |       |       |        |         |       |
| # a. (Cv-Cv)     |       |       |        |         | *     |
| b. Cv-Cv̄        |       | !*    |        |         | *     |
| c. Cv-(Cv)       |       |       | !*     |         |       |
| d. (Cv-Cv)       |       |       |        | !*      | *     |

The analyses of Idealized Pulaar and Kinande show that the same constraint set, ranked differently, yields both transparency and opacity of the low vowel in tongue root harmonies.

The ODT approach differs from Archangeli & Pulleyblank's autosegmental approach most substantially in the treatment of transparency. A&P adopt the No Gapping Constraint, which states that a multiply-linked feature cannot skip over a potential target; thus, transparent segments CANNOT be within the domain of a spreading feature in phonological representations.<sup>10</sup> In contrast, in the ODT analysis of transparency, a transparent segment is within the F-domain of harmony, but is simply immune from realizing the feature [F] due to a highly ranked feature occurrence constraint. The No Gapping Constraint plays no role in the ODT analysis of harmony, and is really only meaningful under the assumption that harmony involves association of a single token of the harmony feature to multiple anchors. As noted earlier, the ODT analysis does not require multiple association—but it is clear that if multiple association is allowed, and if the No Gapping constraint is part of universal grammar, then

the ODT analysis of transparency would lead to a violation of the No Gapping Constraint.<sup>11</sup>

#### 4. Opacity in round harmony

With this much in the way of background, let us turn now to exemplification of ODT in the analysis of round harmony. Many round harmony systems show an asymmetrical harmony of [Round] across high and low vowels. For example, in Turkish, [Round] extends rightward across a sequence of high vowels and is blocked when it encounters a low vowel (Clements & Sezer 1982).

##### (17) Turkish Round Harmony

| gen.sg. | gen.pl.    |         |
|---------|------------|---------|
| ip-in   | ip-ler-in  | 'rope'  |
| yüz-ün  | yüz-ler-in | 'face'  |
| kız-ın  | kız-lar-ın | 'girl'  |
| pul-un  | pul-lar-ın | 'stamp' |

The opaque behavior of low vowels can be accounted for by the CLASH constraint \*[Rd,Low]. Although the round low vowel /o/ appears in underlying representations, it is never derived in the round harmony system. To explain why underlying low round vowels surface, despite the presence of the CLASH constraint in the grammar, it suffices to rank Parse[Rd] and Parse[Low] above \*[Rd,Low], as shown in the following tableau, which evaluates surface candidates for a schematic underlying form CoC.

##### (18) Ranking \*[Rd,Low]

| UR: CoC  | Parse[Rd] | Parse[Low] | *[Rd,Low] |
|----------|-----------|------------|-----------|
| # a. CoC |           |            | *         |
| b. CaC   | !*        |            |           |
| c. CuC   |           | !*         |           |

Ranking the CLASH constraint and Expression above WSA derives the opacity of the low vowels, in exactly the same way that opaque low vowels are derived in the ATR harmony of Idealized Pulaar. An illustrative tableau is shown below, where surface candidates for a schematic underlying sequence of /o...A...I/ are evaluated.<sup>12</sup>

##### (19) Evaluation: opaque low vowels in Turkish round harmony

| UR: o A I    | BA-lf | Prs[Rd] | Prs[Lo] | *[Rd,Low] | Expr | WSA-rt |
|--------------|-------|---------|---------|-----------|------|--------|
| # a. (o) a i |       |         |         | *         |      | *a,i   |
| b. (a a i)   |       | !*      | !*      |           |      |        |
| c. (o o u)   |       |         |         | *!*       |      |        |
| d. (o a u)   |       |         |         | *         | !*   |        |

Note that the CLASH constraint \*[Round,Low] is violated by candidates (a,c,d), because of the specification of these two features on the underlying root vowel /o/. Only (b) satisfies CLASH, but fails since

the underlying feature specifications are not parsed into F-domains. Candidate (c) violates CLASH twice: once for the root vowel, and a second time by realizing [Round] on the low suffix vowel. In this case (a) wins, even though it has failed to satisfy WSA, and has only a narrow harmony domain.

### 5. Parasitic domains in round harmony

Consider next the round harmony system of Kazakh, as described in Korn (1969). Like Turkish, Kazakh has a palatal/velar harmony that extends left-to-right across the word. But the Kazakh system is a little more complicated than Turkish, because the round harmony operates differently in palatal and velar harmonic words. In velar harmonic words, low vowels are opaque to round harmony, just as in Turkish. Licit and illicit vowel sequences are listed below:

#### (20) Kazakh round harmony: velar harmonic words

|              | <u>underlying</u> |   | <u>surface</u> |        |
|--------------|-------------------|---|----------------|--------|
| Low targets: | u A               | → | u a            | (*u o) |
|              | o A               | → | o a            | (*o o) |
| Hi targets:  | u I               | → | u u            | (*u i) |
|              | o I               | → | o u            | (*o i) |

The CLASH constraint \*[Rd,Low] can derive opacity here, just as in Turkish, with the same grammar, repeated in (21).

#### (21) Kazakh grammar (preliminary)

\*[Rd,Low], Expression >> WSA-rt

Now, observe that in palatal harmonic words there is uniform round harmony—both high and low vowels are targets, as seen in (22).

#### (22) Kazakh round harmony: palatal harmonic words

|              | <u>underlying</u> |   | <u>surface</u> |        |
|--------------|-------------------|---|----------------|--------|
| Low targets: | ü A               | → | ü ö            | (*ü e) |
|              | ö A               | → | ö ö            | (*ö e) |
| Hi targets:  | ü I               | → | ü ü            | (*ü i) |
|              | ö I               | → | ö ü            | (*ö i) |

Clearly, the \*[Rd,Low] constraint is violated in the surface forms of some palatal harmonic words. We analyze this as a case of parasitic harmony, where one feature spreads within an F-domain defined by another feature. The Parasitic constraint, formulated in (23), requires the round domain to be co-extensive with the palatal domain of the sponsoring anchor.

#### (23) Parasitic(Rd,Pal): If two anchors are in the same [Pal]-domain then they must be in the same [Rd]-domain.

Parasitic(Rd,Pal) is ranked above \*[Rd,Low] with the result that \*[Rd,Low] will be violated in palatal harmonic words in order to satisfy the Parasitic constraint. The following tableau demonstrates the effects of these two ranked constraints.

## (24) Evaluation: Kazakh round harmony in palatal harmonic words

| UR: ü A                   | Paras. | Express | *[Rd,Low] | WSA-rt |
|---------------------------|--------|---------|-----------|--------|
| # (ü ö)<br>(ü e)<br>(ü e) | !*     | !*      | *         | *e     |
| UR: ü I                   |        |         |           |        |
| # (ü ü)<br>(ü i)<br>(ü i) | !*     | !*      |           |        |

The grammar with the Parasitic(Rd,Low) constraint succeeds in selecting the correct surface candidate. Of course, ODT must explain the underlying motivation for the Parasitic constraint, and determine which features may be dependent on one another in this fashion. We suggest that the Parasitic constraint is motivated in this case by the marked status of the feature combination [Rd,Pal]. In general terms, the Parasitic constraint provides a mechanism for extending a marked feature combination, thereby increasing perceptibility. In terms of the principles discussed earlier, the Parasitic constraint instantiates the Extension principle in the constraint grammar, by prolonging marked configurations.<sup>13</sup> We leave it for future research to explore the full set of Parasitic constraints, and to determine whether all cases of parasitic harmony involve marked feature combinations.<sup>14</sup>

## 6. Faithfulness vs. harmony

Lastly, we turn our attention to Uyghur, described in Hahn (1991). In this language round harmony targets only the high epenthetic vowel, as shown in (25a). Both epenthetic and suffix vowels undergo palatal/velar harmony, but suffix vowels never harmonize with the root vowel in roundness, as shown in (25b). (25c) shows that suffix vowels may be inherently round.

### (25) Uyghur round harmony

| a. underlying | surface   |                  |
|---------------|-----------|------------------|
| üz-m-m        | üzümüm    | 'my grape'       |
| klub-         | kulup     | 'club'           |
| čöml-š        | čömölüş   | 'my immersion'   |
| b. küč-I      | küči      | 'its power'      |
| kön,l-dIn     | kön,üldin | 'from the heart' |
| yüz-m-dIn     | yüzümdin  | 'from my face'   |
| c. kiy-gU     | kiygü     | 'wear' DECID.    |
| kät-gU        | kätkü     | 'go' DECID.      |
| qat-gU        | qatqu     | 'harden' DECID.  |
| qur-gU        | qurğu     | 'dry' DECID.     |

The asymmetry in the harmonic behavior of underlying and epenthetic vowels is accounted for in ODT by appealing to the Faith-

fulness condition. We explode the \*Insert[Rd] constraint into two separate constraints:

- (26) Exploding Faithfulness  
 (a) \*Insert[Rd] on an underlying anchor  
 (b) \*Insert[Rd] on an anchor

The (a) constraint is more restricted, and has no effect on insertion on an epenthetic anchor. The basic idea here is that epenthetic elements contain no underlying structure which the Faithfulness constraints \*Insert and Parse must preserve. This makes epenthetic elements better servants to feature extension. The two \*Insert constraints are in an 'elsewhere' ranking, (a) >> (b). In Uyghur, the Expression constraint that drives round harmony is ranked between the two \*Insert constraints, which means that [Rd] will never be inserted on an underlying anchor, but may be inserted on an epenthetic anchor to satisfy harmony. The ranked constraints are as follows:

- (27) Constraint grammar for Uyghur round harmony  
 \*Insert[Rd]-(a) >> BA-lf, Express[Rd] >> WSA-rt >> \*Insert[Rd]-(b)

The analysis of these facts in AP, which has no analogue of Faithfulness, is extremely problematic. It would seem to require either an ad-hoc specification of [-Rd] on unrounded suffix vowels, with epenthetic vowels unspecified, or a restriction on round harmony to the effect that it can apply only to a completely featureless vowel.

## 7. Summary

We have proposed ODT as an alternative to the autosegmental view of assimilation as spreading. In the ODT approach, a feature [F] is realized within a phonological constituent, termed F-domain. An F-domain is restricted to the span of the sponsoring anchor in the unmarked case, but in cases of F-harmony the domain has wide scope, defined in terms of prosodic or morphological constituents. The Expression constraint requires that within an F-domain all anchors should be specified for [F]; however, this constraint may conflict with feature occurrence constraints that restrict the affiliation of [F]. The ranking of the constraints on alignment of F-domains with the Expression and feature occurrence constraints gives rise to a typology of harmony systems with different properties of transparency and opacity. These results are achieved without any appeal to feature underspecification or feature geometry, because harmony is not viewed as autosegmental spreading. Finally, we see that the Faithfulness condition in ODT provides an account for why epenthetic elements may undergo harmony processes that do not affect underlying segments.

## NOTES

\* Thanks to Jose Hualde, Laura Downing, Donca Steriade, David Odden, and Akin Akinlabi for comments and discussion.

<sup>1</sup> Underspecification is allowed only when the surface specification is ALWAYS determined by an external source, such as the case of suffix vowels in Turkish, whose specification for Palatal/Velar is always determined by a stem vowel via harmony. The suffix vowels never stand alone in a form without a harmony trigger.

<sup>2</sup> Halle (1993) reaches the same conclusion, based on the analysis of a range of assimilation phenomena within the framework of AP.

<sup>3</sup> Our view is that individual features combine by affiliating to an anchor, characterizing the phonetic properties of that anchor. The anchor alone represents a bare segment, a unit which, in OT terminology, may be inserted, parsed, or underparsed. An anchor may SPONSOR features in UR, or may become affiliated with features that are sponsored by other anchors. For the ODT analysis of harmony it is not necessary to specify any hierarchic or geometric properties in the relation between features and anchors. We leave open the possibility that there may be other phenomena which motivate the expression of dependency between features or between features and their anchors, in which case additional structure may be imposed on the representations themselves.

<sup>4</sup> The reader who is unfamiliar with this theory is referred to McCarthy & Prince (1993) and Prince & Smolensky (1993) for a more detailed presentation of the theory.

<sup>5</sup> We are considering here only those cases where harmony is triggered by an underlying feature specification. There is reason to believe that a less restricted version of BA (and Wide Scope Alignment—see below) is active in languages where an inserted feature can also trigger assimilation.

<sup>6</sup> Expression can be satisfied either by inserting individual tokens of [F] on each anchor in an F-domain, or by establishing multiple associations between a string of anchors and a single token of [F], as in the standard autosegmental representation. The ODT analysis of harmony simply does not require multiple associations to account for transparency or opacity; however, we allow that there may be independent reasons to include multiply linked features in the set of well-formed representations.

<sup>7</sup> We assume that the general constraint \*Insert is exploded into a family of constraints, one for each feature and each type of structure in the set of phonological primitives.

<sup>8</sup> While we do not explicitly rule out this scenario, it is likely that such a grammar does not exist. There would be no surface cues



for the existence of a wide scope F-domain if it never induces F-harmony due to the ranking of \*Insert [F] over Expression.

<sup>9</sup> The harmony systems of actual Pulaar and Kinande involve additional complications which do not affect the demonstration that is the focus of this discussion. See Archangeli & Pulleyblank (1993) for discussion and comparison of these two harmony systems within an extended autosegmental framework. The characterization of Pulaar and Kinande below is based on the data presented in that work.

<sup>10</sup> A&P treat transparency in Kinande at the level of phonetic implementation. Low vowels are targets for the phonological ATR harmony, but only variably realize the feature [ATR]. They propose that a late, phonetic principle allows [ATR] to be realized on a low vowel under special prosodic conditions. Elsewhere, a [+ATR] specification on a low vowel will simply fail to be realized. Thus, there is really no transparency at the phonological level in Kinande. However, they acknowledge genuine phonological transparency, as in their analysis of Wolof, in which case the No Gapping constraint rules out the sort of treatment proposed in ODT.

<sup>11</sup> Our current position is that there is no clear need for the No Gapping constraint in ODT, and therefore it is not adopted. The larger issue to be addressed here is the role of locality as a condition on the statement of phonological constraints. Akinlabi (this volume) and Kirchner (1993) propose an OT treatment of harmony which maintains the No Gapping constraint. Although neither proposal addresses the treatment of transparency, we imagine that it would be possible to violate No Gapping by allowing multiple association to skip over a transparent segment. Differences between their OT approach and the domains-based approach advocated here would arise in the analysis of systems which manifest BOTH transparency and opacity, and are considered in more detail in our work in progress.

<sup>12</sup> Capital letters represent unspecified suffix vowels. Since in Turkish the suffix vowels are ALWAYS in the domain of root-controlled harmony, there is no evidence for any underlying specification for the features Palatal, Velar, or Round. In cases like this, we allow the possibility that the harmonizing vowels are unspecified in underlying form, as suggested by Steriade (1993). The alternative would be to arbitrarily assign some underlying features to the suffix vowels. In that case, the constraint grammar would have to be constructed so that the features [Round], [Palatal], and [Velar] on a suffix are realized ONLY when they are in the same F-domain as the root vowel. This approach would also require separating the Parse constraints into two groups: Parse[F] for root vowels, and Parse[F] for suffix vowels. The latter set would have to be ranked below the WSA constraint that gives rise to the large harmony domain, forcing a suffix vowel to lose its underlying specification in favor of realizing the harmony feature in the wide scope F-domain. On the other hand, the Parse constraints for root vowels would have to be ranked above

WSA, to ensure that an underlying feature specification on a root vowel is always parsed, and always triggers harmony. (This discussion ignores the treatment of disharmonic roots, which however pose no problem for the ODT approach.)

<sup>13</sup> Our account of parasitic harmony as the principled extension of a marked feature combination is inspired by a suggestion in Steriade (1993).

<sup>14</sup> Preliminary results are promising. In addition to Kazakh, Yawelmani round harmony can be analyzed with the use of Parasitic constraints involving [Rd,Low] and [Rd,Hi].

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## THE MORPHOLOGY-SYNTAX INTERFACE IN CREOLIZATION (AND DIACHRONY)<sup>1,2</sup>

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This paper examines certain word-order differences between Haitian (Ha) and its lexifier, French (Fr), and reduces these differences to ONE morphological distinction between the two languages. These configurations revolve around the placement of verbs and of object pronouns, and the one dissimilarity to which their differences are reduced concerns verbal inflectional morphology, and the lack thereof, in Fr and Ha, respectively.

### 1. Adverb placement in Ha and in Fr

Let us begin with the central patterns to be explained.<sup>3</sup> As presented by Dejean 1992, these data directly concern whether a transitive verb must remain adjacent to its object NP in Ha and in Fr. In particular, can adverbs intervene between a verb and its object NP? The adverbs I focus on constitute a relatively small class, the class of adverbs that can occur NON-PARENTHETICALLY (I.E., WITHOUT AN INTONATION BREAK) BETWEEN THE SUBJECT AND THE OBJECT, IN BOTH LANGUAGES (only these adverbs will be considered in this paper).<sup>4</sup> The distribution of these adverbs in Ha and in Fr is very telling: on the right of the finite verb in Fr and on the left of the main verb in Ha.

Starting with (1) and (2), please focus on the adverbs *deja/déjà* 'already' (in bold). In (1a), Ha *deja* cannot intervene between the verb *pase* 'iron' and its object *rad yo* 'the(ir) clothes'. (1b) indicates that *deja* may precede the V-NP<sub>Obj</sub> sequence. Thus, (1) illustrates the Ha contrast: \*V ADV NP<sub>Obj</sub> vs. ADV V NP<sub>Obj</sub>.<sup>5</sup>

- (1) a. \*Bouki pase **deja** rad yo (Ha)  
Bouki iron already cloth the  
b. Bouki **deja** pase rad yo  
'Bouki has already ironed the(ir) clothes'

Compare (1) with its Fr counterparts in (2), where Fr *déjà*, unlike Ha *deja*, may intervene between the finite verb and its object (cf. (1a) vs. (2a)) and must not precede the verb (cf. (1b) vs. (2b)). More succinctly, the Fr order is V<sub>fin</sub> ADV NP<sub>Obj</sub> vs. \*ADV V<sub>fin</sub> NP<sub>Obj</sub>:

- (2) a. Bouqui repasse **déjà** le linge (Fr)  
Bouqui iron already the cloth  
'Bouqui is already ironing the clothes'  
b. \*Bouqui **déjà** repasse le linge

Examples (3)-(18) provide other data (borrowed, and adapted, from Dejean) which approximate (1)/(2).

In (3)-(6), the 'interesting' items are sentence-level temporal adverbs: *toujou/toujours* in the sense of 'still' and *janm/jamais* 'never'.

- (3) a. \*Menm lè yo pini Sentaniz, li renmen  
even when 3pl punish Sentaniz 3sg love  
**toujou** manman l (Ha)  
still mother 3sg
- b. Menm lè yo pini Sentaniz, li **toujou** renmen manman l  
'Even when they punish Sentaniz, she still loves her mother'
- (4) a. Même punie, Saintanise aime **toujours** sa  
even punished Saintanise loves still her  
mère (Fr)  
mother
- b. \*Même punie, Saintanise **toujours** aime sa mère
- (5) a. \*Jak pa di **janm** bonjou (Ha)  
Jack NEG say never good-day  
Jak pa **janm** di bonjou  
Jack never says good morning'
- (6) a. Jacques ne dit **jamais** bonjour (Fr)  
Jack NEG say never good-day
- b. \*Jacques **jamais** ne dit bonjour
- (7)-(14) give examples with degree adverbials:
- (7) a. \*Boukinèt kite **prèske** Bouki (Ha)  
Boukinèt abandon almost Bouki
- b. Boukinèt **prèske** kite Bouki  
'Boukinèt almost abandoned Bouki'
- (8) a. Bouquinette abandonna **presque** Bouqui (Fr)  
Bouquinette abandoned almost Bouqui
- b. \*Bouquinette **presque** abandonna Bouqui
- (9) a. \*Bouki manje (si) **tèlman** bannann... (Ha)  
Bouki eat so abundantly bananas
- b. Bouki **si tèlman** manje bannann...  
'Bouki so abundantly eats bananas...'
- (10) a. Bouqui mange (si) tellement (Fr)  
Bouki eats so abundantly...
- b. \*Bouqui (si) tellement mange ...
- (11) a. \*Bouki renmen **trè** ti ronm li (Ha)  
Bouki like much little rum 3sg
- b. Bouki **trè** renmen ti ronm li  
'Bouki likes his little rum a lot'
- (12) a. Bouqui aime **beaucoup** son petit rhum (Fr)  
Bouki likes much his little rum
- b. \*Bouqui **beaucoup** aime son petit rhum

- (13) a. \*Bouki renmen **trò** ronm (Ha)  
 Bouki like too-much rum  
 b. Bouki **trò** renmen ronm  
 'Bouki likes rum too much'
- (14) a. Bouqui aime **trop** le rhum (Fr)  
 Bouki likes too-much the rum  
 b. \*Bouqui **trop** aime le rhum
- Finally, (15)-(18) give examples with predicate-level adverbs:
- (15) a. \*Elèv la konn **byen** leson an (Ha)  
 student the know well lesson the  
 b. Elèv la **byen** konn leson an  
 'The student knows the lesson well'
- (16) a. L'élève connaît **bien** la leçon (Fr)  
 the-student knows well the lesson  
 b. \*L'élève **bien** connaît la leçon
- (17) a. \*Elèv la etidye **mal** leson an (Ha)  
 student the study bad lesson the  
 b. Elèv la **mal** etidye leson an  
 'The student has poorly studied the lesson'
- (18) a. L'élève étudie **mal** la leçon (Fr)  
 the-student studies bad the lesson  
 b. \*L'élève **mal** étudie la leçon

Taken together, (1)-(18) instantiate a robust contrast in Ha/Fr verb placement. While the relevant class of adverbs is restricted, the patterns they give rise to recurrently substantiate ADV V NP<sub>Obj</sub> in Ha vs. V<sub>fin</sub> ADV NP<sub>Obj</sub> in Fr. In all these instances, although the lexemes are semantically and (often) phonetically related, they consistently occur on opposite sides of the verb. That the Ha transitive verb is always adjacent to its object, unlike Fr, has motivated Dejean (1992) to postulate that Ha obeys a 'strict adjacency principle', a principle which would not apply in Fr.<sup>6</sup>

I will argue that Pollock's (1989), Belletti's (1990) and Chomsky's (1991) insights regarding the syntax of verbal morphology provide us with an elegant link between, on the one hand, the above verb-placement facts, in (1)-(18), and, on the other hand, the absence vs. presence of verbal inflectional suffixes in Ha and in Fr, respectively. In this view, Dejean's 'strict adjacency principle' for Ha (cf. its absence in Fr) is not a deep-seated principle, but is only the surface manifestation of more fundamental properties. Namely, Ha verbs are not morphologically inflected whereas Fr verbs are, which in the Pollockian framework has specific word-order consequences congruent with (1)-(18).

## 2. Verbal morphology in Ha and in Fr

Many Creole languages manifest relatively little morphological inflection. In Ha, the verb bears neither suffixal agreement markers, as shown in (19), nor suffixal Tense-Mood-Aspect (TMA) markers, as shown in (20)—Ha TMA markers are FREE morphemes which precede the (uniformly INVARIABLE) main verb.

(19) { Mwen | Ou | Li | Nou | Yo } renmen Boukinèt (Ha)  
 { 1sg | 2sg/2pl | 3sg | 1pl | 3pl } love Boukinèt  
 '{ll You | He/She/It | We | They } love(s) Boukinèt'

(20) Boukinèt { **te** | **ap** | **a** } renmen Bouki (Ha)  
 Boukinèt { ANT | FUT | IRR } love Bouki  
 'Boukinèt { loved | will love | would love } Bouki'

In (19) and (20), the Ha verb remains uninflected for agreement and TMA. In (21) and (22), *aimer* 'to love' is inflected for both agreement and TMA.<sup>7</sup>

(21) J'aim-**e** '1sg-♥+1sg' Nous aim-**ons** '1pl ♥+1pl' (Fr)  
 Tu aim-**es** '2sg ♥+2sg' Vous aim-**ez** '2pl ♥+2pl'  
 Il/Elle aim-**e** '3sg+m/f ♥+3sg' Ils/Elles aim-**ent** '3pl+m/f ♥+3pl'

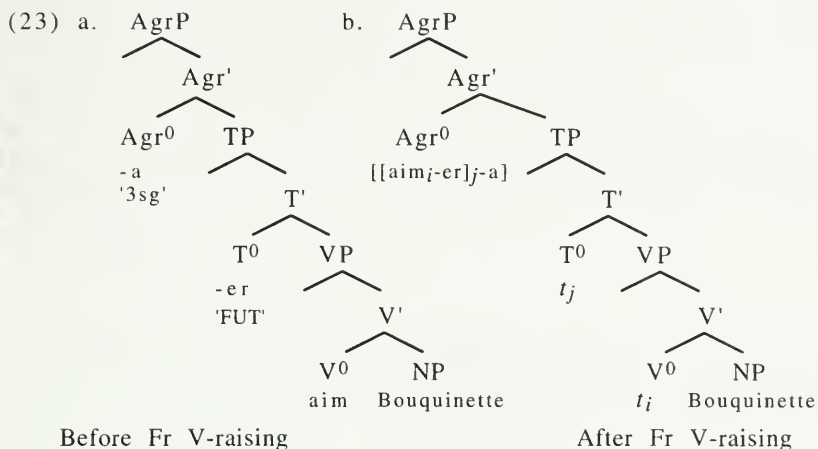
(22) a. Bouquinette aim-**ait** Bouqui (Fr)  
 Bouquinette loved Bouqui  
 b. Bouquinette aim-**era** Bouqui  
 Bouquinette will-love Bouqui  
 c. Bouquinette aim-**erait** Bouqui si ...  
 Bouquinette would-love Bouqui if

## 3. Verb placement and morphology

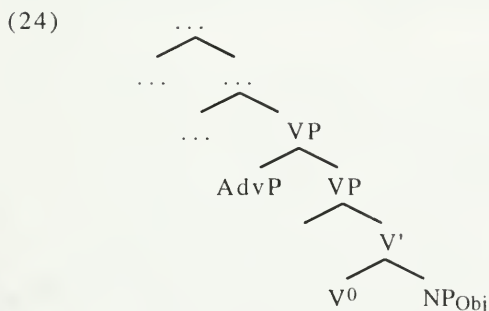
Considering Pollock 1989, among others, I believe that there is somewhat of a cause-and-effect relationship between the data in the two previous sections, i.e., that verbal morphology 'drives' verb placement.

Recall that Ha has ADV V NP<sub>Obj</sub> order and NO verbal suffixes, and that Fr has V<sub>fin</sub> ADV NP<sub>Obj</sub> order AND verbal suffixes. How does morphology drive verb placement? Pollock 1989 proposes to derive verbal inflectional morphology at syntax.<sup>8</sup> Assuming X-bar theory, each subject-verb agreement and TMA inflection is generated as the head of its own projection, Agr(eement)P, T(ense)P, etc; see (23a) where *-a* '3sg' is Agr<sup>0</sup>, *-er* 'future' is T<sup>0</sup> and the root *aim-* is V<sup>0</sup> (also see Belletti 1990 and Chomsky 1991). At syntax, the root of the inflected verb leaves the VP and undergoes cyclic-successive head-movement to the various inflectional heads to collect its inflectional suffixes:





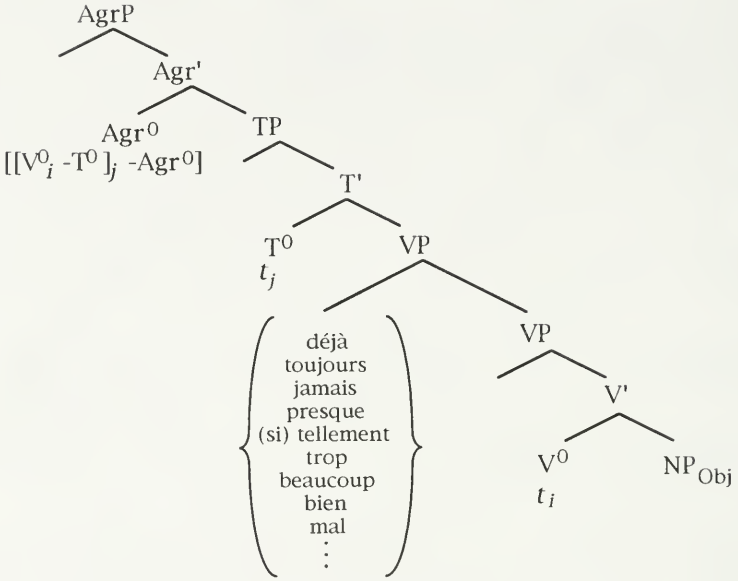
The movement in (23) gives rise to the Fr word-order  $V_{fin} ADV V NP_{Obj}$ : in (23b), once the Fr (transitive) verbal root leaves VP, VP-adjoined adverbs will intervene between the verb and its object. Let's now go back to Ha and see what happens there. Given standard assumptions regarding D-structure, Ha and Fr would have the same underlying order:



D-structure verb-object adjacency in Ha AND in Fr

The adverb placement contrasts above are simply caused by verb movement in Fr and lack of verb movement in Ha. After V-raising to Agr<sup>0</sup> in Fr, any unmoved material remaining below TP and above V' will intervene between the verb and its object:

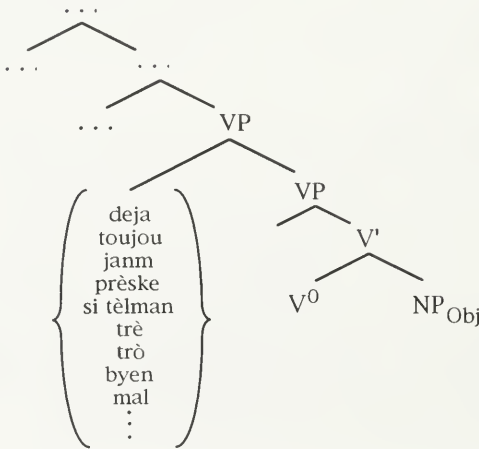
(25)



After Fr V-raising (across an adverb)

As for Ha, it has virtually no inflectional morphology to induce verb raising, and the verb stays in situ, inside VP, with the adverbs *deja*, *toujou*, etc., surfacing pre-verbally:

(26)



S-structure verb-object adjacency in Ha

Recapitulating, the central point so far is that the approach to verbal morphology advocated by Pollock 1989, Belletti 1990, Chomsky 1991, etc., tie the data in (1)-(18) to that in (19)-(22) in revealing ways. The Ha/Fr adverb-placement contrasts are a direct result of Fr verb movement (over VP-adjoined material) to pick up inflectional suffixes vs. absence of verb movement in Ha given that there are no suffixes to be picked up: the underlying order ADV V NP<sub>Obj</sub> shown in (24) surfaces intact in Ha (26) whereas V-raising takes place in Fr producing the V<sub>fin</sub> ADV NP<sub>Obj</sub> surface order in (25).

#### 4. Morphology and verb placement: A closer look

##### 4.1. Fr finite and non-finite verbs in Fr vs. Ha main verbs

Additional data and insights from Pollock 1989 support the present approach to the Ha/Fr contrasts. (27)-(31) compare Fr placement of finite vs. infinitival verbs with respect to the adverb *à peine* 'hardly' and the sentence negation marker *pas*. Given Section 3, I can now safely take such placement to be symptomatic of (the absence of) verb raising. Simplifying Pollock's treatment, let's take the order V ADV or V NEG to indicate verb raising and the order ADV V or NEG V to indicate no verb raising.

We've seen the Fr finite verb raise out of VP over adverbs, like *à peine*. The Fr finite verb also raises over the sentence negation marker *pas*:

(27) ... Verb<sub>fin</sub><sub>i</sub> ... NEG/Adv ... [<sub>VP</sub> t<sub>i</sub> ... ] ... (Fr)

The movement schematized in (27) is instantiated in (28), adapted from Roberts 1993, and previously discussed in Kayne 1975, Emonds 1978, Pollock 1989, Belletti 1990 and Chomsky 1991, among others.

- (28) a. Pierre comprend<sub>i</sub> **à peine** [<sub>VP</sub> t<sub>i</sub> l'italien ] (Fr)  
 Peter understands hardly Italian  
 'Peter hardly understands Italian'  
 b. Jean n'aime<sub>i</sub> **pas** [<sub>VP</sub> t<sub>i</sub> Marie ]  
 John NEG-love NEG Mary  
 'John doesn't love Mary'

Recall that the Fr finite verb **MUST** raise out of VP at syntax:

- (29) a. \*Pierre **à peine** [<sub>VP</sub> comprend l'italien ] (Fr)  
 b. \*Jean ne **pas** [<sub>VP</sub> aime Marie ]

However, infinitivals, unlike finite verbs, may follow adverbs and negation at S-structure, remaining in VP:<sup>9</sup>

(30) ... NEG/Adv [<sub>VP</sub> Verb<sub>non-fin</sub> ... ] ... (Fr)

- (31) a. **À peine** [<sub>VP</sub> comprendre l'italien ], ce n'est pas un  
 hardly to-understand the-Italian it NEG-is NEG a  
 crime  
 crime  
 'To hardly understand Italian is not a crime' (Fr)

- b. Ne **pas** [<sub>VP</sub> aimer ses parents ] est une  
 NEG NEG love one's parents is a  
 mauvaise chose  
 bad thing  
 'Not to love one's parents is a bad thing'

The Fr finite/non-finite dichotomy of (27) vs. (30) somewhat replicates the Ha vs. Fr contrasts in verb placement of Section 1. If verbal morphology is what drives verb movement, then this is expected: Fr non-finite verbs resemble Ha verbs in not being as richly inflected as Fr finite verbs.<sup>10</sup>

#### 4.2. Sentential negation in Ha and in Fr

The surface distribution of Ha and Fr negation markers further likens the surface distribution of Fr infinitivals with that of Ha verbs. Like Fr *pas* in (31b), Ha *pa* of SENTENTIAL negation (along with the adverbs discussed above) precedes the main verb:<sup>11</sup>

(32) ... NEG [<sub>VP</sub> Verb ... ] ... (Ha)

(33) a. Boukinèt **pa** [<sub>VP</sub> renmen Bouki ] (Ha)  
 Boukinèt NEG renmen Bouki  
 'Boukinèt does not love Bouki'

b. \*Boukinèt renmen<sub>i</sub> **pa** [<sub>VP</sub> t<sub>i</sub> Bouki ]

Compare the placement of Ha *pa* in (33) with that Fr *pas* in (28b), (29b), and (31b). Fr *pas* of sentential negation FOLLOWS the finite verb and PRECEDES the non-finite (nonauxiliary) verb while HA *pa* PRECEDES the main verb in all clauses.<sup>12</sup>

#### 4.3. Verb placement in mesolectal Louisiana Creole (Rottet 1993)

Mesolectal Louisiana Creole (MLC) offers some interesting 'variations' regarding verb syntax. These variations mesh nicely with my ongoing investigation, in that MLC's verb syntax seems to be an hybrid of two markedly different sub-grammars: one, Ha-like, isolating, and the other, Fr-like, affixal. The varying distribution of MLC verb forms, as analyzed by Rottet 1993 and presented below, might 'reflect competition among alternative licensing principles for entire grammatical sub-systems', borrowing Kroch's (1989:239) phrase.

Mesolectal varieties of LC have short and long forms for many verbs: *aret/arete* 'stop', *frem/freme* 'shut', *gēb/gēble* 'gamble', *kup/kupe* 'cut', *kuv/kuve* 'cover', *mōzh/mōzhe* 'eat', *vje/vini* 'come', *vō/vōn* 'sell', etc. (Only the long forms are used in the basilect.) As Rottet convincingly argues, the short form corresponds to a Fr form inflected for tense whereas the long form is the typically uninflected Creole form. This correspondence is revealed in the distribution of these forms: as indicated by adverb placement in (34) and placement of negation in (35), the long form stays inside VP, in the (a) examples, whereas the short form raises out of VP, in the (b) examples:

- (34) a. Fo **tuzhu** kupe ze'b-la (MLC)  
 FO always cut grass-the  
 'It's always necessary to cut the grass'  
 b. Fo to kup **tuzhu** ze'b-la  
 FO 2sg cut always grass-the  
 'You always have to cut the grass'
- (35) a. Mo **pa** mōzhe (MLC)  
 I sg NEG / eat  
 'I haven't eaten' or 'I didn't eat'  
 b. Mo mozh **pa**  
 I sg eat NEG  
 'I don't eat'

Moreover, the short forms are incompatible with non-affixal TMA markers. In MLC, morphologically-free TMA markers entail the use of the (non-inflected) long form, as in (36) where inflected *son* cannot co-occur with non-affixal *ape*.

- (36) Le klosh **ape** {sonel\*son} asteʀ (MLC)  
 the bell PROG ring now  
 'The bells are ringing now'

Thus, MLC manifests two competing verbal systems, one with verb raising (with short forms) like Fr, and the other without verb raising (with long forms), like Ha; see Rottet 1993 for further details and analysis. This provides further evidence for the correlation between inflectional morphology and verb movement.

### 5. Verb placement in English diachrony

So far, I've compared Ha and, briefly, MLC to their lexifier, Fr. The picture emerging is one where creolization eliminates verb movement via erosion of verbal inflections. Is this true only of creolization?

Let's step outside creolization and examine one scenario of gradual diachronic change (in Roberts 1993) where a specific set of word-order changes is connected to a drastic decline in verbal inflections, in fashion similar to the above Fr/Ha patterns. Starting with Modern English (NE), note that, by our now-familiar diagnostics, it has restricted verb raising:

- (37) a. \*John loves **not** Mary  
 b. \*Peter understands **hardly** Italian

Compare the synchronic data in (37) with: its correct NE versions in (38); the Fr data in (39) (=28); and the Middle English (ME) data in (40) (from Roberts 1993, Ch. 3, and Kroch 1989).

- (38) a. John does **not** love Mary  
 b. Peter **hardly** understands Italian

- (39) a. Jean n'aime pas Marie (Fr)  
 John NEG-aime NEG Mary  
 'John doesn't love Mary'  
 b. Pierre comprend à peine l'italien  
 Peter understands hardly Italian  
 'Peter hardly understands Italian'
- (40) a. It serveth **not**  
 'It doesn't serve' (i.e. it is of no use)  
 [1513: *The battle of Flodden*—Roberts 1993:239]  
 b. Wepyng and teres counforteth **not** dissolute laghers  
 Weeping and tears comfort not dissolute laughers  
 [1400 50: N. Love, *The Myrour of the Blessyd Lyfe of Jesu Christ*—Roberts 1993:250]  
 c. The Turkes ... made **anone** redy a gret ordonnance  
 'The Turkes ... soon prepared a large number of weapons'  
 [c1482, Kaye, *The Delectable Newsses of the Glorious Victorye of the Rhodyans agaynest the Turkes*—Roberts 1993:253]  
 d. Quene Ester looked never with swich an eye  
 'Queen Esther never looked with such an eye'  
 [Chaucer, *Merchants Tale*, line 1744—Kroch 1989:226]

The NE (main) verbs in (37) and (38) do not raise out of VP.<sup>13</sup> However, there was a time, before the mid-1500s (Kroch 1989), when English main verbs use to be more mobile, contra (37). During that period, the finite (main) verb was like Fr: it could move across negation markers and adverbs (Pollock 1989, Kroch 1989, Roberts 1993, among others). In a fascinating correlation, such movement was possible at the time when English flaunted more inflectional markings on its verbs. Witness, e.g., the present-tense paradigm for (south) ME 'sing':

- (41) *singe* '1sg', *singest* '2sg', *singeth*, '3sg, 1pl, 2pl, 3pl'  
 [Roberts 1993:256]

In the paradigm in (41), the verb never occurs bare, unlike synchronic present-tense *sing*. Thus from ME to NE, loss of verbal inflection was accompanied by loss of main-verb movement, exactly like in the Fr/Ha case. Roberts 1993 explicitly attributes the loss of main-verb raising in English (and some Scandinavian languages) to an 'impoverishment' in verbal inflectional morphology.<sup>14</sup>

## 6 Object pronouns in Ha and in Fr, and in English diachrony

One other set of Ha/Fr configurations seems likely to have a morphological basis: the position of object pronouns. Ha object pronouns are distinct from Fr object pronouns in that the former are not morphologically distinguished for nominative vs. non-nominative Case—Ha uses the same pronominal forms in both subject and object positions—whereas Fr morphologically distinguishes (at least) nominative from non-nominative pronouns; e.g., (42) vs. (43).



|        | singular | plural |
|--------|----------|--------|
| (42) 1 | mwen     | nou    |
| 2      | ou       | nou    |
| 3      | li       | yo     |

|        | singular                 | plural                   |
|--------|--------------------------|--------------------------|
| (43) 1 | je vs. me                | nous                     |
| 2      | tu vs. te                | vous                     |
| 3      | il, elle vs. le, la, lui | ils, elles vs. les, leur |

Alongside this morphological difference, Fr object pronouns in (43) are obligatorily PRE-verbal clitics, as in (44) while Ha object pronouns are POST-verbal; see (45).

(44) a. Bouqui **1'** aime (Fr)  
Bouqui 3sg-love

'Bouqui loves him/her/it'

b. \*Bouqui aime **1e/1a**  
Bouqui love 3sg-m/3sg-f

(45) a. Bouki renmen **li** (Ha)  
Bouki love 3sg

b. \*Bouki **li** renmen

The Fr vs. Ha pronouns' distribution also has a counterpart in English diachrony. (46), cited in Roberts 1994, suggests that Old English (OE) had (somewhat Fr-like) object clitics. However, these disappeared alongside morphological Case markings on nouns.

(46) God **him** worhte pa reaf of fellum  
God them made garments of skin  
'God made them garments of skin'

(AHTh, I,18; van Kemenade 1987:114)

Roberts 1994 argues that OE cliticization was the result of 'strong' inflectional features under AgrO, as manifested by its rich Case morphology.<sup>15</sup> These features induce leftward movement of OE object pronouns, from under V', across the verb. Once Case morphology became impoverished in ME, AgrO became 'weak' ruling out object cliticization (see Roberts 1994 for details). Note that under Roberts' AgrO-based analysis of OE cliticization, Chomsky's 1993 'Shortest Movement' condition would allow object cliticization to the AgrO level only if the verb itself overtly moves to AgrO.

Alternately, Kayne 1989a:240ff argues that movement of Fr object clitics to a functional head higher than V° (T°, say) depends on accompanying movement of V°, out of VP, to T°: such merging of V° and T° allows T° to L-mark VP, making VP transparent to antecedent-government of the clitic trace under V', from outside VP.<sup>16</sup> Without the verb adjoining to it, Fr T° is not strong enough on its own to L-mark VP, which would then remain a barrier to antecedent-government from outside; the clitic trace would thus violate the ECP.

which requires traces to be antecedent-governed (see Kayne 1989 for details).

The OE-ME vs. NE contrasts closely match the Ha vs. Fr ones: taking NE and Ha as end-points of diachronic changes, we find in both cases that: (i) reduction in morphological Case is associated with elimination of object cliticization, and (ii) reduction in verbal suffixes is associated with elimination of (main) verb movement.

Kayne's (1989, 1991) and/or (one interpretation of) Roberts' (1994) views (plus Chomsky's (1993) 'Shortest Movement' condition) would then unite verb movement to object cliticization: the latter would happen ONLY IF the former also happens. Therefore, absence of verb-movement in Ha would directly account for the post-verbal position of Ha object pronouns. Divergent placement of verbs and object pronouns in Ha and in Fr is thus reduced to presence vs. absence of verbal inflectional suffixes in Fr vs. Ha (coupled with presence vs. absence of morphological Case markings on pronouns).<sup>17</sup>

## 7 Substratum influence?

Kwa languages have played an important role in the genesis of Ha; see, e.g., Lefebvre & Lumsden 1992. But, after a preliminary survey of the relevant facts in Fon, perhaps the most influential West-African source languages (Lefebvre & Lumsden 1992), it seems unwarranted to try to explain the verb-placement facts in Ha by evoking substratum influence.

### 'Adverbial' modification in Fon (Maxime da Cruz, p.c.):

- (47) a. Súnú lé kó lì àwù lé wè (Fon)  
 man the-PL already iron cloth the  
 'The men have already ironed the clothes'
- b. Azò mé ví ó tùn nù kpíkplón ó  
 student the know stuff learn  
 gànjí  
 well  
 'The student knows the lesson well'

In (47a), the adverb *kò* 'already' is pre-verbal, like Ha *deja*, but in (47b), *gànjí* 'well' is clause-final whereas Ha *byen* 'well' may occur pre-verbally; see (15). Thus, the Fon adverb-placement data above show no clear similarity with the Ha patterns in Section 1.

### Object placement in Fon (Kinyalolo 1992; Fabb 1992):

Object-placement data from Fon (and other Gbe languages from the Kwa family of Niger-Congo) make a stronger case for the limits of substratum influence on Ha pronoun syntax. In Fon, as well as in Ewe and other Gbe languages (Fabb 1992), the verb must systematically follow its NP<sub>Obj</sub> in certain well-defined syntactic contexts, e.g. in progressive, prospective and purpose clauses. Following is one example



Special thanks to Enoch for welcoming me back from all these wanderings in the most surprising and delicious ways.

<sup>3</sup> Much of the data here are from a paper by, or has been discussed with, my esteemed linguist compatriot Professor Yves Dejean—*Mèsi, Papa Iv*.

<sup>4</sup> Other positions such as clause-initial/final are also possible for (some of) these Ha and Fr adverbs, but it is the AD-VERBAL distribution which is most relevant for the purposes at hand regarding verb placement. Most Ha adverbs occur generally clause-finally; Dejean (p.c.).

<sup>5</sup> The following abbreviations are used: ANT 'anterior', FUT 'future', IRR 'irrealis', NEG 'negation', PROG 'progressive', 1sg 'first singular', ..., 3pl 'third plural', m 'masculine', f 'feminine'.

<sup>6</sup> Cf. Stowell's (1981) adjacency condition on Case assignment in English, regarding e.g. *John often reads the newspapers* vs. \**John reads often the newspaper*.

<sup>7</sup> Such suffixal distinctions are often eroded in spoken varieties of Fr, except for *avoir* 'to have', *être* 'to be', *aller* 'to go', *vouloir* 'to want', *pouvoir* 'to be able', etc., which remain 'richly' inflected' even in spoken varieties; see Chaudenson *et al* 1993 and its references.

<sup>8</sup> In addition, Pollock's comparison of Fr and English verb syntax gives us a model that applies directly to our Ha/Fr comparison.

<sup>9</sup> Pollock's data and analysis are more nuanced. For example, the order NEG V<sub>non-fin</sub> does not preclude ('short') movement of Fr infinitives to a head higher than VP but lower than negation. See Pollock 1989 for details; cf. Kayne 1991.

<sup>10</sup> However, Ha verbs, unlike Fr infinitival verbs, are NEVER separated from their objects by adverbials. In the morphology/syntax spirit of this paper, this correlates with the fact that Fr infinitivals have SOME inflection, namely the infinitival suffix, whereas Ha verbs have no suffixes whatsoever: Ha verbs evince no distinctive finite/non-finite morphology.

<sup>11</sup> DeGraff 1992 a,b argue that TMA markers should be syntactically analyzed as verbs.

<sup>12</sup> DeGraff 1993 further differentiates between Ha *pa* and Fr *pas*, arguing that the former heads NegP while the latter is in Spec(NegP). If Ha *pa* is indeed a head, it would, unlike Fr *pas*, block verb-movement across negation due to the Empty Category Principle (as instantiated in the Head-Movement Constraint; see Chomsky 1991). Thus, V-raising across Ha *pa* is ruled out, independently of the non-affixal status of Ha TMA morphemes.

<sup>13</sup> Although auxiliary verbs do raise out of VP, as in *John has not seen Mary* and *Peter has hardly understood yesterday's Italian lesson*; compare with (37). See Pollock 1989 for one explanation.

<sup>14</sup> Also see Rohrbacher 1993 for a similar hypothesis and for further Germanic data supporting this view.

<sup>15</sup> The AgrO node was first proposed by Kayne (1989b) for the locus of verb-object agreement, as in Fr past-participle agreement.

<sup>16</sup> In Kayne 1991:649, object cliticization is generally adjunction to a functional head higher than VP.

<sup>17</sup> The link between verb movement and cliticization would also explain why NE has no object pro-clitics even though it has kept SOME Case markings on pronouns. Interestingly, many Creoles with English-derived lexicons have completely gotten rid of Case markings (even on pronouns, unlike NE) and have even more restricted verb movement than 'standard' English—the latter still allows movement of auxiliaries, as in *John has not read the paper* vs. *John not has read the paper*, while the former doesn't, for the most part; see O'Neil 1993 regarding absence of verbal inflectional suffixes, of verb movement and of pronominal Case markings in Nicaraguan English.

<sup>18</sup> Assume the following: (i) that Spec(VP) in these Gbe constructions is preempted by the VP-internal subject; and (ii) that Gbe NP<sub>Obj</sub>-V sequences are instances of leftward object movement out of VP, as in Kinyalolo 1992 and Fabb 1992 (although the details of their analyses differ). Then, given Chomsky's (1993) 'Shortest Movement' condition, such leftward movement would require overt V-raising in Fon (pace Kinyalolo 1992 and Avolonto 1992, both of whom assume that in Fon V remains in VP). Admittedly, consolidating this (tentative) conclusion requires an analysis of Gbe data beyond the scope of this paper. (I am grateful to Kasangati Kinyalolo for insightful discussions.)

<sup>19</sup> Diachritics for tones: ˊ = high tone; ˋ = low tone; ˊˋ = mid tone.

<sup>20</sup> Fon also has a set of tonic pronouns. A rough generalization here is that pronouns in the NOM column are used as subjects of tensed clauses while the pronouns in the ACC column are used as objects of verbs and prepositions. Plural pronouns are not morphologically distinguished for Case: they uniformly correspond to the tonic forms.

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## CHECKING INTERROGATIVE SUBJECT PRONOUNS IN FRENCH

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Abstract: One of the distinctive properties of French complex inversion is that the subject is doubled by a subject clitic. Interrogative subjects like *qui* 'who' and *lequel* 'which-one' cannot be doubled, but others like *qui d'entre vous* 'who among you' and *combien de linguistes* 'how many linguists' can. This contrast will be accounted for under the assumption that there is no AgrS-to-C<sup>0</sup> in French interrogatives. It will be shown that the interrogative subjects that allow for clitic-doubling, are able to A'-bind a *pro*, whereas this possibility does not exist for subjects that disallow for clitic-doubling.

### 1 Introduction<sup>1</sup>

In Standard French interrogative root clauses, subjects can be doubled by a subject clitic following the inflected part of the verb as the following examples show:

- (1) a Quand Marie est-elle venue?  
When Marie is she come?  
b Marie est-elle partie?  
Marie is she (cl) left?  
c Pourquoi Marie est-elle partie?  
Why Marie is she left?

There is, however, one specific interrogative context where clitic-doubling is disallowed, viz. those contexts where the subject appears as an interrogative subject:

- (2) a \*Qui est-il venu?  
who is he (cl) come?  
b \*Lequel est-il le plus intéressant?  
which one is it (cl) the most interesting

These sentences become grammatical, when the subject clitic is left out:

- (3) a Qui est venu?  
Who is come?  
b Lequel est le plus intéressant?  
Which one is the most interesting?

Rizzi & Roberts 1989 propose an analysis which is construed as to avoid the combination of an interrogative subject pronoun and a subject clitic: Starting-point is the claim that in complex inversion AgrS (I in their terms) raises to C<sup>0</sup>. The effect is that preverbal subjects have to move to CP as well. Their landing-site is an A'-position adjoined to C', where they are assigned nominative Case. Interrogative subjects subsequently move to SPEC-CP, the operator-position. Due to its A'-status, the nominative Case-position can never serve as a variable. The effect is that the interrogative subject is unable to bind a variable and, as a consequence, sentences like (2) are excluded through the ban on vacuous quantification. This analysis is, however, too powerful, since the combination interrogative subject-subject clitic does exist:

- (4)
- a    Combien de linguistes jouent-ils aux échecs?  
      how many linguists play they (cl) chess?
  - b    Quels auteurs ont-ils écrit des romans de science-fiction?  
      which authors have-they (cl) written novels of science  
      fiction?
  - c    Qui d'entre vous joue-t-il aux échecs?  
      who among you plays he (cl) chess?
- (from Obenauer, 1992)

Obenauer trying to reconcile these quite opposite facts within Rizzi & Roberts' framework believes that the ungrammaticality of (2) should indeed be attributed to vacuous quantification caused by the A'-status of the Case-position of the interrogative subject adjoined to C'. He assimilates the interrogative subjects in (4) to the lexical subjects in the 'regular' cases of complex inversion illustrated in (1). In other words, the interrogative subject does not have an operator-status. Therefore it does not need to create a variable.

This proposal cannot be correct either, because it ignores Rizzi & Roberts' central idea that the very presence of a subject clitic is a diagnostic of AgrS-to-C<sup>0</sup>, which, in its turn, is triggered by the presence of a WH-operator in SPEC-CP (cf. Rizzi 1991). The presence of the subject clitic in (4) indicates that the interrogative subject pronoun is in SPEC-CP. As a result, in (4) as well the interrogative subject heads an A'-chain and is excluded by the ban on vacuous quantification, contrary to fact. In conclusion, the grammaticality of the examples in (4) remains unexplained.

I will propose an analysis that accounts for the contrast between (2) and (4) developed within the framework of the Minimalist Program as formulated in Chomsky 1992 and consistent with ideas about phrase-structure as proposed by Kayne 1993 in his antisymmetry-model. Furthermore I will make crucial use of principles formulated in my analysis of French complex inversion in De Wind

1994. I will proceed along the following lines: section (2) is devoted to an overview of the different analyses of interrogative subjects in Standard French. In section (3), I will argue, against Rizzi & Roberts 1989, that in French complex inversion the verb only moves as far as AgrS<sup>0</sup>. In a derivation of complex inversion where no AgrS-to-C<sup>0</sup> takes place, I will subsequently analyze the way in which the WH-element and the lexical subject are checked. In section (4), it will be shown that the contrast between the sentences in (2) and those in (4) can be accounted for under the assumption that the interrogative subjects in (4) are able to A'-bind a *pro*, whereas this possibility does not exist for subjects like the ones in (2). Finally, in section (5), I will consider sentences containing an interrogative subject lacking the structure of complex inversion. I will show that in these sentences the interrogative subject checks its nominative Case-feature in the same way as subjects in French stylistic inversion, namely in SPEC-VP in overt syntax. I will present evidence from the Northern Italian dialects Fiorentino and Trentino that supports such an approach.

## 2 French interrogative subject pronouns in the literature

### 2.1. Rizzi & Roberts (1989)

In Rizzi & Roberts 1989, it is assumed that in French complex inversion the verb always moves to C<sup>0</sup> as part of a general process of I-to-C<sup>0</sup> active in interrogative contexts (in subsequent work like e.g. Rizzi 1991 and Roberts 1993 they explain I-to-C<sup>0</sup> through Rizzi's 1991 WH-criterion).

The examples in (1) show that the lexical subject in complex inversion occurs preverbally. Thus, it must have moved along with the verb to the CP. This movement is motivated by the claim that 'raising of I<sup>0</sup> to C<sup>0</sup> destroys the context in which I<sup>0</sup> assigns Case to the subject in French.' Therefore, in order to get its Case the lexical subject moves to the CP as well.

Movement of the lexical subject is regarded as an operation that adjoins the lexical subject to C'. In other words, the lexical subject in French complex inversion is in an A'-position. This fact plays a crucial role in the account of the ungrammaticality of the examples in (2). Within Rizzi & Roberts framework, the interrogative subject pronoun has to move to CP for two reasons: it has to get nominative Case and it has to move to the SPEC-CP by virtue of its WH-status. Therefore, in (2) *qui* and *lequel* first adjoin to C' and then move to SPEC-CP, the typical operator-position for WH-elements. The relevant structure is illustrated in (5):

- (5) [CP *Qui*<sub>i</sub> [C' *t*<sub>i</sub> [C<sup>0</sup> *est*<sub>j</sub> *il*<sub>i</sub>] [AgrSP *t*<sub>i</sub>' [AgrS<sup>0</sup> *t*<sub>j</sub>] [VP *t*<sub>i</sub>'' [VP [V<sup>0</sup> *t*<sub>j</sub> *venu*]]]]]

In this structure, the interrogative subject pronoun is unable to bind a variable, because none of the traces can be one: *T* does not qualify as a variable, since it is in an A-bar position. *T'* is an incorporation trace, while *t''* is in a caseless-position. They can therefore not fulfill the role of variable either. It follows that the sentence is ruled out by the ban on vacuous quantification.

In the appendix to their (1989) paper, Rizzi & Roberts admit that the C'-adjoined position can very well be analyzed as an A-position (which they consider an additional SPEC-CP rather than a position adjoined to C'), licensed by  $I^0$  in  $C^0$  on the basis of its ability to assign nominative Case. Therefore, vacuous quantification cannot be the cause of the ungrammaticality of (2). The alternative explanation is that the sentence is excluded on the basis of the requirement that the traces must be canonically head-governed. In French, canonical head-government is to the right. So, in (5) the trace is on the wrong side of AgrS in  $C^0$ . Its ungrammaticality follows immediately. In subsequent work (Rizzi 1989, 1990, 1991, Roberts 1993), the sentences in (2) are ruled out by the head-government requirement of the ECP according to which each trace has to be governed by a head within its own immediate projection:

(6)  $t$  must be governed by  $X^0$  within its immediate projection  $X'$ .

Since trace  $t$  fails to be properly head-governed by AgrS in  $C^0$ , it violates the ECP. This explanation cannot be correct either, since it also excludes the correct sentences in (4).

## 2.2. Obenauer 1992

Since the ungrammaticality of (2a) and (2b) is attributed to trace  $t$  in (5) which is in the adjoined position to C', sentences like the ones in (4) can be grammatical only, if this position is filled. This is exactly what Obenauer 1992 proposes; he assumes that the subject in these sentences moves to a position adjoined to C' and stays there. The subjects in (2a) and (2b), on the other hand, are assumed to move to SPEC-CP. The result is the configuration as illustrated in (5) which Obenauer excludes by means of the following principle put forth in his analysis in Obenauer 1985:

- (7)  $\alpha$  is a variable iff
- (i)  $\alpha = [NP e]$  or  $[QP e]$ .
  - (ii)  $\alpha$  is in an A-position or is its SPEC.
  - (iii) there is a  $\beta$  that locally A'-binds  $\alpha$ .

Following Rizzi & Roberts 1989, he assumes that  $t$  cannot serve as a licit variable, because it is in an A'-position.  $T'$  is locally A'-bound by  $t$ . It excludes the interrogative subject as its binder. Hence the ungrammaticality of (2).



It is unclear, why the interrogative subjects in (2) have to move, whereas those illustrated in (4) do not. It is even impossible to make this distinction, because the very reason why there is a postverbal subject clitic is movement of the verb to  $C^0$  which is, in its turn, triggered by WH-movement (cf. Rizzi & Roberts 1989, Rizzi 1991, Roberts 1993). This implies that also in (4) the subject moves to SPEC-CP, the typical WH-operator-position. The effect, however, is that the examples in (4) are excluded in the same way as those in (2) contrary to fact. In the next section, this problem will be dealt with.

### 3. Deriving complex inversion

#### 3.1. The structure of French complex inversion

One of the constraints that follow from Kayne's 1993 ideas about phrase-structure is that each head can only have one non-head adjoined to it. The implication for the analysis of French complex inversion is that already from a conceptual point of view the WH-element and the lexical subject in example (1) must be generated in separate projections. However, there is also another argument that strongly suggests that an approach where the WH-operator and the lexical subject have their own projection is on the right track.

The argument has to do with the function of the subject clitic as analyzed by Roberts 1993.<sup>2</sup> According to him, the function of the subject clitic is to identify SPEC-AgrSP. This cannot be done by moving the lexical subject through SPEC-AgrSP on its way to SPEC-CP, since this movement would cause an ECP-violation. So, we would get the illicit derivation for the following sentence, (which is, by the way, grammatical in French):

- (8) a Quand Jean est venu?  
 b [<sub>CP</sub>Quand [<sub>C'</sub> Jean]<sub>i</sub> [<sub>C<sup>0</sup></sub> est] [<sub>AgrSP</sub> *t<sub>i</sub>* [<sub>AgrS<sup>0</sup></sub>] [<sub>VP</sub> *t<sub>i</sub>* [<sub>VP</sub> [<sub>V<sup>0</sup></sub> venu]]]]]

The trace the subject leaves behind after movement to SPEC-CP fails to meet the proper head-government requirement as formulated in (6). The only head capable of properly head-governing the trace of the subject is AgrS in  $C^0$ , which clearly cannot serve as a proper head-governor, since it does not govern the trace within **its own immediate projection**. In order to save the sentence, a subject-clitic is introduced in SPEC-AgrSP.

In Rizzi & Roberts' theory, and in subsequent elaborations, the subject clitic incorporates from SPEC-AgrSP into the verb in  $C^0$ . This process is meant to provide the clitic with a Case-feature necessary for reasons of PF-visibility. Hulk 1992 points out that the subject clitic recreates, after cliticization, the problem it is supposed to avoid, i.e. the trace the subject clitic leaves behind after incorporation also

causes a violation of the head-government requirement of the ECP. This becomes clear, when we compare (9b), the structure of (9a) to (8b) the structure corresponding to (8a):

- (9) a Quand Jean est-il venu?  
 b [<sub>CP</sub> Quand [<sub>CP</sub> Jean [<sub>C0</sub> *est-il*<sub>i</sub>] [<sub>AgrSP</sub> *t<sub>i</sub>* [<sub>AgrS0</sub>] [<sub>VP</sub> [<sub>V0</sub> *venu*] [<sub>t<sub>j</sub>]]]]]]]</sub>

The conclusion therefore must be that in an analysis where AgrS-to-C<sup>0</sup> takes place, there can be no licit trace in SPEC-AgrSP. Since a trace is inevitable in French complex inversion, because of the cliticization of the subject clitic, an analysis where AgrS is assumed to move to C<sup>0</sup> can never lead to a licit representation of cases of complex inversion. A grammatical derivation can be obtained only, if the verb moves as far as AgrS<sup>0</sup>. Under such an approach, the lexical subject does not have to move to SPEC-CP and, more importantly, we can do away with the assumption that movement of AgrS destroys its relationship with SPEC-AgrSP. This claim is implausible, because it only seems to hold for French.

In conclusion, an analysis consistent with Kayne's 1993 ideas about phrase-structure and leading to a correct derivation of French complex inversion is the one where the WH-element moves to SPEC-CP and where the lexical subject as well as the verb wind up in AgrSP.

The subject clitic then has to be in the SPEC-position of a projection below AgrSP. This could be SPEC-TP. However, since the subject clitic is a typical agreement-element, I assume that it is also generated in an AgrS-projection.<sup>3</sup> Therefore, for the representation of the lexical subject and the subject clitic I adopt the double AgrS-projection proposed by Roberts 1992 for the Northern Italian dialects and the French dialect Franco-Provençal Valdostain. We get structure (10b) for (10a) (see next page):

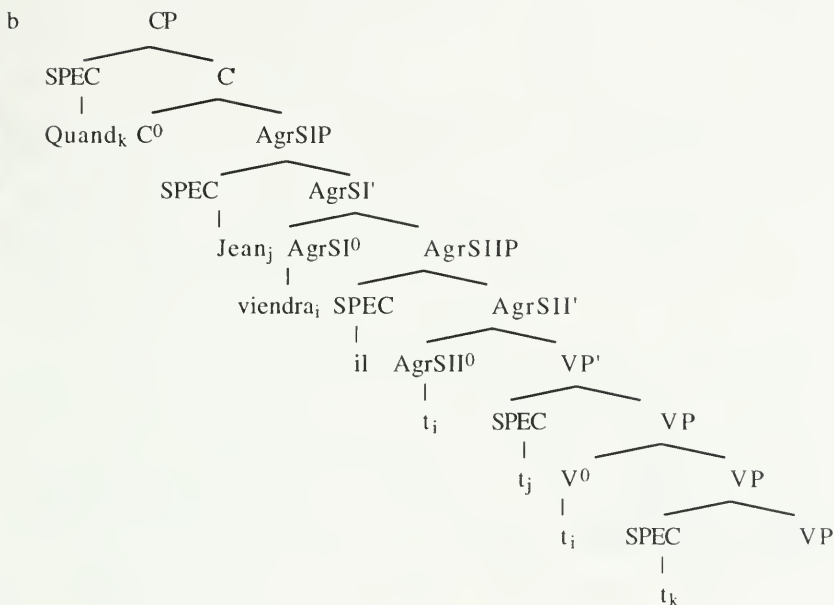
### 3.2. Licensing mechanisms in French complex inversion

Within structure (10), the subject clitic cannot be analyzed as an element that is meant to prevent an ECP-violation, because there is not one. In my (1994) analysis of complex inversion, I assume that the presence of the subject clitic is the result of a strict constraint on the checking relation between a head and its specifier. This constraint is defined as follows:

- (11) Each functional head can only license one specifier overtly and one specifier covertly.

In the Minimalist Program overt movement is triggered by the need to check and eliminate strong features of functional heads. Thus,

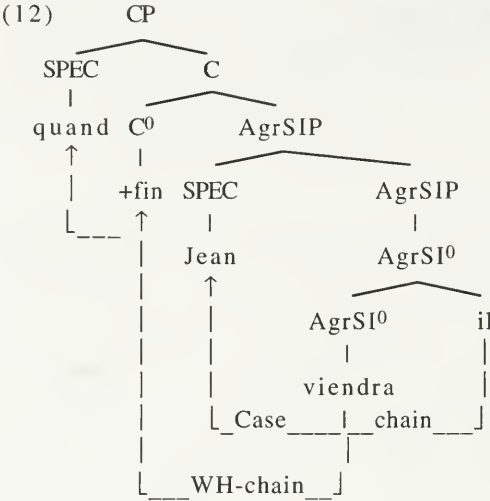
- (10) a Quand Jean viendra-t-il?  
when Jean will-come he?



overt movement of the WH-operator suggests checking of a strong WH-feature on a functional head. Following Rizzi 1991, I assume that the WH-feature of the head is located in Tense. Following Chomsky 1992, I assume that the nominative Case-feature is also in Tense. Since the verb carries Tense to AgrSI<sup>0</sup>, the WH-feature and the nominative Case-feature will wind up in this functional head. It, therefore, seems that the WH-element and the lexical subject will check their WH- and Case-feature against AgrSI.

The problem, however, is that AgrSI can only check one specifier in overt syntax. I assume that AgrSI checks the WH-feature in a non-local way via a chain with C<sup>0</sup> formed on the basis of the finiteness-features both heads share (cf. Drijkoningen 1990 for a similar approach). This checking-mechanism is illustrated below.

AgrSI is unable to check the nominative Case-feature of the subject. It needs help and help is provided by the subject clitic that for this reason cliticizes onto AgrS, inherits the Case-feature under agreement and then mediates it to the subject.<sup>4</sup> This checking-relation is also illustrated in (12):



Now we know how the WH-feature and the Case-feature are checked in French complex inversion, we turn to the checking-mechanisms in the 'special' cases of complex inversion, i.e. those involving an interrogative subject pronoun.

**4 Checking interrogative subjects in French complex inversion**

This section is devoted to the account of checking-mechanisms in cases of complex inversion involving an interrogative subject. Examples of this type of construction were illustrated in (4). They are repeated below:

- (13) a Combien de linguistes jouent-ils aux échecs?  
how many linguists play they (cl) chess?
- b Quels auteurs ont-ils écrit des romans de science-fiction?  
      which authors have-they (cl) written novels of science fiction?
- c Qui d'entre vous joue-t-il aux échecs?  
      who among you plays he (cl) chess?

Given the fact that the interrogative subjects in (13) carry the WH-feature as well as the Case-feature, it is unclear, whether their movement is triggered by the need to check both features or only one feature overtly; an explanation in terms of overt Case-checking and covert WH-checking is not implausible, for covert WH-checking in Standard French root-sentences is quite common as the following examples of WH-in-situ show:<sup>5</sup>

- (14) Tu es parti quand?  
 you left when?  
 'When did you leave?'  
 (15) Il va où?  
 he goes where?  
 'Where does he go?'

However, there is indirect evidence suggesting that WH- and Case-checking take place in overt syntax. In section (3.2), I showed that the subject clitic is present, whenever the nominative Case- and WH-feature need to be checked overtly. Therefore, on the basis of the presence of the subject clitic, we can draw the conclusion that interrogative subject pronouns in complex inversion check their Case-feature **and** their WH-feature in overt syntax.

How do the two checking processes take place? One possibility could be movement to SPEC-AgrSIP, where the Case-feature is checked against the subject clitic and subsequent raising to SPEC-CP where the WH-feature is checked. C<sup>0</sup> turns into a proper head-governor under agreement, so that the trace of the subject can satisfy the ECP.

Rizzi & Roberts 1989 and Friedemann 1991 propose a similar derivation for sentences like (3a) and (3b), repeated here as (16a) and (16b):

- (16) a Qui est venu?  
 Who is come?  
 b Lequel est le plus intéressant?  
 Which one is the most interesting?

In these examples, the subject checks its Case in SPEC-AgrSP (SPEC-IP in their analyses), then moves to SPEC-CP where it checks its WH-feature and turns the empty C<sup>0</sup> into a proper head-governor under agreement like interrogative pronouns in English do (cf. Rizzi 1989):

- (17) a Qui est parti?  
 who is left?  
 b [CP Qui<sub>i</sub> [C<sup>0</sup>] [AgrSP t<sub>i</sub> [AgrS<sup>0</sup> est] [VP parti]]]  
 (18) a Who has left?  
 b [CP Who<sub>i</sub> [C<sup>0</sup>] [AgrSP t<sub>i</sub> left]]

A similar account for (19a) would yield the structure in (19b):

- (19) a Qui d'entre vous joue-t-il aux échecs?  
 who among you plays he (cl) chess?  
 b [CP Qui d'entre vous<sub>i</sub> [C<sup>0</sup>] [AgrSP t<sub>i</sub> [AgrS<sup>0</sup> joue-t-il] [VP aux échecs]]

However, if Standard French and English pattern alike with respect to the ability of turning the empty root- $C^0$  into a proper head-governor, it is quite natural to expect this similarity to show up in embedded sentences as well. This expectation is not fulfilled however:

- (20) \*Qui crois tu est venu?  
 who think you is come?  
 (21) \*Qui crois tu a fait ça?  
 who think you has done that?

Whereas in English, an empty embedded  $C^0$  is able to assume the role of proper head-governor, this seems to be impossible in French. The ungrammatical examples from French can only be rescued by introducing a lexical complementizer agreeing with the interrogative subject pronoun:

- (22) Qui crois-tu qui est venu?  
 who think you that is come?  
 (23) Qui crois tu qui a fait ça?  
 who think you that has done that?

So, it turns out that contrary to English, French appears to need a lexicalized agreeing  $C^0$ , in order to get a trace in SPEC-AgrSP properly head-governed. This phenomenon, commonly referred to as the *que/qui* alternation, suggests that in French an empty  $C^0$  is unable to fulfill the role of proper head-governor.

If it is true that  $C^0$  cannot be a proper head-governor, when it contains Agr $S^0$  (cf. section 3.1) or when it is empty, there can be no movement of the interrogative subject through SPEC-AgrSIP. The conclusion then must be that the interrogative subject either moves to SPEC-AgrSIP and stays there, or moves directly to SPEC-CP, thereby skipping SPEC-AgrSIP.

The first option implies overt checking of the WH- and the Case-feature in SPEC-AgrSIP. This approach has to be discarded immediately because the SPEC-AgrSIP cannot be an operator-position and a Case-position simultaneously.

The remaining possibility is the derivation where the interrogative subject moves directly to SPEC-CP. There it checks its WH-feature. The problem now is Case-checking which clearly has to be realized in a way other than movement.

Cinque 1990 claims that elements that qualify as operators, sometimes A'-bind a *pro* instead of a variable. A'-binding of a *pro* is only allowed, if the conditions on *pro*-licensing as formulated in Rizzi 1986 are met:

- (24) *pro*-licensing  
 a *pro* is Case-marked by  $X^0_y$  (formal licensing)



- b Let X be the licensing Head of an occurrence of *pro*: then *pro* has the grammatical specification of the features on X coindexed with it (formal identification)

Given the fact that *pro*-elements are the non-lexicalized counterparts of NPs, the effect of condition (24a) is that A'-bound *pro*'s are restricted to Case-marked NP positions. Their feature-content is assumed to be identified by their antecedent.

Cinque observes that the ability of binding a *pro* turns out to be a privilege of operators. He assumes, following Chomsky 1981, that only bare-quantifiers, WH-phrases and null NPs in SPEC-CP can act as an operator. As a consequence, a bindings-relation with a *pro* is restricted to these elements.

Under Cinque's approach, variables can be considered as the result of movement of operators through or from a Case-position, whereas A'-bound *pro*'s can be viewed as base-generated variables.

Above we reached the conclusion that the only viable derivation for interrogative subjects in complex inversion is the one where they move directly to SPEC-CP thereby skipping SPEC-AgrSIP. The result is a representation where the subject can only check its Case-feature through a bindings-relation with a *pro* in SPEC-AgrSIP. This position turns out to be the ideal setting for *pro*, since it satisfies both the formal licensing condition as well as the formal identification condition defined in (24) through the subject clitic, that bears the nominative Case-feature and has  $\phi$ -features 'rich' enough to identify the content of *pro*. Furthermore, the interrogative subject being a WH-phrase in SPEC-CP qualifies as an operator and can therefore be a licit A'-binder for the *pro*-element in SPEC-AgrSIP. In conclusion, the establishment of an A'-chain between the interrogative subject and a *pro* is unproblematic.

Once formally licensed and identified, the *pro*-element in SPEC-AgrSIP has to be connected with the lexical subject. It can be connected, if the result is a licit chain. This requirement is satisfied, because introduction *pro* in the chain formed by the interrogative subject and its base-position yields a licit A'-chain consisting of a WH-operator, an A'-bound *pro* and the base-position of the operator. As a result, the structure of the sentences illustrated in (13) is as follows:

- (25) [CP *qui*<sub>i</sub> *d'entre vous* [C<sub>0</sub>] [AgrSIP *pro*<sub>i</sub> [AgrSIO *joue*<sub>j</sub>-t-il<sub>k</sub>] [AgrSIP t<sub>k</sub> [AgrSIO t<sub>j</sub>] [VP' t<sub>i</sub> [VP [V<sub>0</sub> t<sub>j</sub> aux échecs]]]]]]
- (26) [CP *Combien*<sub>i</sub> *de linguistes* [C<sub>0</sub>] [AgrSIP *pro*<sub>i</sub> [AgrSIO *jouent*<sub>j</sub>-ils<sub>k</sub>] [[AgrSIP t<sub>k</sub> [AgrSIO t<sub>j</sub>] [VP'ti [V<sub>0</sub> t<sub>j</sub> aux échecs]]]]]]
- (27) [CP *Quels auteurs*<sub>i</sub> [C<sub>0</sub>] [AgrSIP *pro*<sub>i</sub> [AgrSIO *ont*<sub>j</sub>-ils<sub>k</sub>] [[AgrSIP t<sub>k</sub> [AgrSIO t<sub>j</sub>] [VP'ti [V<sub>0</sub> t<sub>j</sub> écrit des romans de science-fiction]]]]]]

As soon as *pro* enters the chain, it will share the theta-role of the interrogative subject. The result is that it will be a personal *pro* and such elements are known to have referential content. Therefore, integration of the *pro*-element in the A'-chains in (25)-(27) is only allowed, if the interrogative subject has referential properties. This very fact explains why complex inversion is possible in (13) but not in (28):

- (28) a \*Qui est-il venu?  
 who is he (cl) come?  
 b \*Lequel est-il le plus intéressant?  
 which one is it (cl) the most interesting

In (13), the interrogative subjects are specific or, in Pesetsky's 1987 terms, D-linked, whereas in (28) the subjects do not express any referential value and, as a consequence, they are incompatible with *pro*.

There is evidence from other languages confirming the hypothesis that specificity is a prerequisite for doubling of constituents having the status of an operator by an empty or, if possible, by a lexically realized element (a resumptive pronoun).

Cinque 1990 shows that not all types of operators are able to license a *pro*. This is shown by constructions containing parasitic gaps which Cinque analyzes as A'-bound *pro*-elements:

- (29) ?Quali libri hai preso *t* senza pagare *e*?  
 which books have you taken without paying?  
 (30) a \*Qualcosa ho fatto *t* anch'io pur senza finire *e*.  
 something I did too even without finishing  
 b \*Qualcuno forse licenzieranno *t* dopo aver assunto *e*.  
 someone perhaps they will fire after having employed

On the basis of the contrast between (29) and (30), he reaches the conclusion I derived from the contrast between (13) and (28), namely that an A'-bound *pro* can only be licensed, if the binder is D-linked (Cinque 1990:118).

Zwart 1993 observes that in Dutch topicalized quantifiers can only be doubled by the so-called D-word *die*, if they are specific. It explains the difference between (31) and (32), on the one hand, where the topicalized quantifiers are clearly non-specific, and (33) through (35), on the other, which contain D-linked quantifiers:

- Dutch* (Zwart (1993:259,261))  
 (31) \*Iedereen die ken ik.  
 Everyone that I knew.  
 "Everyone, I know"  
 (32) \*Iedereen die is sterfelijk.  
 everyone that is mortal  
 "Everyone (all human beings) is mortal"

- (33) Alle sprekers die ken ik.  
All speakers that knew I  
"I knew all speakers"
- (34) Iedereen in de tuin die kende ik.  
everyone in the garden knew I  
"I knew everyone in the garden"
- (35) Iedereen die was er.  
everyone that was there  
"Everyone (who was supposed to be there) was present"

In Modern Greek, lexically selected WH-words can, under normal circumstances, only occur with postverbal subjects. Generation of the subject in preverbal position leads to ungrammaticality:

*Modern Greek (Anagnostopoulou (1993:2))*

- (36) a \*Pjon o Petros idhe?  
whom(Acc) the Peter (Nom) saw-3sg?
- b Pjon idhe o Petros?  
whom (acc) saw-3sg the Peter (Nom)  
"who did Peter see?"

Anagnostopoulou 1993 attributes the ungrammaticality of sentences like (36a) to the fact that preverbal subject being a topic constitutes a barrier to WH-movement. However, in some cases WH-arguments that clearly must bind a position in the VP can occur with a preverbal subject. If it is true that preverbal subjects constitute a barrier for WH-movement, the grammaticality of such cases can only be explained under the assumption that the WH-constituent has been base-generated in SPEC-CP. From this position it necessarily A'-binds a *pro*. If it is true that only D-linked operators are able to A'-bind a *pro*, it is expected that the occurrence with preverbal subjects is restricted to these types of operators. This expectation is fulfilled:

*Anagnostopoulou (1993:3,11)*

- (37) \*\*Pjon sto diavolo i dhaskala malose  
Whom to-the devil the teacher scolded?  
'Who the hell did the teacher scold?'
- (38) Pjo provlimaj o Petros elise tj monos tu?  
Which problem<sub>j</sub> (acc) the Peter (Nom) solved-3sg e<sub>j</sub> on his own?

Non-specific WH-elements appear not to be able to A'-bind a small *pro*. It explains why (37) containing a WH-object, that is clearly non-specific, is ungrammatical, whereas (38) where the subject is specific and can therefore A'-bind a small *pro* is grammatical.

In this section, I have shown that the contrast between (13) and (28) can be explained through the assumption that in the former but not in the latter the subject is able to check its Case-feature through

a *pro* in SPEC-AgrSIP, formally licensed and identified by the subject clitic. The impossibility of connecting the subject in (28) to the *pro* in SPEC-AgrSIP is due to the requirement that the binder of the *pro*-element must have referential properties. In (13) where the subject is specific or, in Pesetsky's 1987 terms, D-linked, this requirement is met, but not in (28). Hence their difference in grammaticality. As shown by evidence from Italian, Dutch and Modern Greek, reported by Cinque 1990, Zwart 1993 and Anagnostopoulou 1993, respectively, the requirement on operators imposed by A'-bound *pro*'s seems to hold cross-linguistically.

We will conclude the account of checking-mechanisms related to interrogative subjects in French with the analysis of the correct counterparts of (28). This analysis is presented in the next section.

### 5 Checking interrogative subjects in constructions lacking the structure of complex inversion

Whereas only D-linked interrogative subjects are allowed to appear in complex inversion, no such restrictions apply to interrogative subjects in 'regular' WH-constructions illustrated below:

- (39) a Qui est venu?  
Who is come?  
b Lequel est le plus intéressant?  
Which one is the most interesting?
- (40) a Combien de linguistes jouent aux échecs?  
how many linguists play chess?  
b Qui d'entre vous joue aux échecs?  
who among you plays chess?

The constraint defined in (11) that each functional head can only license one specifier overtly and one specifier covertly might lead to the conclusion that the subjects in (39) and (40) check their Case-feature, that I assume to be invariably strong, in overt syntax and their WH-feature in covert syntax. This option is not unattractive given the fact, already noted in the previous section, that WH-in-situ is wide-spread in French (cf. (14) and (15)). However, we showed that in French a trace in SPEC-AgrSP is impossible, because an empty C<sup>0</sup> nor a C<sup>0</sup> containing AgrS can be a proper head-governor (see section (3.1) and (4) for discussion). Under the assumption that the ECP also holds at LF, the derivation, where the subject checks its Case overtly in SPEC-AgrSP and its WH-feature covertly in SPEC-CP, leads to ungrammaticality, since LF-raising to SPEC-CP of the subject creates a trace in SPEC-AgrSP that fails to be properly head-governed.

How can nominative Case-checking be realized in (39) and (40), if it is excluded in SPEC-AgrSP? I assume that the subjects in (39) and (40) check their Case in the same way as subjects in stylistic in-

version. In French stylistic inversion, the subject, which is always lexical, occurs in sentence-final position:

- (41) Quand a téléphoné Marie?  
when is left Marie?
- (42) Qu'a fait Jean?  
what has done Jean?

Given the fact that postverbal subjects in French are only allowed in a restricted set of constructions, it is hardly plausible that the Case-feature of the subject, which is strong otherwise, is suddenly weak in stylistic inversion (unless we allow for the possibility that syntactic processes influence a strong feature in such a way that it turns into a weak feature. This interesting possibility should be looked into, since it preserves the insight that all checking-processes take place in the functional domain). Instead, I assume that in French subjects can check their Case-feature in SPEC-VP. This checking operation can be viewed as an alternative to checking in SPEC-AgrSP. It is used, whenever SPEC-AgrSP is unavailable. In stylistic inversion the unavailability of SPEC-AgrSP is due to principle (11). Because of this principle, AgrS can only license one specifier overtly. As it already licenses the WH-feature, overt Case-checking is excluded. The effect is that the Case-feature percolates down to the position of V, where it is checked against the Case-feature of the subject in SPEC-VP.

In (39) and (40), the Case-feature of the subject is checked in exactly the same way: Overt checking in SPEC-AgrSP is not allowed, because AgrS already checks the WH-feature. As a consequence, the Case-feature percolates down to  $V^0$ , where it is checked against the Case-feature of the subject in SPEC-VP. The result is a representation where an A'-chain is formed between the subject and its base-position in SPEC-VP. Some plausibility for this representation can be derived from A'-chain formation in the Northern Italian dialects Fiorentino and Trentino.

Most, if not all of the Northern Italian dialects are known to have subject clitics that require strictly local agreement (cf. Hulk 1986, Brandi & Cordin 1989, De Wind 1993) i.e. the subject clitics only show agreement, when the subject appears in their local domain. This property explains why in the examples from Fiorentino and Trentino, illustrated below, subject clitics only show personal agreement in sentences with a preverbal subject. In the case of postverbal subjects, personal agreement leads to ungrammaticality:

*Fiorentino (Brandi & Cordin 1989:113)*

- (43) a Mario e parla.  
Mario he speaks

b *Trentino*  
 El Mario el parla  
 the Mario he speaks  
*Brandi & Cordin (1989:122)*

(44) a \*Le hanno telefonato delle ragazze.(F)

b \*L'ha telefoná qualche putela. (T)  
 they have telephoned some girls  
 "Some girls telephoned"

A sentence with a subject in sentence-final position can be grammatical only, if the subject clitic is an impersonal one, or simply absent:

(45) a Gl'ha telefonato delle ragazze (F)

b Ha telefoná qualche putela (T)  
 (it) has telephoned some girls  
 "Some girls telephoned"

Sentences with an interrogative subject display the same behaviour with respect to personal agreement as those with a postverbal subject, as (46) and (47) show:

*Brandi & Cordin (1989:124,125)*

(46) a Quante ragazze gli ha parlato con te? (F)

b Quante putele ha parlá con ti? (T)  
 How many girls (it) has spoken to you?

(47) a \*Quante ragazze le hanno parlato con te? (F)

b \*Quante putele le ha parlá con ti? (T)  
 How many girls **they** have spoken to you?

The absence of personal agreement shows that interrogative subjects cannot have been moved through SPEC-AgrSP. Therefore, the interrogative subject must bind a variable elsewhere. The most eligible candidate is SPEC-VP, its base-position.

The evidence from Fiorentino and Trentino showing that A'-chains formed between the interrogative subject and the SPEC-VP seem to exist lends support to the claim that in French interrogative subjects in constructions lacking the structure of complex inversion bind a variable in SPEC-VP.

## 6 Conclusion

The derivation of French complex inversion in a structure where AgrS moves to C<sup>0</sup> can never lead to a licit representation, because, as a result of this movement, C<sup>0</sup> cannot serve as a proper head-governor for any trace in SPEC-AgrSP. Since a trace in SPEC-AgrSP is inevitable, due to the obligatory incorporation of the subject clitic, AgrS-to-C<sup>0</sup> will always lead to an ECP-violation. A licit representation can be obtained under the assumption that the verb only moves as far as AgrS<sup>0</sup> and that the WH-element and the preverbal



subject are moved to separate projections, SPEC-CP and SPEC-AgrSP respectively. The result is a structure consistent with Kayne's 1993 requirement that each head can have only one specifier. In such a structure, the subject clitic supports overt checking of the WH- and nominative Case-feature by AgrS which contains the WH-feature and the nominative Case-feature carried along by the verb from T<sup>0</sup>, their base-position (cf. Rizzi 1991, Chomsky 1992). Under the assumption that AgrS can license only one specifier, overt checking of both the WH-element and the lexical subject by AgrS is impossible. Therefore, a subject clitic is introduced: while AgrS checks the WH-operator, the subject clitic inherits the nominative Case-feature from AgrS and checks its against the lexical subject.

Under this approach, the presence of the subject clitic can be viewed as a diagnostic for nominative Case- and WH-checking in overt syntax. This observation is relevant for the analysis of cases of complex inversion involving an interrogative subject. As the WH- and the Case-feature are both carried by one specifier it is not immediately clear, whether they both undergo overt checking. The presence of the subject clitic, however, suggests that this is indeed the case.

The nominative Case- and WH-feature of interrogative subjects in French complex inversion can not be checked in the way in which they are checked in English, i.e. through movement of the subject to the SPEC-AgrSP and subsequent raising to SPEC-CP, where C<sup>0</sup> is turned into a proper head-governor under agreement, because an empty C<sup>0</sup> in French cannot turn into a proper head-governor as shown by the *que/qui*-alternation. Checking of these features is realized by moving the interrogative subject to SPEC-CP where it checks its WH-feature, non-locally, against AgrSI and its Case-feature against the subject clitic by A'-binding a *pro* in SPEC-AgrSIP formally licensed and identified by this clitic.

*Pro* only allows for binding by a specific or D-linked operator. This restriction explains the ungrammaticality of the examples in (2) where the operator is non-specific versus the grammaticality of those in (4) containing a specific operator. As shown by e.g. Cinque 1990, Zwart 1993 and Anagnostopoulou 1993 the restriction imposed by an A'-bound *pro* on its antecedent seems to hold cross-linguistically.

Interrogative subjects in sentences lacking the structure of complex inversion check their Case in SPEC-VP just like postverbal subjects in French stylistic inversion do. Some plausibility for this checking-mechanism is derived from the Northern Italian dialects Trentino and Fiorentino, which clearly show that Case-checking in SPEC-VP is the only alternative for interrogative subjects.

In short, interrogative subjects in French check their Case either in SPEC-VP or via a *pro* in SPEC-AgrSP. The first way of Case-checking is accessible to all types interrogative subjects. The second possibility is only available to D-linked interrogative subjects.

### NOTES

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<sup>2</sup> In Rizzi & Roberts' 1989 analysis, the function of the subject clitic is not taken into consideration. Roberts 1993 elaborating on this model tries to account for the presence of this element.

<sup>3</sup> The agreement-relation between the subject clitic and AgrS is clearly shown by the following example from Kayne 1984:

- (i) Quand Jean et moi devrait-on partir tout de suite.  
when Jean and me should we leave immediately?

In (i), the verb agrees with the subject clitic and not with the lexical subject. Given this fact, it is hard to defend base-generation of the clitic in SPEC-TP.

<sup>4</sup> I assume that the subject clitic adjoins to the right of the verb in AgrSI. In Kayne 1993, clitics invariably adjoin to the left and, furthermore, adjunction to verbs is excluded by the condition on asymmetric C-command. Due to space-limitations, I am not able to discuss this problem.

<sup>5</sup> Since Sportiche 1988, when it became widely accepted that subjects are base-generated in SPEC-VP, the notion WH-in-situ is a misnomer as far as interrogative subjects are concerned. Contrary to the WH-elements in (14) and (15), the interrogative subject has undergone movement to SPEC-AgrSP. Still, I will continue to refer to such cases as WH-in-situ. It does not mean freezing of a constituent in its base-position, but rather that no movement to CP takes place.

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## CLITICS AND ISLAND-INSENSITIVE OBJECT DROP\*

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Null object constructions in many languages have been analyzed as involving movement of a null topic operator. This paper examines Greek, Bulgarian, Quicheño Spanish and Brazilian Portuguese, in which definite or indefinite object drop fails to show evidence of such movement. All four languages show gaps in their clitic pronoun paradigm and a certain "exceptional" form of clitic left dislocation corresponding to the type of objects, definite or indefinite, that may be dropped. I argue that these languages show evidence of having phonetically null "clitic-like" pronominals, which make possible a unified, maximally simple account of the phenomena examined here.

### 1. Introduction

Since Huang's (1984) analysis of null objects in Chinese, null object constructions in many languages have been analyzed as operator-variable constructions, in which a null topic operator raises to verb-complement position, leaving behind a trace that serves as the variable it binds. Raposo (1986) adopts Huang's analysis for European Portuguese, also an object-drop language, and Campos (1986) proposes the same analysis for Spanish, in which only indefinite objects may be dropped. A major source of support for such analyses is the sensitivity of object drop to island effects.

However, a number of languages exhibit object drop that is insensitive to island constraints. (cf. Farrell (1990), Kato (1993) for Brazilian Portuguese, Suñer & Yépez (1988) for Quicheño Spanish). I will show below that indefinite object drop in modern Greek and Bulgarian is likewise insensitive to islands. In such cases a topic operator analysis is unmotivated (and is indeed rejected by the aforementioned authors).

In this squib, I argue that Greek and Bulgarian show evidence of having phonetically null indefinite "special" object pronominals (meaning null, clitic-like indefinite pronominals). This claim is motivated by the similarity of a number of constructions involving indefinites to certain constructions involving cliticized definites. As I will show, it provides a maximally simple account of island-insensitive indefinite object drop (which under this account is not object drop at all, but rather cliticization by a null clitic), and of certain constructions involving left-adjoined indefinite objects that I will refer to as "exceptional" *clitic-left-dislocation* (ECLLD). I will show that such an

analysis is superior to a null topic analysis in the style of Huang (1984), or to an analysis stipulating that *pro* (or an equivalent empty category) can be licensed as an indefinite object.

An equivalent analysis is proposed for Brazilian Portuguese and Quiteño Spanish, which I analyze as having *definite* null special pronominals.<sup>1</sup> This analysis predicts a number of surprising properties of these two languages, although it fails to explain the apparent sensitivity of null definite objects to Principle C effects.

In the next section, I explain the typological assumptions that allow me to speak of null "clitic-like" elements. Section 2 is a summary of Dimitriadis (1994); it reviews briefly the pattern of ECLLD and IOD in Greek, from which it is concluded that ECLLD is demonstrably a subclass of CLLD, and that the null variable involved can only be a null special pronominal; and likewise that IOD in Greek (but not in all IOD languages) behaves as the indefinite counterpart of cliticization, rather than as a form of topicalization.

In section 3 I show that Bulgarian, which has island-insensitive IOD like Greek, also exhibits ECLLD, as expected if Bulgarian has null indefinite special pronominals.

The plausibility of this analysis is bolstered by its extension to cases of island-insensitive definite object drop, in particular to Brazilian Portuguese and Quiteño Spanish, discussed in the remaining sections. Both languages have gaps in their definite clitic paradigms that correspond to the types of objects that can be dropped; moreover, both languages allow *definite* objects to enter in ECLLD constructions, just as would be expected of languages with null definite "clitics."

Thus we have evidence for the same cluster of properties in all cases:

- (1) a. A language allows a certain class of null objects (definite or indefinite) inside islands, rendering a null-topic analysis inappropriate.
- b. The language always turns out to lack clitic pronoun forms (overt special pronominals) that could be construed with the class of objects that can be dropped; hence there is a gap in the special pronominal paradigm, which can be occupied by the posed null clitics.
- c. The same class of objects can enter in ECLLD constructions.

The languages that have IOD in islands lack indefinite clitics and have ECLLD of indefinites, while the languages that have island-insensitive full object drop have lost the relevant definite object clitics and allow ECLLD of definite objects. The persistence of this pattern irrespective of the definiteness of the allowable null objects supports the contention that the phenomena in question are related.



### 1.1. Special clitics and special pronominals

Given the inherently phonological nature of clitics, the notion of a null counterpart to a clitic pronoun appears to be not only unprincipled, but a contradiction in terms. In this section I will attempt to address these objections and clarify the relation of null clitics to licensing mechanisms and to the empty category paradigm.

Part of the problem, I believe, is the use of the term "clitic" to describe a phonological as well as a syntactic notion. Within the class of clitics it is traditional to distinguish the class of "special clitics," which are characterized, for example, by appearing in syntactically restricted positions, as opposed to "simple" clitics such as the cliticized pronouns in English. (cf. Wanner (1978)). I assume that (some) such clitics comprise a distinct grammatical category, for which I have coined the name "special pronominals."

Traditional Greek grammar recognizes clitic pronouns as a distinct subclass of pronouns; elsewhere they are described as "non-tonic object pronouns." I chose the term "special pronominals" as a typological generalization of the notion of special clitics, and I use it explicitly to refer to the syntactic properties of the class in question *without* reference to its phonological properties. Suppose one were studying Greek (or any Romance language) in its written form only, without any knowledge of its phonology: there would still be a clearly recognizable *syntactic* class of pronominals that must always immediately precede or follow a verb, can (in some languages) enter in doubling constructions, etc. It is this class, so construed, that I intend the term "special pronominals" to describe.<sup>2</sup> This is not a deep claim: I am merely providing a name for what I consider to be an obvious, and long recognized, natural syntactic class, whatever its formal status.

It is true that all known members of this class, however defined, are overt, and that they are obligatorily cliticized. But it does not follow that these are *necessary* properties of the class of special pronominals. Certainly they would be if the *overt* identification of a grammatical relation is taken to be an essential property of this class;<sup>3</sup> but this is a theory-internal matter, not a pretheoretical given, certainly not a matter that should be settled by definition.

For reasons of consistency with established usage, I will continue to refer to "clitic pronouns", and sometimes even to "null clitics;" but it should be borne in mind that the null entities I propose belong to the paradigm of the syntactic class that contains pronominal clitics, and need not have all the properties associated with the term "clitic."

## 2. Null pronominals in Modern Greek

### 2.1. Exceptional CLLD

Clitic Left Dislocation (CLLD), recently studied by Cinque (1990) and Iatridou (forthcoming), typically involves a left-dislocated element coindexed with a clitic, as in the following example from Greek.

- (2) To vivlio i Maria to efere.  
 the book/Acc the Maria/Nom CL brought  
 'Mary brought the book.'

Although CLLD superficially resembles the left dislocation of a clitic-doubled element, it has been established that it is a distinct phenomenon, present in languages that prohibit clitic doubling (such as Italian), and appropriate in contexts incompatible with left dislocation.

Iatridou (forthcoming) argues that the preposed object in (3b) is base-generated in that position, and presents several diagnostics that differentiate it from ordinary left dislocation (LD) of an object. The first diagnostic is that a CLLD'ed object is old information, and need not be stressed, while an ordinary left-dislocated object *must* be stressed. Thus (3b), but not (3c), is an appropriate (unstressed) answer to (3a).

- (3) a. Pios agorase to palto?  
 who bought the coat  
 b. To palto o Costas to agorase. (CLLD)  
 the coat the Costas CL bought  
 'Costas bought the coat.'  
 c. # **To palto** o Costas agorase. (LD)  
 the coat the Costas bought  
 'Costas bought **the coat**.'

By this diagnostic, (4b) must be a CLLD construction, since it is an appropriate answer to (4a): Left-adjoined indefinites in Greek can be interpreted like CLLD'ed definite NPs.

- (4) a. Pios agorase palto?  
 who bought coat  
 'Who bought a coat?'  
 b. Palto o Costas agorase. (CLLD-like)  
 coat the Costas bought  
 'Costas bought a coat.'

We have here a left dislocation construction, in the absence of an overt clitic, in which the adjoined *nominal* element is old information. I examined this construction at some length in Dimitriadis (1994), concluding on the basis of several tests that it is indeed a form of CLLD. I call such "clitic-less nominal CLLD" constructions "exceptional CLLD," or ECLLD; when necessary I will refer to CLLD with a visible clitic as "overt CLLD." Although the presence of a clitic is not conceptually necessary to a CLLD construction,<sup>4</sup> I argued in Dimitriadis

(1994) that the semantic variable involved in ECLLD has construal and distributional properties that are identical to those expected of an indefinite clitic pronoun (except for the fact that it lacks phonological content), and are incompatible with those expected of object *pro*.

The null special pronoun analysis, of course, claims that there is nothing "exceptional" about ECLLD, aside from involving a non-overt special pronominal instead of an overt one (i.e., instead of a clitic pronoun). As (3c) indicates, Greek only allows indefinites to appear in ECLLD constructions.<sup>5</sup>

## 2.2. Object drop as cliticization

In this section I examine Indefinite Object Drop (IOD) in Greek, which as noted is insensitive to islands. For this reason an analysis in the style of Huang (1984) must be rejected, while an analysis in terms of null special pronominals accounts for IOD by assimilating it to cliticization.

Greek does not in general allow direct objects to be dropped, although of course they may be omitted if a clitic is present.

- (5) Q Foras to palto sou?  
       you-wear the coat your  
       'Are you wearing your coat?'  
 A: \*(To) forao.  
     CL I-wear

However, an indefinite NP may be omitted without a (visible) clitic being present. (In fact, a clitic may not in general appear in place of an indefinite).

- (6) Q Foras palto?  
       you-wear coat  
       'Are you wearing a coat?'  
 A: (\*To) forao.  
     CL I-wear  
     'I am wearing [one].'

If the indefinite sentences may contain an invisible counterpart to the clitic pronoun, then IOD is simply assimilated to cliticization, requiring no additional devices.

Campos (1986) presents five diagnostics demonstrating that indefinite object drop in Spanish obeys the constraints associated with movement. It is indicative of the differences in the superficially similar object drop paradigms of the two languages that Greek behaves differently from Spanish with respect to all five diagnostics. For example the sentences in (7), (8) show that in Greek, but not in Spanish, object drop is insensitive to the Sentential Subject Constraint, and the Adjunct Island Constraint, respectively. Both are otherwise present in both languages. (Spanish examples are from Campos (1986)).

- (7) a. Q Pepe necesita gafas? (Sentential Subject)  
'Does Pepe need glasses?'  
A: \* Que necesita es obvio.  
'That he needs (them) is obvious.'  
Q O Costas chriazete gاليا?  
the Costas needs glasses  
A: To oti chriazete ine profanes.  
the that he-needs is obvious  
'That he needs (them) is obvious.'
- (8) a. Q Encontraron entradas para la película? (Adjunct)  
'Did you find tickets for the movie?'  
A: \* Sí, pudimos entrar al cine porque encontramos.  
'Yes, we were able to go into the cinema because  
we found (some).'
- b. Q Vrikate isitiria gia tin tenia?  
you-find tickets for the film?  
A: Ne, boresame ke bikame giati vrikame.  
yes, we-could and entered because we-found  
'Yes, we were able to enter because we found (some).'

On the basis of the sensitivity to islands of Spanish IOD, Campos (1986) argues for an analysis involving movement from verb-complement position of a null topic operator (cf. Huang (1984)). The insensitivity of Greek IOD to islands establishes that a similar analysis of Greek IOD would be inappropriate. The null-clitic analysis, on the other hand, naturally predicts that IOD would be insensitive to syntactic islands.

There is another benefit to this approach: It is not clear, under Campos's system, why Spanish only allows indefinite objects to be dropped; the restriction of the null topic operator to such objects must be stated independently. Since indefinite "clitics" are by their nature restricted to non-specific objects, an analysis along the lines I propose is automatically inapplicable to definite objects. Moreover, we would expect that the objects that can be dropped are exactly those that cannot be cliticized by an overt clitic. As the following section establishes, this indeed appears to be the case in Greek.

### 2.3. The distribution of ECLLD and IOD

A prediction of the claim that null special pronominals are involved in IOD and ECLLD is that the distribution of the two constructions will be consistent, i.e., that all and only the objects that can object-drop should appear in ECLLD constructions. This is not logically necessary: CLLD has special properties that distinguish it from ordinary cliticization or clitic doubling. For example, Italian does not allow ordinary clitic doubling, but allows CLLD.

In Greek, nevertheless, the choice between the definite (overt) and indefinite (null) variant appears to be made on the basis of the same criteria for CLLD and ordinary cliticization. Those objects that

can be dropped cannot be cliticized, and vice versa; and those objects that can undergo ECLLD cannot undergo overt CLLD, and vice versa. In fact one property determines the other, i.e., the objects that undergo IOD also undergo ECLLD, while those that can (and must) be cliticized must also be construed with an overt clitic in CLLD constructions.

This pattern is examined in some detail in Dimitriadis (1994). The following, which will serve to illustrate the general pattern, demonstrates that this complementarity of distribution extends to non-nominal complements.

- (9) Q (To) kseris oti/pos ta skilia trone tiri? (overt clitic)  
 CL you-know that the dogs eat cheese  
 'Do you know that dogs eat cheese?'  
 a. \*(To) ksero. (\*IOC)  
 CL I-know  
 b. Oti ta skilia trone tiri \*(to) ksero. (\*ECLLD)  
 that the dogs eat cheese CL I-know  
 'I know that dogs eat cheese.'
- (10) Q (\*To) Ipes efcharisto? (\*overt clitic)  
 CL you-said thanks  
 'Did you say thanks?'  
 a. (\*To) ipa.  
 CL I-said  
 'I said it.'  
 b. Efcharisto (\*to) ipa. (ECLLD)  
 thanks CL I-said

### 3. IOD in Bulgarian

The languages of the Balkans are known to share many a subtle quirk of grammar. As mentioned above, Bulgarian has indefinite object drop and ECLLD which appear to be fully assimilable to the account given for Greek.

Consider first object drop. As in Greek, only indefinite objects can be dropped (examples (11,12)), and it is possible to do so inside islands (examples (13,14)).

- (11) Q Nosiš li palto?  
 you-wear Q coat  
 'Are you wearing a coat?'  
 a. Nosja.  
 I-wear  
 b. \*Nosja go.  
 I-wear CL

- (12) Q Nosiš li si paltoto?  
 you-wear Q *refl.* the-coat  
 'Are you wearing your coat?'  
 a. \* Nosja.  
 I-wear  
 b. Nosja go.  
 I-wear CL
- (13) Q Koj donese bira na kupona?  
 who brought beer at the-party  
 'Who brought beer to the party?'  
 A: Čux če čovekât kojto e donesâl si e trâgnal.  
 I-heard that the-person who is brought *refl.* is left  
 'I heard that the person who brought  $\phi$  has left.'
- (14) Q Paulina šte donese li bira na kupona?  
 Paulina will bring Q beer to the-party  
 'Will Paulina bring beer to the party?'  
 A: Čux sluxâ če šte donese.  
 heard the-rumour that will bring  
 'I heard the rumor that she will bring  $\phi$ .'

If we conclude, as I propose, that Bulgarian has null indefinite clitics (that is, null indefinite special pronominals), we expect that they should be utilized in CLLD, i.e., that Bulgarian also should have ECLLD of indefinites. Although this is in fact the case, the situation is obscured by an independent phenomenon (one not shared with Greek), the ability of Bulgarian to have unstressed topics that are old information (cf. Rudin (1986), Izvorski (1994)). Thus superficially, it appears as if Bulgarian has ECLLD of definites and indefinites alike:<sup>6</sup>

- (15) Q Are you wearing a coat?  
 a. Palto nosja prez zimata.  
 coat I-wear during the-winter  
 b. \* Palto go nosja (prez zimata).  
 coat CL I-wear during the-winter
- (16) Q Are you wearing your coat?  
 a. Paltoto si go nosja.  
 the-coat *refl.* CL I-wear  
 'I am wearing my coat.'  
 b. Paltoto si nosja prez zimata.  
 the-coat *refl.* I-wear during the-winter  
 'I wear my coat during the winter.'

It would in fact be more parsimonious to conclude that Bulgarian has no ECLLD at all, since sentences (16a) and (15a) can be generated by topicalization; let's for now refer to these constructions as "apparent ECLLD," pending resolution of their true status.

Fortunately, topicalization is sensitive to syntactic islands, while CLLD, not being derived via movement, is not. Thus when an island intervenes, we expect it to interfere with topicalization only, allowing



CLLD (overt or "exceptional"). As the following sentences show, definites cannot be topicalized across an island, although as expected they can undergo overt CLLD in such environments. But indefinites can be left-adjoined in the absence of a clitic; since sentence (18) cannot be derived by topicalization, it must be analyzed as ECLLD; moreover, since (17a) is ungrammatical we conclude that ECLLD is restricted to indefinites, as predicted by the null clitic analysis.

(17) Q Who brought the computer to the party?

- a. \* Kompjutârâ čux če čovekât kojto e donesâl  
 the-computer I-heard that the-person who is brought  
 si e trâgnal.

*refl. is left*

'I heard that the person who brought the computer has left.'

- b. Kompjutârâ čux če čovekât kojto go e  
 the-computer I-heard that the-person who CL is  
 donesâl si e trâgnal.

brought *refl. is left*

'I heard that the person who brought the computer has left.'

(18) Q Who brought beer to the party?

- A: Bira, čux če čovekât kojto e donesâl si e  
 beer I-heard that the-person who is brought *refl. is*  
 trâgnal.

*left*

'I heard that the person who brought beer has left.'

Thus we have found in Bulgarian the cluster of properties expected of (indefinite) null special pronominals: indefinite object drop inside islands, ECLLD of indefinites, and the incompatibility of the overt (definite) clitic forms with the NPs that undergo IOD and ECLLD. In the next two sections I examine two languages that allow null definite objects inside islands. The null clitic analysis would predict that definites, in these languages, should show the cluster of effects associated with indefinites in Greek and Bulgarian. As the following sections will show, this indeed appears to be the case.

#### 4. Quiteño Spanish

Quiteño Spanish, a dialect spoken in Quito, Ecuador, was studied by Suñer & Yépez (1988). All examples provided below are theirs. Quiteño is of interest because it allows definite object drop inside islands:

- (19) a. Yo le reconocí al hombre que trajo  $\phi$ .  
 I him recognized the man who brought  
 'I recognized the man who brought it [the package].'

- b. La persona que mandó  $\phi$  escribió esta nota.  
 the person who sent wrote this note

'The person who sent them [the flowers] wrote this note.'

- c. Cuando entregue  $\phi$ , puede matricularse.  
 when you-hand in you-can register  
 'When you hand them [the documents] in, you can register.'

Thus the null element denoted by  $\phi$  cannot be a null topic operator as in Huang (1984). Could it be a form of null "clitic," in this case definite? There are two observations that lend plausibility to such an analysis. The first is that the definite direct clitics (*lo(s)*, *la(s)*) have been almost completely lost; the indirect object clitic *le(s)* can be used in their place. But in sentences that also contain a cliticized indirect object, the direct object cannot be overtly represented by a clitic; ellipsis is nevertheless allowed (provided the object is inanimate), with a null where standard Spanish would use a direct object clitic:

- (20) a. Dámelo. (Standard Spanish)  
 give/2sg-me-it  
 'Give it to me.'  
 b. Dame $\phi$ . (Quiteño)
- (21) a. Bueno, yo te lo saco. (Standard Spanish)  
 well I from-you it remove  
 'Well, I'll remove it from you.'  
 (*lo* = *el vestido* 'the dress')  
 b. Bueno, yo te  $\phi$  saco. (Quiteño)

Thus Quiteño has a gap in its clitic paradigm that can be "filled" by positing null definite accusative clitics; this is also motivated by the clear correspondence of the above sentences to cliticization in Standard Spanish.

Given such an analysis, we might also hope to see ECLLD of definite objects. Suñer & Yépez report that null object constructions are "favored by the existence of the referent of the  $\phi$  DO either in Left-Dislocated position or in the immediately preceding sentence," noting that "these Left-Dislocated phrases are not in any way contrastive or emphatic." The relevant examples can be recognized as clear cases of ECLLD of definites:

- (22) a. Las elecciones yo nunca entendí  $\phi$ .  
 the elections I never understood  
 'The elections, I have never understood them.'  
 b. La leche vendían  $\phi$  a \$1.20.  
 the milk they-sold for \$1.20  
 'The milk, they used to sell it for \$1.20.'  
 c. Las de allá, cerraron  $\phi$ .  
 the ones from there they-closed  
 'The ones from there, they closed them.'

Thus in Quiteño, we see associated with definite objects the same cluster of properties that we found in the indefinites of Greek and Bulgarian. The recurrence, *mutatis mutandis*, of these phenomena in connection with definite objects is strong evidence that ECLLD and island-insensitive object drop are related. It does not, to be sure,

show that null "clitics" are necessarily responsible: if Quiteño has a different way to license a null object that does not involve movement, it is plausible that the null entity involved can also function as a CLLD variable. The gap in the clitic paradigm, which as we will see in the next section is repeated in Brazilian Portuguese, provides more specific, if weaker, evidence for the null-clitic analysis.

Against this evidence we must balance a serious complication that I have not yet addressed: it appears that the null entity is subject to Principle C of the binding theory, a property that distinguishes it from overt clitic pronouns.

- (23) Mi carro<sub>i</sub> necesita que le<sub>i</sub>/\* $\phi$ <sub>i</sub> lave.  
 my car needs that CL I-wash  
 'My car needs that I wash it.'

On the basis of such data Suñer & Yépez (1988) rule out *pro* as well as "null resumptive pronouns" as the empty element in question. One possible approach is to concede that the null clitics of Quiteño are not functionally identical to the overt clitics of Standard Spanish, possibly being subject to Principle C. This raises the issue of the binding principle that governs the null clitics of Greek and Bulgarian. Note that a clitic, overt or null, might be subject to different binding conditions when used as a variable (in CLLD) rather than as a pronoun.

Another possibility is to attribute the ungrammaticality of (23) to independent principles governing the choice between *le* and  $\phi$  as the direct object clitic; it is conceivable that these principles force the overt variant to be used when it is c-commanded by a coindexed antecedent. Apparent principle C effects also arise in connection with object drop in Brazilian Portuguese, discussed in the next section. Farrell (1990) argues that these are in fact an artifact of an independent restriction on anaphora; if his analysis is correct, it may also be relevant to the Quiteño data.

## 5. Brazilian Portuguese

Brazilian Portuguese is another language with island-insensitive definite object drop, which has been studied among others by Tarallo (1983), Kato (1993) and Farrell (1990). Object drop is most acceptable with inanimate third-person objects, while overt forms are "generally preferred and often required" for animate third person objects. First and second objects must be overt, as example (24a) shows; third-person null objects are possible inside islands, as in (24b) (both examples from Farrell (1990)).

- (24) a. Coitado do João/ \*de mim/ \*de você. O chefe  
 poor of the João of me of you the boss  
 mandou  $\phi$  embora.  
 sent away  
 'Poor João<sub>i</sub>/me<sub>i</sub>/you<sub>i</sub>. The boss fired  $\phi$ <sub>i</sub>.'

- b. Eu vou beber a cerveja antes de brigar com  
 I go drink the beer before of fight with  
 a pessoa que deixou  $\phi$  fora da geladeira.  
 the person that left out of the refrigerator  
 'I'm going to drink the beer<sub>i</sub> before fighting with the person  
 that left  $\phi_i$  out of the refrigerator.'

Again, we find that the clitic paradigm of Brazilian Portuguese contains a gap corresponding to the null elements posited by the null special pronominals analysis. Spoken Brazilian Portuguese has lost third person accusative clitics; with inanimate objects, even full pronouns are marginal.

Like Quiteño, Brazilian Portuguese has ECLLD of definites (Nunes, p.c.). Example (25a), from Kato (1993), involves a left-adjoined antecedent that is old information. Example (25b), from Farrell (1990), shows ECLLD in an embedded clause. (Neither author identifies these examples as analogues of CLLD).

- (25) a. Q E quanto ao bolo?  
 and as for the cake  
 'What about the cake?'  
 A: (O bolo,) o rapaz que  $\phi$  trouxe saiu agora.  
 the cake the boy who bought just left  
 'The cake<sub>i</sub>, the boy who bought  $\phi_i$  just left.'  
 b. Ouvi falar que o bolo todo o mundo  $\phi$  adorou.  
 I-heard say that the cake everybody adored  
 'I heard that everybody loved the cake.'

As Farrell notes, (25b) is not readily analyzed as topicalization, particularly since the left-adjoined NP here follows the complementizer; but it is perfectly regular as an instance of CLLD. Compare the following Greek examples:<sup>7</sup>

- (26) a. O Yanis nomize oti tin Maria o Kostas  
 the Yanis thought that the Mary/Acc the Kostas  
 tin ide. (CLLD)  
 CL saw  
 'Yanis thought that Kostas saw Maria.'  
 b. O Yanis nomize oti kersasia o Kostas efage.  
 the Yanis thought that cherries/Acc the Kostas ate  
 'Yanis thought that Kostas ate cherries.' (ECLLD)

Object drop in Brazilian Portuguese appears to be constrained by Binding Condition C: a null object contained in a complement clause cannot be coindexed with a matrix argument.

- (27) \*O João<sub>i</sub> falou que o Pedro viu  $\phi_i$ .  
 João said that Pedro saw  
 'João<sub>i</sub> said that Pedro saw  $\phi_i$ '

Farrell (1990) argues that such apparent principle C violations are in fact caused by an independently attested restriction that prohibits an empty object from being coindexed, intra- or inter-sententially, with

the subject of a verb that takes a sentential complement. He concludes from this that empty objects in Brazilian Portuguese belong to the category *pro*, but his argument serves just as well in support of null third person clitics.

Farrell proposes a licensing mechanism under which object *pro* is exceptionally identified by the verb as long as *pro* carries "intrinsic" third-person features. The motivation for this mechanism appears to be restricted to the theory-internal need to somehow identify object *pro*, plus the observation that only third-person objects may be dropped. Assuming Farrell's reanalysis of the binding facts is correct, an analysis positing a null third person form for the definite clitic (that is, special pronominal) is better motivated than his intrinsic specification account.

The historical change that Brazilian Portuguese has undergone can then be said to involve, rather than the complete loss of third person accusative clitics, the replacement of overt forms with phonologically null substitutes. Null clitic constructions appear to be supplementing, and perhaps replacing, the preexisting topic-operator mechanism of object drop that European Portuguese still has. Bianchi & Figueiredo Silva (1993) found that Brazilian Portuguese has separate animate and inanimate paradigms of object drop; the animate paradigm obeys islands like OD in European Portuguese, while the inanimate paradigm is insensitive to islands. That would make a null clitics analysis appropriate to the inanimate paradigm only.

Kato (1993) has previously (and independently) analyzed object drop in Brazilian Portuguese by means of a null third person accusative clitic; the proposals made here are fully compatible with her analysis. Kato accepts the presence of Principle C effects on object drop; she accommodates these effects as follows: to the classification of Sportiche (1986), which divides elements that enter into binding relations according to whether c-command is required or optional (and whether a locality or an antilocality condition is in effect), she adds a third column specifying that "anti-c-command" is required, and assigns null clitics to it. Although this step accommodates the behavior of Brazilian object drop, it is clear that it does so by in effect stipulating that null clitics are subject to Binding Condition C; thus the question still awaits a more illuminating explanation.

The presence of Principle C effects with null, but not with overt, definite special pronominals raises a conceptual problem: contrary to the simplest hypothesis about special pronominals, it implies that they differ from overt clitics in more than phonological content. A possible explanation of the origin of such differences (although not of the Principle C effects themselves) is suggested by the work of Nunes (1992). He notes that in written Brazilian Portuguese, which still has third-person accusative clitics, the distribution of such clitics is different from the distribution of dative and first and second person accusative clitics: for example, with auxiliary + participial main verb



constructions, third person accusative clitics must appear before the auxiliary, while other clitics favor proclisis to the participle.

- (28) a. João tinha lhe-dado um livro.  
           João had to-him given a book  
       b. ??João lhe-tinha dado um livro.
- (29) a. \* João tinha o-visto.  
           João had him seen  
       b. João o-tinha visto.

In constructions of the form auxiliary + infinitival verb, third person accusative clitics favor enclisis to the infinitive, while other clitics favor proclisis to it. Nunes argues that as a result of a historical change from enclisis in Old Portuguese to the strongly proclitic modern Brazilian Portuguese system, the phonological licensing of the syllable onset of third-person accusative clitics became impossible; this led to reanalysis giving rise, among other things, to the null object construction of Brazilian Portuguese.

Although Nunes is agnostic about the proper analysis of the null object construction, his account provides on the one hand an explanation of how null elements could be introduced to the system of special pronominals, and on the other evidence that the loss of overt third person clitics is associated with changes in their pattern of movement, and conceivably with reanalysis introducing properties not shared by overt special pronominals.

## 6. Conclusion

The preceding sections have established that island-insensitive object drop, cliticization and "exceptional" CLLD are distributionally related in a variety of languages, motivating the conclusion that the same mechanism is involved; the presence of ECLLD of definite objects in Quiteño, and Brazilian, which have definite object drop, directly parallels the ECLLD of indefinites in the IOD language Greek and Bulgarian. In each case we also find gaps in the clitic paradigm corresponding to the proposed null counterparts.

The presence of null "clitics" would explain the cluster of observed phenomena in a maximally simple way, requiring no additional stipulations for the IOD languages Greek and Bulgarian. The pattern of apparent Binding Condition C restrictions associated with definite object drop remains to be reconciled with this analysis. Since an account of object drop in terms of a topic operator, in the style of Huang (1984), is problematic for these languages because it predicts that object drop should be sensitive to islands, the null clitic analysis nevertheless appears to be the best way to account for island-insensitive object drop. At any rate the principle C effects are also problematic for alternative analyses, since a null anaphor would not a priori be expected to behave like a referential entity.



The data discussed establishes that the same null element serves as the variable in ECLLD and island-insensitive object drop. The claim that this null element is indeed similar to a pronominal clitic is somewhat more open to question, but in my opinion sufficiently well-motivated by the presence of appropriate paradigmatic gaps in the overt clitic paradigm of each language and the correspondence in the construal characteristics of the constructions in question.

I based the notion of null "clitics," more properly *null special pronominals*, on a typological generalization of the syntactic category of which pronominal "special clitics" are members. Although the syntactic status and properties of clitics remain mysterious, the empirical coverage achieved in this paper can be taken as evidence against accounts that make overtness an essential property of pronominal clitics.

### NOTES

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<sup>1</sup> Kato (1993) has also proposed that object drop in Brazilian Portuguese involves a null clitic. Her analysis is discussed in section 3.2.

<sup>2</sup> Special pronominals are thus distinct from "weak pronouns," another phonologically defined class.

<sup>3</sup> If for example we consider clitics to be "the overt spelling out of a *wh*-trace," then the null counterpart to clitics would be the *wh*-trace. This is obviously incompatible with my proposal; cf. Cinque (1990, p. 61) for a discussion of the problems that CLLD raises for this conception of clitics.

<sup>4</sup> For example, Iatridou (forthcoming) discusses *subject CLLD*, in which a subject NP is left-adjoined; in this case, subject *pro* functions as the CLLD variable.

<sup>5</sup> The precise class of NPs that can undergo ECLLD in Greek is difficult to determine, but appears to be coextensive with the class of NPs that (under a given interpretation) cannot be cliticized.

<sup>6</sup> Sentences (15a) and (16b) are degraded if an adverbial (such as "during the winter"), or an overt subject that is new information, is not present.

<sup>7</sup> In Greek, the left-adjoined NP and the complementizer can appear in either order, as noted by Iatridou (forthcoming), whence example (26a).

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## VERBAL PREFIXES AS FUNCTIONAL HEADS\*

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Russian verbal prefixes are argued to be underlyingly separate syntactic functional heads, although by orthographic and lexicological tradition they can never be separated from the verbal stems to which they attach. Arguments for their separate status are provided from phonology (vocalization of jers, assignment of stress) and morphology (the treatment of irregular verbs). It is shown that this analysis gives a neat account of the contribution made by prefixes to a verb's argument structure and government properties.

### 1. Introduction

Russian is a language with a variety of fascinating phenomena. It may be no accident that a disproportionate number of the influential structural linguists of the 20th century worked on Russian. However, although Russian figured in a considerable amount of generative research in the 1960's and 1970's, it receded to a more modest position in the 1980's. Recent work on functional categories has triggered a small explosion in the theoretical syntax of Russian, as Slavists and general syntacticians alike have been exploring the ramifications of this methodological apparatus for Russian and other Slavic languages. This paper offers both theoretical and descriptive innovations in the analysis of Russian prefixed verbs, treating verbal prefixes as syntactically separate functional heads (despite the fact that they are never physically separable, as in, e.g., Hungarian or German), bearing the same relation to the verb as prepositions have to the noun. This approach makes intuitive sense, because in Russian, as in many languages, the inventory of verbal prefixes closely recapitulates the set of prepositions.

In section 2 I survey the phonological and morphological evidence that prefixes should be treated as syntactically separate. Section 3 is devoted to questions of case and prepositional government. In the conclusion I take up the parallelism between prepositions and verbal prefixes.

### 2. Formal Evidence for Separate Verbal Prefixes

First, let's consider the nuts-and-bolts motivation for handling prefixes as syntactically discrete elements, despite the fact that in standard dictionaries and grammars of Russian, prefixed verbs are

regarded as distinct lexemes, with the prefix added to the basic verbal stem through a strictly lexical process of word formation.<sup>1</sup>

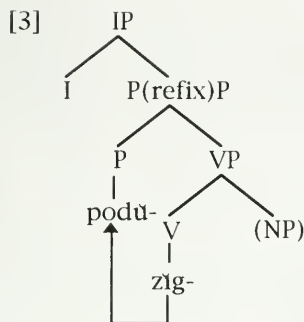
We can start with the bracketing paradox observed by David Pesetsky (1985),<sup>2</sup> associated with the past-tense paradigm of the verb *pod-žeč* 'set on fire' in [1].<sup>3</sup>

- [1] a. *pod-žëg*-MASC, *podo-žgla*-FEM, *podø-žglo*-NEUT, *podo-žgli*-PL  
 b. [[[*podũ-* + *žlg-*] + *l*] + *ũ*]      [[[*podũ-* + *žlg-*] + *l*] + *a*]  
 c. [*podũ-* + [[*žlg-* + *l*] + *ũ*]]      [*podu(-* + [[*žlg-* + *l*] + *a*]]
- [2] *podo-šël*, *podo-šla*, *podo-šlo*, *podo-šli* 'approached'

Note that an extra *o* follows the prefix *pod-* in all forms but the masculine. Pesetsky was working in a theoretical framework that incorporates level-ordered morphology and derives Russian vowel/zero alternations from underlying 'jers', or abstract short lax vowels. Basically, jers vocalize when they are followed by a jer in the following syllable; otherwise they disappear. Pesetsky pointed out that there is a problem in getting the jers to work out in this paradigm. The natural morphological bracketing for this verb is [1b], where the innermost derived unit, the lexical verb *pod-žeč*, is created on the second level of the morphology. On this cycle the jer at the end of the prefix vocalizes because a jer is present in the next syllable. This will happen inevitably in BOTH the masculine and feminine past tense forms, each given in [1b]. In the masculine the root jer also vocalizes on the last cycle, due to the desinential jer. This is correct, but the vocalization of the jer after the prefix is wrong, since the prefixal jer actually vocalizes in only those forms in which the root jer doesn't vocalize. The bracketing in [1b] is correct for a verb like *podošël*, given in [2], where the prefix-final jer vocalizes THROUGHOUT the past tense. The jer vocalization of *podžëg*, *podožgla* only works out if we assume the morphological bracketing in [1c], where first the past tense *-l* is added, followed by the vowel of the desinence, and only then, on the last cycle, is the prefix attached. So when the desinential jer causes the root jer to vocalize in the masculine form, there is no following jer to cause the prefix-final jer to vocalize. However, in the remaining forms of the paradigm, the root jer is unaffected, and it thus triggers vocalization of the prefix-final jer. This predicts all the facts, but defies common sense.

Pesetsky's 'solution' is to state that this kind of bracketing paradox is the way things are supposed to be. The verb *pod-žeč* has one semantic bracketing, corresponding to [1b], and one morphological structure, corresponding to [1c]. Both structures are mapped to the word in the lexicon, rather in the spirit of Sadock 1991. This could conceivably be the way language works. Nevertheless, if a unified structural approach is feasible, it is surely preferable. So let's consider the structure in [3].





Here I take the prefix to be a functional head projected above V by virtue of the lexical properties of a verb. The meaning is generally compositional. The lexical entry must specify that the verb *pod-žeč'* includes a functional superstructure with the prefix *pod-*. In the syntax, the verbal head raises to adjoin to the prefix, for the usual kind of morphological reasons: the prefix is a bound morpheme, and the sentence will be ill-formed unless it is attached to a verbal head.

If the approach to verbal prefixation illustrated in [3] is correct, it gives us a natural and principled solution to the bracketing problem observed by Pesetsky: the prefix is added last not merely by stipulation (because that's the way the lexical phonology can be made to work out), but because it is really a syntactically discrete element, and the verb raises to the prefix-functional head. Following Chomsky 1992, I assume that the entire inflectional paradigm is present in the lexicon; an individual form is SELECTED based on Tense and Agreement features acquired in the syntax, but the prefix is actually ADDED in the syntax.<sup>4</sup>

It turns out that adding prefixes in the syntax rather than the lexicon can resolve other morphological and phonological problems as well; let's now examine several of these. One concerns the form of the imperative in verbs containing the stressed prefix *vý-*. As shown in [4], the imperative takes two desinences in Russian: *-i* is general, but, simplifying only slightly, verbs with stem-stress throughout the present tense take  $-\emptyset$ .<sup>5</sup>

[4] **Present tense end-stress** → **Imperative in -i**

govorjú-1.SG → govórí 'speak!'  
 govóříš'-2.SG  
 govórit'-3.SG, etc.

**Present tense stem-stress** → **Imperative in -∅**

stávlju-1.SG → stáv' 'put!'  
 stáviš'-2.SG  
 stávit'-3.SG, etc.

But now consider the form of the imperative when these verbs are prefixed with stressed *vý-*: as we see in [5], the presence or absence of *-i* is conditioned not by the form of the stem, which, under a traditional view of what a stem includes, would certainly be characterized as fixed stem-stress, but rather by the form of the UNPREFIXED stem.

- [5] *vý-govorju*-1.SG → *vý-govori* 'speak out'  
*vý-govoriš'*-2.SG  
*vý-govorit*-3.SG, etc.  
*vý-stavljju*-1.SG → *vý-stav'* 'put out'  
*vý-staviš'*-2.SG  
*vý-stavit*-3.SG, etc.

There are various ways we could work this fact into our phonological rules, but if *vý-* is added last, because the inflected verb has to raise up to it in the syntax, then this is very natural and requires no exceptional special rules. The stem has its own inventory of forms, unaffected by the prefix. The prefix *vý-* has its own stress—a lexical fact about this prefix—which supersedes the stress of the stem, but doesn't influence the selection of the desinence.

A third argument of this nature is supplied by verbs like *pit'* 'drink'. Because the root hosts a vowel/zero alternation, we have to posit a jer as the underlying root vowel. In the present tense, as shown for the first-person singular in [6], the jer is underlyingly stressed, fails to vocalize and therefore disappears, and the stress moves to the only available vowel, the *-u* in the desinence.

- [6] *p'íj-u* → *p'ǔj-u* → *p'j-ú* 'drink-1.SG'

We know that the underlying stress must fall on the jer because of the systematic pattern: essentially all verbs with stem-final *j* have fixed stem stress, as demonstrated in [7].<sup>6</sup>

- [7] *dúj-*: *dúju*-1.SG, *dúješ'*-2.SG, *dújet*-3.SG, etc. 'blow'  
*znáj-*: *znáju*-1.SG, *znáješ'*-2.SG, *znáct*-3.SG, etc. 'know'  
*otkrój-*: *otkróju*-1.SG, *otkróješ'*-2.SG, *otkróet*-3.SG, etc. 'open'

Now consider what happens to the verb when it is prefixed, as in a verb like *po-pit'* 'take a drink'. In this case, the verb has a prefix, so the stress could potentially move to the left, onto the prefix. However, it doesn't—it still moves to the right, producing forms like *po-p'jú* instead of *\*pó-p'ju*, as in [8].

- [8] *po-p'íj-u* → *po-p'ǔj-u* → *po-p'j-ú* 'take a drink'  
*\*pó-p'j-u*

Movement of stress to the right in this case flies in the face of the widespread pattern whereby stress on an unvocalized jer moves one syllable to the left. We can see this most clearly in cases where an unvocalized jer stands between two syllables, so that the stress could

potentially move in either direction. Consider the stress of the plural forms of the noun *sem'ja*, given in [9].

|     |      |          |          |
|-----|------|----------|----------|
| [9] | NOM  | sém'i    | 'family' |
|     | ACC  | sém'i    |          |
|     | GEN  | seméj    |          |
|     | DAT  | sém'jam  |          |
|     | LOC  | sém'jax  |          |
|     | INST | sém'jami |          |

Russian has no attested pattern with a stress shift from one syllable to another within the stem; all alternations involve shifts between stem and desinence. Therefore this paradigm must represent some variety of fixed stem stress. This will only work if we assume that the stem has fixed stress on the underlying jer in the second syllable. Then, as shown in [10], when that jer fails to vocalize, the orphaned stress COULD potentially move either to the right, onto the desinence, or to the left, onto the first syllable of the stem.

[10] *sem'ǰj-i* → *sem'ǰj-i* → *sém'-i*

In fact, it moves to the left; this is the systematic treatment of stress orphaned by the loss of an unvocalized jer.

This being the case, we now have a neat account of the fact we saw in [8]. Leftward movement of orphaned stress is systematic, but it is not available in the verb *po-p'jú*, because at the point when stress is determined on the inflected stem, in the lexicon, it does not have a prefix attached—it is merely associated in the functional superstructure of the verb.

Now, of course, there ARE cases when stress does fall on the prefix in mobile past tense stress like the verb *po-njat'* 'understand': *pó-njal*-MASC.PAST, *po-njalá*-FEM.PAST. However, these cases represent phrasal stress, not word stress; they are parallel to cases when the stress retracts from a noun onto a preposition, as in [11].

[11] *zá ruku* 'by the hand'  
*íz domu* 'from home', etc.

This is yet another reason to unite prepositions and prefixes into one functional category.

A fourth morphological fact which indicates that prefixes are syntactically distinct from verbs is the existence of irregular prefixed paradigms, as noted in [12].

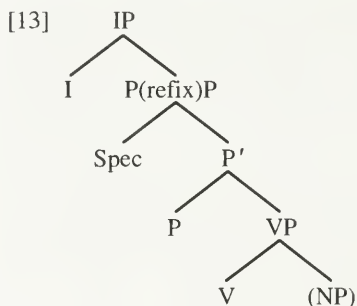
|      |                          |   |             |   |                                 |
|------|--------------------------|---|-------------|---|---------------------------------|
| [12] | <i>budu</i> -1.SG 'be'   | + | <i>za-</i>  | → | <i>za-budu</i> -1.SG 'forget'   |
|      | <i>budeš'</i> -2.SG      |   |             |   | <i>za-budeš'</i> -2.SG          |
|      | <i>budet</i> -3.SG, etc. |   |             |   | <i>za-budet</i> -3.SG, etc.     |
|      | <i>dam</i> -1.SG 'give'  | + | <i>raz-</i> | → | <i>raz-dam</i> -1.SG 'hand out' |
|      | <i>daš'</i> -2.SG        |   |             |   | <i>raz-daš'</i> -2.SG           |
|      | <i>dast</i> -3.SG        |   |             |   | <i>raz-dast</i> -3.SG, etc.     |

'Be' and 'give' are classic, maximally irregular verbs in Russian. If prefixes are built into lexical stems, as traditionally assumed, then the lexical specification of irregular paradigms must be repeated for each prefixed verb in these groups. However, under my analysis, we can specify one irregular pattern for each unprefixated stem, and then, since that same stem is used with a different functional superstructure for each prefix, it will automatically be captured without further specification.

The four arguments given in this section provide adequate evidence on the formal side that treating Russian prefixes as syntactically separate from verb stems has serious advantages. Let's now turn our attention to the consequences of this proposal for verbal government.

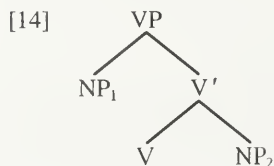
### 3. Case and Prepositional Government via Prefixes

If it is correct that verbal prefixes are actually functional heads, then it isn't enough to project a head P and P(refix)P, as in [3]: we must have a Specifier position as well. An emerging consensus suggests that if we posit functional projections, they need to be complete, i.e., not merely heads, but with the full range of internal X-bar positions. Accordingly, [3] should be revised as [13].

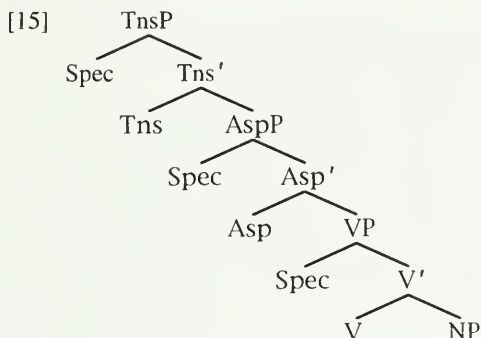


What can we do with the Spec of P(refix)P position in this structure? The obvious possibility is to exploit it for verbal government. This can be accomplished through the combination of Spec-Head agreement and argument structure.

Consider the canonical case of the internal and external arguments of a verb, represented schematically in [14].



In the standard case, a verb may take an internal argument, its object, as well as an external argument, its subject. Some verbs are defective, lacking either a subject or an object. There are a number of proposals in the literature to the effect that functional categories may project a parallel argument structure of their own. For example, Stowell 1992 proposes that Tense is, in effect, a two-argument predicate whose argument structure combines with the argument structure of the verb itself. Yadroff and King 1994 make a similar claim about Tense and Aspect in Russian. They propose the structure in [15], and argue that the internal argument of Tns is AspectP, while its external argument, in Spec of TnsP, is a variable representing Reference time.



I would like to make a similar proposal about verbal prefixes: that they incorporate their own argument structure, which invariably includes an internal argument, the VP, and MAY also include an external argument position in Spec of P(refix)P. Let's look at a few examples to see how this works.

Many verbs in Russian form a durative through the addition of the prefix *pro-*; a couple of examples are given in [16] and [17].

- [16] a. Ivan *sidel tixo* (čas).  
 Ivan / sat / quietly / (hour-ACC)  
 'Ivan sat quietly (for an hour).'
- b. Ivan *pro-sidel čas* // \*Ø.  
 Ivan / sat-DUR / hour-ACC // \*Ø  
 'Ivan spent an hour // \*Ø sitting.'
- [17] a. Maša *čitala Annu Kareninu*.  
 Maša / read / Anna Karenina-ACC  
 'Maša was reading Anna Karenina.'
- b. Maša *pro-čitala vsju noč*.  
 Maša / read-DUR / all / night-ACC  
 'Maša spent all night reading.'

In [16a] we see an intransitive verb with an optional adjunct time adverbial in the Accusative case. In Russian (as in many other lan-

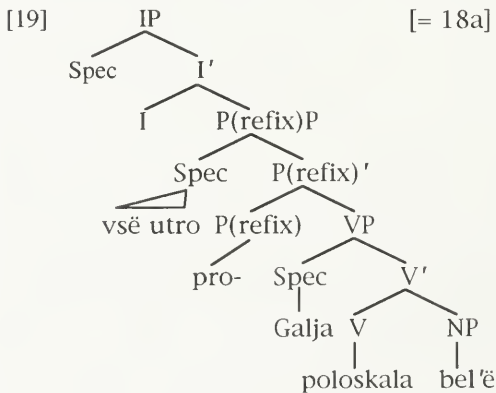
guages), this has nothing to do with the verb *per se*—Accusative time adverbials can be found with nominalizations, the copula, predicate adjectives, etc. However, with the addition of the prefix *pro-* in [16b] the time expression gets promoted to what is called a “quasi-argument” in Fowler & Yadroff 1993. Note that it is no longer optional.

In [17a] we see a typical transitive verb which takes an Accusative object. If we add *pro-*, as in [17b], we get the same kind of argument-like duration phrase. If we now attempt to combine an Accusative duration adverbial with a direct object, we find, somewhat surprisingly, that the result is generally grammatical. Two examples from Fowler and Yadroff 1993 are given in [18].

- [18] a. Galja *pro-poloskala* vsë utro bel'e.  
Galja / rinsed-DUR / all-ACC / morning-ACC / laundry-ACC  
'Galja spent all morning rinsing the laundry.'  
b. Vanja *pro-nës* tžželyj čemodan kilometr.  
Vanja / carried-DUR / heavy / suitcase / kilometer-ACC  
'Vanja carried the heavy suitcase a [whole] kilometer.'

It was argued in Fowler and Yadroff 1993 that the existence of sentences like [18a–b] rules out the otherwise appealing hypothesis that prefixation with durative *pro-* causes the prefixed verb to select for a temporal NP as direct object, displacing the notional patient or theme, much as the English verb *spend* selects for a temporal object in the translations of these sentences. However, both NPs can coexist, and thus it cannot be the case that durative *pro-* selects the temporal NP as the direct object, i.e., the internal NP argument of the verb.<sup>7</sup>

So how does addition of durative *pro-* affect the verb? I suggest that it selects an external argument in a structure like [19].



In this structure, the verbal head, the unprefixated verb *poloskat'*, takes two arguments, the external argument *Galja* and the internal argument *bel'ë*. As usual, it assigns an appropriate  $\theta$ -role to each of



them. One level further up the verb 'finds' the prefix *pro-*. It too has an argument structure: it takes an internal argument, the VP complement, AND an external argument, which is an obligatory duration phrase (time or distance), and assigns it a  $\theta$ -role, call it the  $\theta$ -role Measure. The essentially predicational effect of the prefix *pro-* in this meaning can be summed up informally along the lines of [20].

[20] *pro-*: duration (measure, event [=VP])

The formula in [20] states that the prefix *pro-* expresses a duration relation between the event conveyed in the VP and a measure phrase, which will normally be an Accusative NP with the meaning of time or distance.

Returning to example [18a] and the structure in [19], I suggest that case is assigned to the Accusative measure phrase by Spec-Head agreement between the Prefix head *pro-* and its Specifier, the measure phrase. The mechanism of Spec-Head agreement has been put to similar employment in Chomsky 1992.<sup>8</sup>

First let's consider what happens when *pro-* is added to an intransitive verb; the pertinent example is [16b]. It will have a structure similar to [19], except that there is no internal argument within VP. As noted before, the prefixed verb remains intransitive; for example, it can't be passivized, as shown in [21].

[21] \*Čas byl prošižen Ivanom.  
hour / was / sat through / by Ivan

The prefix *pro-* has an Accusative case feature, which is passed on to the duration NP through Spec-Head agreement. As it happens, this is quite a regular property of the prefix *pro-*. It has a variety of submeanings [Švedova 1980, the latest Russian Academy Grammar, lists 8], and in several of them, *pro-* prefixed to intransitive verbs adds an argument marked in the Accusative case. A few examples are given in [22]; more could be adduced.

- [22] a. Boris proexal ostanovku. [submeaning: 'past, miss']  
Boris / rode past / stop-ACC  
'Boris rode past [missed] his stop.'
- b. [Vy] prosentimental'ničali svoju žizn'. ['use up']  
you / wasted being sentimental / self's / life-ACC  
'[You] wasted your life being sentimental.'
- c. My prošli Zund, liš' stixnul štom. ['go by, through']  
we / went by / Zund-ACC / as soon as / abated / gale  
'We went by Zund as soon as the gale quieted down.'

These Accusative NP's don't seem to qualify as direct objects. A convenient test is passivization, and they quite generally fail to create passive equivalents. So, while Russian dictionaries and grammars label such prefixed verbs as "transitive", that label merely reflects the presence of an Accusative NP rather than a structural direct object,

defined simply as the internal NP argument of a verb, the NP sister to V within V' in the generic structure in [14]. Instead, I claim that these verbs are what you might term "pseudo-transitive": they have a surface similarity to transitive verbs, but the Accusative NP is actually the added argument of the prefix.

Space requirements prohibits a detailed examination of prepositional government by prefixed verbs, but the formal analysis of the structure of prefixed verbs proposed here accounts neatly for the natural phenomenon of prepositional government. A great many prefixes, in a great many of their submeanings, add PP arguments to sentences. In the canonical case, a prefix requires a PP containing the matching preposition. Several examples are given in [23], and these could be multiplied almost without end.

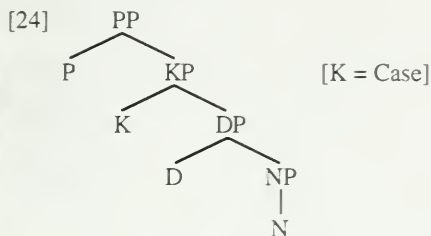
- [23] a. Ptica **otletela ot** zabora.  
bird / flew away from / from / fence  
'The bird flew [some distance] away from the fence.'
- b. Učitel'nica **vošla v** auditoriju.  
teacher / went in / into / classroom  
'The teacher went into the classroom.'
- c. Ne **dodružili do** otkrovennosti?  
NEG / become friendly up to a point / up to / openness  
'You didn't become friendly enough to be open with each other?'

#### 4. Conclusion: The Status of Prepositions

This close semantic similarity between prefix and preposition has of course been noted before. Indeed, it underlies much of the structuralist attempts to uncover invariant meanings in the prefix and preposition systems of Russian and the other Slavic languages.<sup>9</sup> However, the formal side has been investigated much less intensively in the literature, perhaps because it is so obvious: the majority of prefixes are formally identical to prepositions, and of those that aren't, there is generally either an etymological relation obscured somewhat by historical phonology (e.g., the prefix *pred-* 'pre-' corresponds to the preposition *pered* 'before') or there is outright suppletion (the prefix *vy-* corresponds to the preposition *iz*; the prefix *pere-* also corresponds in certain meanings to the preposition *čerez*, etc.). The analysis proposed here makes this correspondence explicit: prepositional government, like the addition of a cased NP argument, is the result of Spec-Head agreement between a prefix and its external argument.<sup>10</sup>

However, my analysis makes us wonder about the nature of prepositions. If prefixes and prepositions are essentially alike, and if prefixes occur as functional heads projected above verbs, then what about prepositions? I would like to suggest in conclusion, without giving comprehensive arguments in favor of this idea, that prepositions taking NP complements are NOT lexical categories, but are in fact

functional projections of the Russian noun. Under this view, nouns can be said to take at least the set of functional projections given in [24].



In [24] I adopt the standard GB view that nouns project a DP, add to that the view accepted by at least some Slavic syntacticians (cf. Toman 1991, 1994) that there is a projection of Case, and extend this naturally to prepositional marking of NPs, regarding prepositions as a kind of super-case. This reflects some traditional approaches to Russian case, where a preposition and the case marker have often been regarded as a kind of discontinuous morpheme, or at least inextricably bound to one another. Moreover, in any language with a large number of oblique cases, such as Hungarian or Finnish, a lot of the work done by prepositions in Russian, English, or other languages of this basic type is instead handled by oblique case markings. Indeed, in Hungarian it is difficult to distinguish case suffixes from postpositions on formal or semantic grounds.

I will give one brief argument in favor of this view of Russian prepositions. Russian freely permits ellipsis of referential NPs, as illustrated in [25a].

- [25] a. Miša napisal pis'mo? Da. [e] napisal [e].  
 Miša / wrote / letter<sub>ACC</sub> / yes / [e] / wrote / [e].  
 'Did Miša write the letter? Yes, [he] wrote [it].'
- b. Miša zanimal'sja ètoj temoj? Da. [e] zanimal'sja [e].  
 Miša / worked on / this / topic<sub>INST</sub> / yes / [e] / worked on /  
 [e]  
 'Did Miša work on this topic? Yes, [he] worked on [it].'

The same phenomenon occurs just as readily with oblique NPs, for example, the Instrumental NP in [25b]. But now consider the pattern of ellipsis in prepositional phrases.

- [26] a. Miša govoril s Ivanom? Da. [e] govoril [e].  
 Miša / spoke / with / Ivan<sub>INST</sub> / yes. / [e] / spoke / [e].  
 'Did Miša speak with Ivan? Yes, [he] spoke [with him].'
- b. \*Miša govoril s Ivanom? Da. [e] govoril s [e].  
 Miša / spoke / with / Ivan<sub>INST</sub> / yes. / [e] / spoke / with / [e]

Under the same ellipsis conditions, the entire PP is deleted, as in [26a]. It is completely impossible to retain the preposition while deleting its object, as in [26b]. Yet this is not what we would expect if P were a lexical category alongside V, N, and A, because there are no comparable ellipsis restrictions with those lexical categories. This pattern provides additional confirmation that prepositions are functional rather than lexical categories, and capture the difference as illustrated in [24]. The category of P is the ultimate functional head: it combines with both verbs and nouns. Note that this analysis also gives us a natural account of obligatory Pied Piping in *wh*-movement from Russian prepositional phrases, without having to resort to stipulation.

As I have demonstrated in this paper, there are excellent arguments from phonology, morphology, and syntax in favor of analyzing Russian verbal prefixes as syntactically discrete functional heads, added to verbs in the syntax through a rule verb raising, following Pollock 1989 and many subsequent works. Indeed, it seems that the standard term *prefix* should be abandoned for these morphemes in Russian, and replaced by the competing term *preverb*, which is often used with respect to languages with separable prefixes (German, Hungarian, etc.). Prefixes do exist in Russian, but only as strictly morphological elements, added in the lexicon rather than in the syntax. Russian preverbs provide yet another fascinating example of the fuzzy interface between morphology and syntax.<sup>11</sup>

## NOTES

\* An earlier version of some of this material was presented at Formal Approaches to Slavic Linguistics 3 (to appear as Fowler 1994a). I am grateful to the following individuals for valuable suggestions and comments: Catherine V. Chvany, Stephen Franks, Frank Y. Gladney, Jonathan Ludwig, Michael Yadroff. Naturally, all dubious decisions remain my own responsibility.

<sup>1</sup> One exception is Gladney 1978, where prefixes are treated as syntagmatically separate within VP, but without the kind of highly articulated structure assumed in current work on functional categories. Walińska 1990 offers a proposal not unlike mine, but focuses on aspect, which is not of primary concern here.

<sup>2</sup> The idea was first presented in Pesetsky's unpublished but widely disseminated 1979 MIT paper.

<sup>3</sup> Throughout this paper, prefixes are separated out by a hyphen to allow for immediate morphological parsing. However, nothing similar is done in Russian orthography.

<sup>4</sup> While no material can intervene between the prefix and verb in Russian or the other Slavic languages, in other languages we CAN find material there. I assume that the range of possibilities is due to

a combination of morphological factors—whether or not the prefix is a bound morpheme, the morphological type of head it can attach to, and so forth—AND syntactic factors—above all, the position of the prefix head in the various projections within Infl.

<sup>5</sup> Such imperatives are traditionally said to take  $-\emptyset$ , and the surface form is certainly a  $-\emptyset$ . However, given a lexical-phonology approach including underlying abstract jers, as in Pesetsky 1985, the desinence could equally well be said to be a final jer which never vocalizes. This distinction is irrelevant to the present argument.

<sup>6</sup> The only exceptions are imperfectives derived by means of the suffix *-avaj* from prefixed verbs built on three roots: *znaj-* 'know', *dad-* 'give', and *stan-* 'stand'. This suffix exhibits another major irregularity as well, unpredictable loss of *-va-* in conjugation, and it seems justified to regard end-stress with this suffix as equally irregular.

<sup>7</sup> Discussion of this phenomenon in the Slavic literature (e.g., Flier 1985: 45–46) has been confused by the unfortunate reliance on the verb *čitat'* 'read' for key examples, such as [i].

- [i] ??*Maša pro-čitala Annu Kareninu vsju noč'.*  
*Maša / read-DUR / Anna Karenina-ACC / all / night-ACC*  
 ??'Maša spent all night reading Anna Karenina.'

The problem is that there are (at least) two major homonymous forms *pro-čitat'*: the durative, which we are attempting to focus on here, AND the plain perfective, which has essentially resultative meaning. The plain perfective is illustrated in [ii].

- [ii] *Maša pro-čitala Annu Kareninu.*  
*Maša / read-PF / Anna Karenina-ACC*  
 'Maša read *Anna Karenina*.' [= 'Maša got *Anna Karenina* read.']

In principle, it ought to be possible to force [i] with the intended durative reading, and in fact some informants do acknowledge it. However, there is a striking case of interference at work here. When duration is specified with perfective verbs, the bare Accusative NP is totally ungrammatical, as illustrated in [iii], and instead Russian requires a prepositional phrase with *za* 'for, in'.

- [iii] *Maša pro-čitala Annu Kareninu \*dva časa//za dva časa.*  
*Maša / read-PF / Anna Karenina-ACC / \*two / hours // in /*  
*two / hours*  
 'Maša read *Anna Karenina* \*two hours//in two hours.'

The problem with [i] is that, when confronted with this sentence, Russian speakers immediately leap to the majority reading of *pro-čitat'* as perfective, and reject the sentence because of the incorrect time adverbial. It takes an imaginative informant to "reach through" this interference to the intended durative reading.



<sup>8</sup> The ensuing discussion of case assignment to the Accusative temporal NP associated with a *pro*-durative builds upon an idea suggested by Michael Yadroff in an early presentation of the paper that became Fowler and Yadroff 1993. It was eliminated from the published version because we couldn't make it work out at the time.

<sup>9</sup> A notable example is van Schooneveld 1978, and similar goals still govern work being done today; e.g., Janda 1985 offers interesting intuitions about the submeanings of the prefix *za-* within the framework of cognitive grammar. How satisfying such a strictly semantic account is largely a matter of ideology, based on one's attitude toward semantics-based linguistics in general.

<sup>10</sup> Not all prefixes change the argument structure of a sentence. Many leave the argument structure of the verb unaffected, adding some semantic nuance or twist to the verb's meaning that is compatible with the same set of VP-internal arguments.]

<sup>11</sup> For discussion of other problems at the morphology/syntax interface in Russian, see Fowler 1993, 1994b.

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## REANALYSIS PRECEDES SYNTACTIC CHANGE: EVIDENCE FROM MIDDLE ENGLISH\*

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The standard view of syntactic change is that variation between competing forms culminates in the reanalysis of one of the forms. Under this view, reanalysis is a necessary reflex of the grammar which occurs when one form is lost in favor of another. I argue that reanalysis is not necessarily driven, but rather that it may be the product of innovation. Further, reanalysis need not be the culmination of variation and competition. In the case of the change in sentential negation in Middle English, a syntactic reanalysis occurs before competition between syntactic forms.

### 1. Introduction

According to one commonly accepted view of syntactic change, reanalysis is the end result of syntactic change (Lightfoot 1991). According to this view, reanalysis is triggered when a new form rises to categorical use and the old form with which it was in competition drops out of use, with the loss of the old form forcing learners to give the new form a new structural analysis. But despite the conceptual appeal of this scenario, there is reason to doubt that it adequately describes syntactic change in the general case. Rather, a growing number of quantitative studies of syntactic change indicate that the emergence of a new structural option is the prerequisite, rather than the consequence, of syntactic variation and change (Kroch 1989, Santorini 1989, Taylor 1990 and 1994, Pintzuk 1991, Fontana 1993, see also Kiparsky 1994). In this paper, I present further evidence against the standard view of historical change on the basis of sentential negation in Middle English, which underwent drastic change between 1200 and 1400 AD.

This paper differs from the above mentioned studies in that the change in negation in Middle English is not necessarily one involving parameter setting on the scale of the grammar (cf. Kroch 1989, 1994). In the case at hand, the variation involves the syntactic and semantic properties of particular lexical items: the negative clitic *ne* and the negative adverb *not*.

In the remainder of section 1, I introduce the basic paradigm of Middle English negation. In section 2, I sketch the standard view of the change in negation in Middle English and offer a pre-theoretic claim as to the nature of the change which contradicts the standard view. Section 3 introduces the theoretical assumptions which I will make concerning the more detailed structural and quantitative anal-

ysis. In section 4, I establish the status of *not* as a sentence adverb in early Middle English. Section 5 details the quantitative results of studying the distribution of *not* over the entire Middle English period. In section 6, I offer an explanation for the mechanism of the change, and summarize the expected results of my claim versus the standard view. This section ends with a presentation of the data showing that reanalysis does precede syntactic change in this case. Section 7 investigates the driving force behind the change, which I claim to be semantic rather than syntactic. Section 8 concludes the paper with a summary of the results obtained.

In Modern English, sentence adverbs appear in two different string locations in declarative sentences when an auxiliary verb is present.

(1) **Preverbal adverb:**

a. I **never** have liked him.

**Postverbal adverb:**

b. I have **never** liked him.

These positions are parallel to the positions of sentence adverbs in Middle English.

(2) **Preverbal adverb:**

a. ... & heo **næfre** ne beoð isceadde from þare  
... and she never *neg* is separated from there  
eƿe mirth.  
each mirth.

"... and she never is separated from each joy."

(Bodley Homilies 12:126)

**Postverbal adverb:**

b. he ne mighte **neure** finde man of so grete chastete.  
he *neg* might never find man of so great chastity.  
"he might never find a man of such great chastity."

(St. Edmund 434)

The preverbal position is not available for Modern English *not*.

(3) **Preverbal not:**

a. \*He **not** would answer the telephone.

**Postverbal not:**

b. He would **not** answer the telephone.

By contrast, the preverbal position was available for *not* in early Middle English. The use of *not* in early Middle English examples like (4) is taken to be that of an emphatic negative, this emphasis is represented by the material in parentheses in the glosses provided.

(4) **Preverbal not:**

- a. þat Jesuss **nohht** ne wolde Ben boren nowwhari  
 that Jesus not *neg* would be born nowhere in  
 þe land, ...  
 the land, ...  
 "That Jesus did not (at all) want to be born anywhere in  
 the land, ..." (Ormulum I:122)

**Postverbal not:**

- b. ... & he ne shal **nouȝt** deceiue him.  
 ... and he *neg* shall not deceive him.  
 "... and he shall not (in any way) deceive him."  
 (Psalter 161:131:11)

**2. Claim**

While the syntax of other sentence adverbs like *never* has remained stable, *not* was reanalyzed from being a sentence adverb to being the sentential negator (Kroch 1989, Pollock 1989, Shanklin 1990, Roberts 1993). This change is evident in two aspects of the use of *not*. The first is that the preverbal position in (4a) is lost for *not*. The second is that *not* loses its emphatic interpretation.

The standard motivation for the change, which traces back to Jespersen (1917), is that, due to cliticization and phonological weakening, the negative particle *ne* was lost. Under Lightfoot's (1991) analysis of language change, the lack of *ne* forces language learners to reanalyze *not* as the sentential negator.

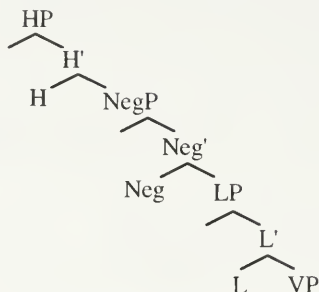
Contrary to this standard view of the change, I claim that the reanalysis of *not* was the cause for the loss of the negative particle, *ne*, rather than a consequence of it. In particular, the loss of the preverbal position for *not* occurs more than a century before the loss of *ne*. Thus, I claim that the reanalysis of *not* precedes the loss of *ne*.

In addition, I claim that the syntactic reanalysis of *not* reflects the simultaneous semantic reanalysis of *not*. *Not* is reanalyzed as an ordinary, non-emphatic, sentential negator before *ne* is lost. The functional reanalysis of *not* can simultaneously explain the loss of the preverbal position of *not* and the loss of emphatic meaning for *not*. Once *not* is reanalyzed as a sentential negator, *ne* and *not* serve the same function. *Ne* is no longer necessary, and is lost.

**3. Theoretical assumptions**

Following Pollock (1989), I assume two INFL projections. In the remainder of the paper, I will refer to them as HP and LP as I am not concerned with their specific feature content. I also assume a functional projection of negation, NEGP, as shown in the tree in (5).

## (5) Partial tree of clausal structure



While Pollock's view is a convenient one for the following discussion, the pre-theoretic claim in section 2, and the evidence I use to support it, is independent of the particular notation chosen. As we move on to the last sections, I will depend more crucially on the existence of the NEGP projection in my explanation of the mechanism of the change.

Roberts (1985) demonstrates that Middle English is a language with verb movement, like French. Thus, under standard assumptions, the verb will raise and adjoin to H in the overt syntax. In so doing, the verb will adjoin to the intermediate heads L and NEG (cf. Travis 1984, Chomsky 1986). The existence of two INFL projections in Pollock's approach provides a convenient analysis of the preverbal and postverbal English sentence adverbs in (1). Sentence adverbs can be analyzed as phrasal adjuncts of INFL' (cf. Roberts, 1993). Preverbal adverbs are left-adjuncts of H', and thus appear linearly before the verb or auxiliary in H. Postverbal adverbs are left-adjuncts of L'.

I assume that Middle English *ne* is the head of NEGP (Pollock 1989, Zanuttini 1991). Like its French cognate, it cliticizes onto the verb in subject-verb inversions like (6a). This behavior is reminiscent of Modern English *-n't* (6b), which is taken to be a head by Kayne (1989).

- (6) a. [**Ne** canstu] me noȝt know?  
       *neg* can+you me not know  
       "Can't you recognize me?" (King Horn 55)  
 b. [**Didn't**] he arrive on time?

Early Middle English *not* has the distribution of a sentence adverb, as demonstrated by its preverbal position in (4a). In later Middle English, there is evidence that *not* can also be used as a head, as in (7).

- (7) **Head of NEGP not:**  
 [Am **not**] I lord and kyng of the cuntre?  
 "Aren't I lord and king of the country?" (Digby Plays 100)



Even when *ne* is absent, *not* is not required to be a head, as shown by its stranding in the subject-verb inversion in (8).

(8) **Non-head *not*:**

[Wyll] he **not** com nere?

"Won't he come near?" (Mankind 162)

One of the difficulties in analyzing Middle English negation is that the majority of uses during the change are structurally ambiguous.

(9) Crist shulde **not** haue suffred dep.

"Christ should not have suffered death ..."

(Wycliffite sermons I:415)

The possible positions of *not* in (9) are:

- The lower sentence adverb position, adjoined to L'.
- The head of NEGP.
- The specifier of NEGP.

In each case, *not* would appear postverbally. While the specifier of NEGP position is, at this point, unmotivated, it is the position used for Modern English *not* by Kayne (1989), Pollock (1989) and Zanuttini (1991). In addition, quantitative evidence presented in section 5 will demonstrate clearly that the specifier position is used by *not* during Middle English.

In order to determine the status of *not* in examples like (9), I will adopt the null hypothesis, that the overall rate of use in ambiguous cases of the different structural options for *not* reflects their rate of use in unambiguous cases. In particular, examples like (10), repeated from (4a, 7, 8) above, provide unambiguous information about the use of *not*. (10a) is an example of the use of *not* as a sentence adverb. (10b) is an example of the use of *not* as a head. (10c), while still ambiguous, is evidence that *not* is not used as a head, i.e. it is used as a sentence adverb or in the specifier position.

(10) **Adverbial *not*:**

- a. þat Jesuss **nohht** ne wolde Ben boren nowwhar i  
 That Jesus not *neg* would be born nowhere in  
 þe land, ...  
 the land, ...  
 "That Jesus did not want to be born anywhere in the  
 land, ..." (Ormulum I:122)

**Head of NEGP *not*:**

- b. [Am not] I lord and kyng of the cuntre?  
 "Aren't I lord and king of the country?" (Digby Plays 100)

**Non-head *not*:**

- c. [Wyll] he not com nere?  
 "Won't he come near?" (Mankind 162)

For the quantitative analysis, I use the diachronic part of the Helsinki corpus of English for the years 1150-1500.<sup>1</sup> The northern dialect

texts were excluded from this study as Kroch & Taylor (1994) indicates that the northern dialect will behave differently from the other dialects with respect to preverbal negation. As has been shown, preverbal negation is a crucial diagnostic in the use of *not* as a sentence adverb.

The quantitative analysis gives several results. During Middle English, *not* can occupy three distinct positions: the adverbial adjunct position, which is the same position as *never*, the specifier of NEGP, or the head of NEGP. Initially, *not* has the same distribution as *never*, and is thus a sentence adverb. *Not* is increasingly used in the specifier of NEGP during Middle English. Once specifier *not* is established, *ne* becomes optional, and *not* is able to be used as the head of NEGP. The results are explained in detail in sections 4, 5 and 6.

#### 4. *Not* in early Middle English (1150-1220 AD)

As Kroch (1989) and Roberts (1993) observe, *not* is a sentence adverb in early Middle English. During the first 70 years of Middle English, *not* has the same syntactic distribution as *never* in declarative finite clauses.

In the corpus studied, *never* appears preverbally in 16% of cases (35 out of 216 potential instances), a rate identical to the 16% rate of preverbal use of *never* found in Kroch (1989). Thus, I assume that sentence adverbs in general will use the preverbal position in 16% of cases. If *not* is a sentence adverb, like *never*, it should appear preverbally in 16% of cases. Table 1 shows the results of a chi-square test on the actual distribution of preverbal *not* versus the expected distribution assuming an estimated rate of preverbal use of 16%.<sup>2</sup>

**Table 1:** *not* as a sentence adverb

|          | preverbal | postverbal | total           |
|----------|-----------|------------|-----------------|
| actual   | 16        | 69         | 85              |
| expected | 14        | 71         | 85              |
|          |           |            | $\chi^2 = 0.34$ |
|          |           |            | $p > 0.56$      |

The chi-square test is commonly used to determine the relative deviation between a sample distribution and the expected distribution under some hypothesis. In this case, the hypothesis is that *not* is used preverbally at a rate of 16%, and thus, that *not* is a sentence adverb. The resulting  $p > 0.56$  indicates that there is more than a 56% chance that the variation between the actual distribution of *not* and the expected distribution is due to chance. The standard criteria for a chi-square test is that a hypothesis is rejected when  $p < 0.05$ , i.e., when the probability that the actual distribution differs from the expected distribution only as a result of random variation, is less than 5%. Thus, the distribution of *not* in the first 70 years is consistent

with the analysis that *not* is used as a sentence adverb, and not as the sentential negator, during this period.

There is additional structural evidence that *not* is a phrasal projection, like an adverb. Both *not* and *never* can occupy clause initial position in verb-second clauses.

- (11) a. ... and [**n**ohht ne stannt it still].  
 ... and not *neg* stood it still  
 "... and it didn't stand still." (Ormulum, I:125)  
 b. swa [**n**auer nulde he him sugge]; ...  
 ... so never *neg+would* he him say; ...  
 "... so he would never tell him; ..." (Layamon, II:732)

During this time period, there is no evidence that *not* is used as a head (0 out of 48 potential instances). Thus, all the available evidence indicates that *not* is originally used as a sentence adverb, and not as a sentential negator.

## 5. The change in status of *not* (1220-1500 AD)

The distribution of *never* remains constant for the remainder of the Middle English period. By contrast, preverbal *not* is lost. In addition, the sentential negator *ne* from Old English is also lost. The loss of preverbal *not* and the loss of *ne* reflects a general change in the syntactic status of *not*. *Not* is lost as a sentence adverb, and is reanalyzed as the sentential negator. While this change is a subtle one, the change in the use of *not* from an ordinary lexical sentence adverb to a sentential negator with a specific functional role can be traced in the historical record.

In section 5.1, I introduce the quantitative techniques used to estimate the use of *not* as a sentence adverb. In section 5.2, I present the quantitative data for the use of *not* as a head of NEGP. In section 5.3, I show that the use of *not* as a sentence adverb and the use of *not* as a head is not sufficient to cover all of the data. I claim that the unaccounted for instances are cases of the use of *not* in the specifier of NEGP position.

### 5.1. Loss of adverbial *not*

We can model the loss of the adverbial status of *not*, using the distribution of *never* as an independent estimate, as was done in section 4, table 1. In that table, we used a 16% rate of use of preverbal *not*. We can then estimate the total number of adverbial *not* (both the preverbal and postverbal) tokens in each time period according to the following formula:

$$N(\text{preverbal } not) = 0.16 \times N(\text{total adverbial } not)$$

so

$$N(\text{total adverbial } not) = N(\text{preverbal } not) \div 0.16.$$

For example, in the first time period:

$N(\text{total adverbial } not) = 16 \div 0.16 = 99$  estimated actual adverbial uses of *not*.

Thus, we gain our first insight into the ambiguous cases like example (9). Table 2 gives the results of this calculation for five 70 year time periods. Notice that the rate of use of adverb *not* drops from 100% use to 5% use during Middle English.<sup>3</sup>

**Table 2:** The loss of preverbal *not*

| time period | actual preverbal | estimated adverb | actual total | estimated % adverb |
|-------------|------------------|------------------|--------------|--------------------|
| 1150-1220   | 16               | 99 <sup>4</sup>  | 85           | 100%               |
| 1220-1290   | 7                | 43               | 72           | 60%                |
| 1290-1360   | 7                | 43               | 235          | 19%                |
| 1360-1430   | 7                | 43               | 736          | 6%                 |
| 1430-1500   | 2                | 12               | 227          | 5%                 |

The results in table 2 are consistent with previous analyses of Middle English negation. *Not* is originally a sentence adverb, but it loses that function and becomes the sentential negator.

### 5.2. Rise in head of NEGP *not*

The next estimate for the behavior of *not* comes from examining subject-verb inversion constructions like questions and imperatives with overt subjects (cf. examples 7 and 8). These constructions give an independent estimate of the use of *not* as a head for each time period. Table 3 shows the use of the head position in inversion constructions.

**Table 3:** The use of *not* as a head in inversions

| time period | head | total | % head |
|-------------|------|-------|--------|
| 1150-1220   | 0    | 48    | 0%     |
| 1220-1290   | 0    | 42    | 0%     |
| 1290-1360   | 0    | 62    | 0%     |
| 1360-1430   | 12   | 67    | 18%    |
| 1430-1500   | 2    | 15    | 13%    |

Again, as in the case of adverb *not*, I assume that the use of *not* as a head in inversion constructions provides an estimate of the overall use of *not* as a head. Thus, based on the percentages in table 3, we can estimate the number of tokens of *not* as a head of NEGP in declarative contexts, just as in table 2. Since *not* can only be used as a head when the competing head *ne* is absent, this estimate is relevant just in sentences without *ne*. Table 4 presents the use of *not* as a head in declarative clauses when *ne* is absent.

**Table 4:** The use of *not* as a head in declaratives

| time period | with <i>ne</i> |      | without <i>ne</i> |       |  | grand total |
|-------------|----------------|------|-------------------|-------|--|-------------|
|             | total          | head | total             | %head |  |             |
| 1150-1220   | 82             | 0    | 3                 | 0%    |  | 85          |
| 1220-1290   | 67             | 0    | 5                 | 0%    |  | 72          |
| 1290-1360   | 191            | 0    | 44                | 0%    |  | 235         |
| 1360-1430   | 102            | 114  | 520               | 18%   |  | 736         |
| 1430-1500   | 0              | 30   | 227               | 13%   |  | 257         |

### 5.3. The rise of *not* in the specifier of NEGP

Table 5 compiles the information from table 2 and table 4. The adverb uses are taken from table 2, but have been divided into two cases, depending on the presence or absence of *ne*. The head uses have been taken from table 4. Table 5 clearly shows that the adverb and head estimates do not cover all of the data, and thus there must be a third position used by *not* during Middle English. I claim that the remainder of the data are cases of the use of *not* in the specifier of NEGP. In addition, I claim that *not* is used as a sentential negator in these cases.

**Table 5:** Estimated distribution of the data

| time period | with <i>ne</i> |      |      |       | without <i>ne</i> |      |      |       |
|-------------|----------------|------|------|-------|-------------------|------|------|-------|
|             | adverb         | head | spec | total | adverb            | head | spec | total |
| 1150-1220   | 82             | -    | 0    | 82    | 3                 | 0    | 0    | 3     |
|             | 100%           |      | 0%   |       | N/A               | 0%   | N/A  |       |
| 1220-1290   | 43             | -    | 24   | 67    | 0                 | 0    | 5    | 5     |
|             | 64%            |      | 36%  |       | N/A               | 0%   | N/A  |       |
| 1290-1360   | 19             | -    | 172  | 191   | 25                | 0    | 19   | 44    |
|             | 10%            |      | 90%  |       | 57%               | 0%   | 44%  |       |
| 1360-1430   | 0              | -    | 102  | 102   | 43                | 114  | 477  | 634   |
|             | 0%             |      | 100% |       | 7%                | 18%  | 75%  |       |
| 1430-1500   | 0              | -    | 0    | 0     | 12                | 30   | 184  | 227   |
|             | -              |      | -    |       | 5%                | 13%  | 81%  |       |

The loss of the adverb position for *not* occurs regardless of the presence or absence of *ne*.<sup>5</sup> This supports the hypothesis that a third option, the specifier of NEGP position, is being used by *not*. If the change was one which proceeded directly from the adverb position to the head of NEGP position, we would expect the use of *not* as an adverb to remain constant when *ne* is present, and to fall only when *ne* is absent. Since the use of *not* as a head is possible only when *ne* is absent, this is the first piece of quantitative evidence that the reanalysis of *not* as a sentential negator is independent of the loss of *ne*.

## 6. An account of the change

We have seen some evidence that the reanalysis of *not* occurs independently of the loss of *ne*. The standard account claims that the reanalysis of *not* is a direct result of the loss of *ne*. In this section, I consider these two hypotheses of the mechanism of the change in negation. These hypotheses can be framed in a proposal for economy of projection by Speas (1993). Speas claims that either the head or specifier position of XP must be occupied to license XP in the syntactic phrase marker. Thus, in the case of sentential negation, either the head of NEGP or the specifier of NEGP position must be filled in order to license NEGP.

In section 6.1, I set out the predictions of the standard analysis for the change in negators in Middle English. Section 6.2 discusses the predictions of a change where the reanalysis of *not* occurs before the loss of *ne*. Section 6.3 presents the full range of data, and shows that the reanalysis of *not* does precede the loss of *ne*. Section 6.4 addresses a semantic motivation for the change.

### 6.1. Standard analysis: Reanalysis follows change

Under the standard analysis, the original licenser of NEGP, *ne*, becomes phonologically weak and is lost. In order to preserve the licensing of NEGP under economy of projection, *not* must be reanalyzed as a NEGP constituent. If this reanalysis follows the loss of *ne*, then both the head of NEGP and the specifier of NEGP positions should be available for use by *not*.

The standard analysis thus makes two predictions about the distribution of the data. First, the standard analysis predicts that the use of *not* in the specifier position and the head position will rise after the use of *ne* drops. Only after *ne* is lost will the NEGP need to be licensed by some other negator. Second, the standard analysis predicts that the use of *not* in the head position will rise at the same time as the use of *not* in the specifier position, as either position will be available to license NEGP when *ne* is gone.

### 6.2. My analysis: Reanalysis precedes change

When *not* is categorially an adverb, it is not a component of, and hence cannot license, NEGP. NEGP is, however, present in the clausal structure and is licensed by the negative head *ne*. Note that there is nothing in Speas' approach that rules out redundant licensing of a projection. Hence, *not* is free to occupy the specifier of NEGP. When *not* is reanalyzed as occupying the specifier of NEGP, *ne* becomes structurally redundant, as it is no longer needed to license NEGP. Consequently, *ne* is lost. Under this approach, only the specifier position is initially available for *not*.

This position makes predictions contrary to those of the standard view. First, my analysis predicts that the use of *not* in the specifier position will rise before the use of *ne* drops, as *not* is reana-



lyzed as occupying the specifier of NEGP before *ne* is lost. Second, since the use of *not* as a head can begin only after the competing head *ne* is lost, the use of *not* as a head rises only after *not* is used in the specifier position.

### 6.3. The loss of *ne*

The crucial evidence for determining the nature of the change is the time course of the loss of *ne*. Table 6 shows the loss of *ne*. The loss of adverb *not*, the rise in specifier *not*, and the rise in head *not*, from table 5, are also provided for comparison.

**Table 6:** The loss of *ne*

| time period | with<br><i>ne</i> | without<br><i>ne</i> | total | % <i>ne</i> | % adverb<br><i>not</i> | % specifier<br><i>not</i> | % head<br><i>not</i> |
|-------------|-------------------|----------------------|-------|-------------|------------------------|---------------------------|----------------------|
| 1150-1220   | 82                | 3                    | 85    | 96%         | 100%                   | 0%                        | 0%                   |
| 1220-1290   | 67                | 5                    | 72    | 93%         | 60%                    | 40%                       | 0%                   |
| 1290-1360   | 191               | 44                   | 235   | <b>81%</b>  | <b>19%</b>             | <b>81%</b>                | <b>0%</b>            |
| 1360-1430   | 102               | 634                  | 736   | 14%         | 6%                     | 76%                       | 18%                  |
| 1430-1500   | 0                 | 227                  | 227   | 0%          | 5%                     | 81%                       | 13%                  |

Table 6 clearly shows that the rise in the use of *not* in the specifier position precedes the loss of *ne*, and also that the rise in the use of *not* in the head position comes only after *not* is established in the specifier position. In particular, the boxed row corresponding to 1290-1360 shows that the use of *ne* and the use of the specifier position are high during the same time period. In addition, the use of the head position only becomes available after a significant drop in use of *ne* and after *not* is established in the specifier of NEGP.

Thus, based on the data in table 6, I conclude that the reanalysis of *not* precedes the loss of *ne*. Consequently, the time course of the change is that the specifier of NEGP position is established for *not* while *ne* is present, then *ne* becomes optional, and finally, *not* used as a head becomes possible.

### 6.4. Motivation for the change

We have just seen that the reanalysis of *not* precedes the loss of *ne*. The loss of *ne* is accounted for as a consequence of the change in the syntactic status of *not*. The change in *not* can be accounted for syntactically, as the specifier of NEGP position is open to be used while *ne* is present. There is, however, no apparent motivation for the change, as the presence of *ne* is sufficient to license NEGP and signal sentential negation.

When *not* is used with *ne* in early Middle English, it is used as an emphatic negator, with meaning similar to "at all". Emphatic terms in general are frequently weakened over time (cf. Hock 1986, Horn 1989). In this case, the use of *ne...not* changed from meaning "not at all" to merely "not". Thus, there was no semantic distinction between a sentence with just *ne* and one which also contained *not*. This

prompted a reanalysis of *not* from sentential adverb to part of the bipartite negator *ne...not*, which indicated sentential negation as a unit. The structurally redundant, semantically redundant, and phonologically weak *ne* was lost soon after, leaving *not* as the lone negator.

### 7. Semantics of *ne...not*

In the crucial time period covering 1290-1360, the overwhelming form of negation is *ne...not*. This is parallel to the Standard French negator, *ne...pas*. Both of these cases have *ne* as the head of NEGP and *not/pas* in the specifier of NEGP. Thus, both negators are in position to act as sentential negators. The original descriptive term for this situation is negative concord, and in this case, the description is an appropriate one. The [NEGP *not* [NEG *ne*]] configuration (prior to verb movement and cliticization) is the standard SPEC-HEAD agreement relation used for inflectional affixes. I claim, then, that the use of both negators, *ne* and *not* does not result in a double negation interpretation because of this "negative agreement" relation (cf. the negative binding analysis in Shanklin (1990) or the Neg. Criterion in Haegeman & Zanuttini (1991) for possible formalizations of negative concord which would subsume this case).

In general, the semantics of negative concord is not well understood, and I will take this opportunity to point out that the Middle English period is an important one for its study. In this paper, a detailed study of the change in negators in Middle English has been presented. This change is not only one from *ne* negator to *not* negator, but also a change from a negative concord system which used *ne...not*, *ne...nothing* and *ne...never* in addition to ordinary negation with *ne*. Standard Modern English no longer uses negative concord. *Nothing* and *never* appear without the negator *not*. Thus, the phenomena investigated here deserve further study in the investigation of negative concord.

### 8. Conclusion

The evidence in this paper demonstrates that the change in negators in Middle English is a change in which, contrary to the standard view, reanalysis is not forced upon language learners as a result of syntactic constraints. In this case, the reanalysis of *not* as a sentential negator precedes the loss of the Old English sentential negator, *ne*, creating a redundant system of negation. *Ne* is later lost from this redundant system.

The study of the change in negators in Middle English has three facets of general significance. First, this change is inconsistent with the prevailing view that changes are necessary reflexes of grammar, driven by structural learnability considerations, which occur after variation and competition between forms. In this case change occurs after the innovation of a new structural position for *not* makes *ne* unnecessary. Second, previous structural analyses of verb movement

in Middle English, the use of *not* as a sentence adverb in early Middle English, the existence of negative concord in Middle English, and the invariant use of *never* in Middle English (cf. for example Kroch 1989, Shanklin 1990, Roberts 1993) are supported by the quantitative results presented here. In addition, the quantitative study of this phenomenon has led to additional structural conclusions. The syntactic status of *not* as an adverb, specifier of NEGP, and head of NEGP was demonstrated. In addition, the precise time period of the change in negators, between 1290 and 1360, was determined. These conclusions could not have been reached without the detailed, quantitative study presented here.

### NOTES

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<sup>1</sup> The corpus used in this paper is the Helsinki Corpus of English Texts (diachronic part), available from the Norwegian Computing Centre for the Humanities, and, deposited by Merja Kytö, Department of English, University of Helsinki with the Oxford Text Archive.

<sup>2</sup> Tables and numerical data in this paper are presented in the following fashion: Numbers which correspond to actual occurrences of data are reported exactly. Estimates of the distribution of the data will be rounded to the nearest whole number, though all calculations are performed to the full precision of Microsoft Excel. Percentages are rounded to the nearest percent. Percentages represented as decimals and other numbers are given to two decimal places.

<sup>3</sup> The estimated use of adverb *not* of 5% in the final time period (1430-1500) is probably too high, as Kroch (1989) shows that verb raising is being lost at this time. Thus, instances of preverbal *not* may instead be the result of a lack of verb raising. In my corpus, both instances of preverbal *not* in this time period occurred with lexical verbs and not with auxiliaries or modals. Thus, the use of *not* as an adverb in the final time period may be as low as 0%.

<sup>4</sup> The estimated number of adverb instances of *not*, based on the number of preverbal instances of *not*, is greater than the actual number of instances of *not* in the corpus. Consequently, I take the rate of use of adverb *not* to be 100%.

<sup>5</sup> Note that the low number of instances of *not* without *ne* in the first two time periods makes the estimate of adverb and specifier *not* unreliable. In both time periods, the expected number of instances of preverbal *not* is less than one, so we do not expect to see any evi-

dence to determine whether or not the observed tokens are used in the adverb position or the specifier position.

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## SELECTION PROPERTIES OF RAISING VERBS\*

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This paper explores the nature of raising verbs in English, focusing on SEEM, and departs from the standard view (as in Chomsky 1981). No appeal is made to CP-deletion to account for raising phenomena. Instead, it is proposed that raising verbs (obligatorily) select AP complements, the heads of which may be overt or null. The presence of this AP complement, coupled with an analysis of null C<sup>0</sup>s in the spirit of Pesetsky 1991, accounts for much of the phenomena associated with raising verbs, including their inability to assign Case to the subjects of their infinitival embedded clauses.

### 1. Introduction

Raising verbs in English are analyzed as being able to govern, but not Exceptionally Case Mark (ECM),<sup>1</sup> the subjects of their infinitival embedded clauses. Raising verbs (such as *seem* and *appear*) are typically grouped with certain adjectives (such as *likely* and *certain*) under the rubric of RAISING PREDICATES.

Data such as (1) through (4) below show that raising predicates can take tensed clausal complements but, when the embedded clause is infinitival (as in (5) and (6)), the embedded subject must raise to the position of subject of the matrix clause (shown in (7) and (8), respectively):

- (1) It is likely [that John is late]
- (2) It is likely [John is late]
- (3) It seems [that John is late]
- (4) It seems [John is late]
- (5) \*It is likely [John to be late]
- (6) \*It seems [John to be late]
- (7) John<sub>i</sub> is likely [t<sub>i</sub> to be late]
- (8) John<sub>i</sub> seems [t<sub>i</sub> to be late]

Chomsky (1981) accounts for raising of the embedded subject in (7) and (8) via a number of stipulations regarding raising predicates. First, he assumes that raising predicates do not assign subject thematic roles. Thus IT in (1) through (4) above is analyzed as an EXPLETIVE as required by the Extended Projection Principle (EPP). Chomsky also stipulates that raising verbs are unable to assign Case, thereby motivating movement of the embedded subject to Spec (IP) of the matrix clause in order for it to receive Case and be phonologically realized.<sup>2</sup> Furthermore, he allows for raising predicates to CP-

delete when their embedded clauses are infinitival.<sup>3</sup> As such, the embedded clauses in (5) through (8) are analyzed as IPs, not CPs.

But there are a number of problems with such an approach. CP-deletion is conceptually troubling<sup>4</sup> as is the stipulation that raising verbs do not assign Case. Moreover, there are facts that this approach cannot account for. Temporarily ignoring raising adjectives, I turn to raising verbs and consider some of the complements they can select.

## 2. Raising verb complements

### 2.1. Clausal complements

With respect to clausal complement selection, we saw in (3) and (4) that raising verbs can take tensed clausal complements; (6) and (8) show that they can only take infinitival clausal complements provided that the embedded subject raises.

### 2.2. Non-clausal complements: NP, AP and PP

The ungrammaticality of (9) shows that raising verbs cannot take a subjectless NP complement:

(9) \*John<sub>i</sub> seems [<sub>NP</sub> t<sub>i</sub>]

Nor can they take subjectless AP or PP complements, as shown by the ungrammaticality of (10) and (11) (where IT is analyzed as an expletive):

(10) \*It<sub>exp</sub> seems [<sub>AP</sub> obvious]

(11) \*It<sub>exp</sub> seems [<sub>PP</sub> in a hurry]

### 2.3. Small clause complements

Raising verbs can, however, take NP complements, as well as AP and PP complements, provided these have subjects, i.e. that they are small clause constructions such as (12), (13) and (14):

(12) John<sub>i</sub> seems [<sub>AP</sub> t<sub>i</sub> [nice]]

(13) John<sub>i</sub> seems [<sub>NP</sub> t<sub>i</sub> [a fool]]

(14) John<sub>i</sub> seems [<sub>PP</sub> t<sub>i</sub> [in a hurry]]

Data such as (12) through (14) are analyzed in Chomsky 1981 and Stowell 1981, 1991 as small clause raising constructions. Under such an analysis, it is assumed that *John* has moved from Spec of the small clause to Spec (IP) of the matrix clause and receives its  $\theta$ -role from the head of the small clause.<sup>5</sup>

It would appear, then, that raising verbs must always take clausal complements, of some form or other, that express propositions. This fact might be captured by a propositional s-selection restriction.

### 2.4. AP + clausal complements

Additionally, we see instances where the selected full clauses are preceded by adjectives capable of predicating over propositions.

Consider, for example, (15):

(15) It seems [<sub>AP</sub> obvious [<sub>CP</sub> that John is late]]

(15), where the adjective intervenes between the raising verb and the tensed clause, is fine. If, however, the complement clause is infinitival (as in (16)), the embedded subject is unable to raise with the AP present even if CP-deletion is assumed to have occurred (as shown in (17)):

(16) \*It seems [<sub>AP</sub> obvious [<sub>IP</sub> John to be late]]

(17) \*John<sub>i</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>IP</sub> t<sub>i</sub> to be late]]]

It is not at all clear how the approach to raising verbs described above can account for this fact. Assuming that (17) violates the Empty Category Principle (ECP), it is not apparent why the adjective is unable to properly head-govern the trace.<sup>6</sup>

This is especially troubling in light of data such as (18) through (21) below where CP-deletion could not have occurred. In (18) and (19), only a CP complement has been selected; in (20) and (21), the verb has selected an AP with a CP complement:

(18) It seems [<sub>CP</sub> that John is late]

(19) \*[That John is late]<sub>i</sub> seems [<sub>CP</sub> t<sub>i</sub>]

(20) It seems [<sub>AP</sub> obvious [<sub>CP</sub> that John is late]]

(21) [That John is late]<sub>i</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub>]]]

Since (18) is fine, the ungrammaticality of (19) (where the entire CP complement raises) is puzzling.<sup>7</sup> Ungrammaticality that results from movement suggests an ECP violation. In (19), however, the trace in CP should respect the ECP as it is properly head-governed by the verb (as well as redundantly antecedent-governed and  $\theta$ -governed, assuming that SEEM  $\theta$ -marks the embedded clause). Why then is (19) out?

It would appear that the grammaticality of (21) compared to the ungrammaticality of (19) could be accounted for, in some way, by the presence of the adjective. Since the presence of CP is not in question here, an alternative explanation is called for.

### 3. The obligatory AP proposal

#### 3.1. Assumptions

To recapitulate, it would appear that raising verbs in some way select for propositions, either in the form of full clauses or small clauses. Focusing on full clauses, (18) suggests that raising verbs may take a single CP complement; however, the ungrammaticality of (19) suggests that something else is going on.

I propose that raising verbs obligatorily select AP complements, the heads of which may be overt or null. Overt A<sup>0</sup>s must have the property of predicating over propositions and raise at LF to form complex predicates with the raising verbs. Null A<sup>0</sup>s, however, do not raise.

In developing this proposal, I abandon the CP-deletion account. Instead I will assume that CP complements to  $A^0$  are headed by a null [+Affix]  $C^0$  (in the spirit of Pesetsky 1991) and as such, I propose that NP traces in embedded Spec (IP) of raising constructions depend on incorporation of the null  $C^0$  into  $V^0$  for proper head-government. I will argue that much of the phenomena associated with raising verbs (including their inability to Case-mark the subjects of embedded infinitival clauses) can be shown to follow directly from the interaction between the obligatory  $A^0$  (null or overt) and the null [+Affix]  $C^0$ .

### 3.2. Some evidence

However, what evidence here suggests the existence of an AP complement to  $V^0$  headed by a null  $A^0$ ? I think that such an analysis can be motivated by the following facts. Focusing on *seem*, consider (22) through (25):

- (22) John<sub>i</sub> seems [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> 0 [<sub>IP</sub> t<sub>i</sub> to be late]]]  
 (23) \*John<sub>i</sub> seems [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> that [<sub>IP</sub> t<sub>i</sub> to be late]]]  
 (24) \*John<sub>i</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> 0 [<sub>IP</sub> t<sub>i</sub> to be late]]]]]  
 (25) \*John<sub>i</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> that [<sub>IP</sub> t<sub>i</sub> to be late]]]]]

Of these, only (22) is grammatical, suggesting that in (23) through (25), the ECP is not satisfied. Under Rizzi's (1991) analysis, both null  $C^0$  (in (22) and (24)) and overt  $C^0$  (in (23) and (25)) should block head-government under minimality. Therefore, the grammaticality of (22) must somehow be explained.

### 3.3 Null [+Affix] $C^0$

I assume that the structures of (22) and (23) can minimally be represented as (26) and (27), respectively:

- (26) [<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> 0 [<sub>IP</sub> t<sub>i</sub> [to be late]]]]]]]  
 (27) \*[[<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> that [<sub>IP</sub> t<sub>i</sub> [to be late]]]]]]]]]

Under Pesetsky's (1991) analysis, null  $C^0$ s may have the feature [+Affix] or [-Affix]. Pesetsky assumes the following with respect to [+Affix] null  $C^0$ s: (1) a null [+Affix]  $C^0$  must raise and incorporate into the verb to satisfy the Stray Affix Filter (SAF);<sup>8</sup> (2) incorporation of the null  $C^0$  extends the government domain of the verb to include everything that the trace of the incorporated  $C^0$  governs, (here embedded Spec (IP)) via Pesetsky's revision of Baker's (1988) Government Transparency Corollary (GTC);<sup>9</sup> and, (3) a morpheme that is phonologically null at D-structure is not a governor.<sup>10</sup>

Since (22) (restated as (26)) is good, I assume that the null  $C^0$  is [+Affix]. Therefore, in (26') below, the null [+Affix]  $C^0$  raises to  $V^0$  to satisfy the SAF, allowing  $V^0$  to extend its government domain to include the NP trace in embedded Spec (IP).

- (26') [<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems+0<sub>j</sub> [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> t<sub>j</sub> [<sub>IP</sub> t<sub>i</sub> [to be late]]]]]]]

The overt  $C^0$  in (27), however, does not raise, precluding proper

head-government of the NP trace by *seem*. Note that the presence of the overt C<sup>0</sup> can account for the ungrammaticality of (25) as well.

Note also that the overt head of AP appears to be unable to properly head-govern the NP trace in (24). This will be discussed in Section 3.4.

Consider now (28) through (31) where the entire embedded CP raises:

- (28) \*<sub>[CP 0 John is late]<sub>i</sub> [<sub>VP</sub> seems [<sub>CP</sub> t<sub>i</sub>]]</sub>
- (29) \*<sub>[CP That John is late]<sub>i</sub> [<sub>VP</sub> seems [<sub>CP</sub> t<sub>i</sub>]]</sub>
- (30) \*<sub>[CP 0 John is late]<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub>]]]]</sub>
- (31) [<sub>CP</sub> That John is late]<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub>]]]]

(28) and (30) are analyzed as being introduced by null [+Affix] C<sup>0</sup>s which must incorporate in order to satisfy the SAF. But since they are in sentence initial position, they have no available host. As such, (28) and (30) violate the SAF. However, no SAF violation occurs in (29) or (31). The ungrammaticality of (29), therefore, must still be accounted for.

To summarize, it would appear as if *seem* can properly head-govern the NP trace in (22) but not the CP trace in (29), while *obvious* appears to be able to properly head-govern the CP trace in (31) but not the NP trace in (24).

### 3.4. Obligatory AP

Under an obligatory AP analysis, (29), (22), (24), and (31) can be represented as (32), (33), (34), and (35), respectively:

- (32) \*<sub>[CP That John is late]<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> 0 [<sub>CP</sub> t<sub>i</sub>]]]]</sub>
- (33) a. [<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> 0 [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> 0 [<sub>IP</sub> t<sub>i</sub> [to be...]]]]]]]]]]
- b. [<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> 0+0<sub>j</sub> [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> t<sub>j</sub> [<sub>IP</sub> t<sub>i</sub> [to be...]]]]]]]]]]
- c. [<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems+0<sub>j</sub> [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> 0<sub>j</sub> [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> t<sub>j</sub> [<sub>IP</sub> t<sub>i</sub> [to be...]]]]]]]]]]
- (34) a. \*<sub>[<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> 0 [<sub>IP</sub> t<sub>i</sub> [to ...]]]]]]]]]]</sub>
- b. \*<sub>[<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious+0<sub>j</sub> [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> t<sub>j</sub> [<sub>IP</sub> t<sub>i</sub> [to...]]]]]]]]]]</sub>
- c. \*<sub>[<sub>IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [obvious+0<sub>j</sub>]<sub>k</sub> [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> t<sub>k</sub> [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> t<sub>j</sub> [<sub>IP</sub> t<sub>i</sub> [to...]]]]]]]]]]</sub>
- (35) a. [<sub>CP</sub> That John is late]<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub>]]]]
- b. [<sub>CP</sub> That John is late]<sub>i</sub> [<sub>VP</sub> seems+obvious<sub>j</sub> [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> t<sub>j</sub> [<sub>CP</sub> t<sub>i</sub>]]]]

I assume that null A<sup>0</sup>, being a zero morpheme, can have the features [+Affix] or [-Affix]. If null A<sup>0</sup> has the feature [+Affix], it would be able to raise to V<sup>0</sup>, allowing V<sup>0</sup> to properly head-govern the CP trace via the revised GTC. Since (32) is ungrammatical, I assume that A<sup>0</sup> to V<sup>0</sup> raising has not occurred; i.e., that null A<sup>0</sup> is [-Affix].<sup>11</sup>

Yet (33) (which under this analysis contains a [-Affix] null A<sup>0</sup>

and a [+Affix] null  $C^0$ ) is good, suggesting that proper head-government of the NP trace obtains and that the SAF is respected. For the SAF to be respected, null  $C^0$  must be able to raise through null  $A^0$ , since incorporation into a NULL  $A^0$  would not satisfy the SAF. So, null  $C^0$  would raise to  $A^0$ , as in (33b), then excorporate and again raise to incorporate into  $V^0$ , as in (33c), allowing  $V^0$  to extend its government domain to Spec (IP) of the embedded clause.<sup>12</sup>

While Rizzi (1991) assumes that government of a subject, and hence Case assignment, by a matrix verb, is always blocked across a CP due to the intervening  $C^0$  (null or overt), Pesetsky (1991) assumes that Exceptional Case Marking obtains via incorporation of a null [+Affix]  $C^0$ , and is only blocked if  $C^0$  is [-Affix]. I am assuming here that in (33), Case assignment by a raising verb is blocked by the intervening null  $A^0$  which is [-Affix].

Turning to (34), the null [+Affix]  $C^0$  should be able to incorporate into  $A^0$  extending its government domain to include embedded Spec (IP). However, since (34) is ungrammatical, we must assume that for some reason, the overt adjectival head is unable to properly head-govern the trace.

How, then, can the grammaticality of (35), where the adjective appears to be properly head-governing the CP trace, be accounted for? Following Stowell (1991), I propose that the overt  $A^0$  raises to  $V^0$  to form a COMPLEX PREDICATE, as in (35b). As such, it is the complex predicate *seems obvious* and not the adjective *obvious*, that is properly head-governing the NP trace. Why, then, is (34) out? I'd like to suggest two possibilities. On the one hand, we could say that, as represented in (34b),  $C^0$  raises to  $A^0$  satisfying the SAF. The amalgamated element [adjective + null  $C^0$ ] now incorporates into  $V^0$ , as shown in (34c). Recall, however, that incorporation extends the government domain of  $V^0$  to govern everything that the TRACE OF THE INCORPOREE governed. In this case, the incorporee is the amalgamated element [adjective + null  $C^0$ ] in  $A^0$  and not the null element in  $C^0$ . Therefore, head-government is only extended to Spec (CP) and not Spec (IP). Alternatively, we could say that  $A^0$  raising to  $V^0$  may be simply precluded if  $A^0$  has already been host to a previous incorporation.

#### 4. Small clauses revisited

In Section 2.3, I assumed the analysis of small clauses presented in Chomsky 1981 and Stowell 1981, 1991. However, in proposing that raising verbs obligatorily select AP complements, I would hope to extend that proposal to an analysis of small clause constructions as well.

With respect to full clausal complements, I claim that data such as (18) through (21) (repeated here as (36) through (39), respectively, provide evidence for an intervening AP complement:

(36) It seems [<sub>CP</sub> that John is late]



- (37) \*[That John is late]<sub>i</sub> seems [<sub>CP</sub> t<sub>i</sub>]  
 (38) It seems [<sub>AP</sub> obvious [<sub>CP</sub> that John is late]]  
 (39) [That John is late]<sub>i</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub>]]]

Although the CP complement can raise when the adjectival head is overt, as in (39), this is not the case when what is raising is the embedded subject. In cases such as (34) (repeated here as (40)), I have claimed that the presence of an overt adjectival head prevents raising of the embedded subject by blocking the C<sup>0</sup> to V<sup>0</sup> raising that allows proper head-government of the subject trace:

- (40) \*<sub>[IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> 0 [<sub>IP</sub> t<sub>i</sub> [to...]]]]]]]]]

As in embedded infinitival clauses, subjects must raise in small clause constructions in order to receive Case. Once again, it would appear that the presence of an overt adjectival head precludes such movement. However, since the small clause is not assumed to be headed by a CP, we can't appeal to the inability of C<sup>0</sup> to incorporate into V<sup>0</sup> to account for the ungrammaticality of data such as (41):

- (41) \*<sub>[IP</sub> John<sub>i</sub> [<sub>VP</sub> seems [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> obvious [<sub>AP</sub> t<sub>i</sub> [<sub>A'</sub> late]]]]]]]

Instead, I assume, following Stowell 1991, that a small clause construction undergoes restructuring at LF. The obligatory AP analysis would require a D-structure such as (42) which would undergo restructuring resulting in (43):

- (42) e [<sub>VP</sub> seem] [<sub>AP</sub> 0 [<sub>AP</sub> [<sub>NP</sub> John] late]]  
 (43) e [<sub>VP</sub> seem+late]<sub>i</sub> [<sub>AP</sub> 0+t<sub>i</sub> [<sub>AP</sub> [<sub>NP</sub> John] t<sub>i</sub>]]

A<sup>0</sup> raises to V<sup>0</sup> by means of head-to-head adjunction, forming a complex predicate. If the A<sup>0</sup> heading the small clause must raise to V<sup>0</sup> in much the same way as C<sup>0</sup> raises to V<sup>0</sup> in the case of full clauses, we can assume that, as in the latter case, null A<sup>0</sup>s can be moved THROUGH (by means of incorporation and excorporation of the small clause head in an effort to form a complex predicate with the raising verb) while overt adjectival heads cannot, thereby blocking complex predicate formation.

## 5. Summary: The obligatory AP proposal

The proposal outlined here can be briefly summarized as follows:

- A. Raising verbs obligatorily select AP complements:
- i. if A<sup>0</sup> is null, it has the feature [-Affix];
  - ii. if A<sup>0</sup> is overt, it raises to V<sup>0</sup> at LF forming a complex predicate whose government domain extends to include everything that the trace of the incorporated A<sup>0</sup> governs, i.e., a trace in CP, but not in embedded Spec (IP).
- B. A<sup>0</sup>s may select CP propositional complements:
- i. null C<sup>0</sup> is [+Affix];

- ii. proper head-government of an NP trace in embedded Spec (IP) only obtains when a null  $C^0$  can incorporate into  $V^0$ , extending its government domain;
  - iii. null  $C^0$  can move through a null  $A^0$  to  $V^0$  since incorporation into null  $A^0$  would not satisfy the SAF; and,
  - iv. incorporation of null  $C^0$  into an overt  $A^0$  precludes proper head-government of a trace in embedded Spec (IP). Proper head-government may not obtain due to:
    - a) a limit on extension of the government domain of  $V^0$  to government of what the trace of the amalgamated element (overt  $A^0$ + null  $C^0$ ) governs;
    - or,
    - b) the inability of the overt  $A^0$  to incorporate into  $V^0$  if it has, itself, been host to a previous incorporation.
- C.  $A^0$ s may select small clause propositional complements:
- i. null  $A^0$ s can be moved through, allowing restructuring to occur resulting in complex predicate formation;
  - ii. overt  $A^0$ s block complex predicate formation and so cannot occur with small clause constructions.

## 6. Why AP?

I have proposed here that an obligatory complement selected by the raising verb intervenes between it and the clausal complement, accounting for much of the phenomena associated with raising verbs. I have further assumed this complement to be an AP as it would appear as if the head of this intervening maximal projection must be a lexical item that can predicate over propositions.

However, S. Franks (personal communication) questions the validity of identifying this complement as an AP, suggesting that it might, for example, be a PP instead. I can think of only a few cases where PPs predicate over propositions, and these are idiomatic PPs such as the following:

- (44) It seems in the bag that John will win the race.  
 (45) It seems in the cards that they will marry.

M. DeGraff (personal communication) has suggested that the idiomatic nature of these PPs might require them to be reanalyzed as adjectives (in the sense of predicating over propositions) at some relevant level. On this note, he further suggests that NULL  $A^0$  might be interpreted as the null counterpart to lexical *true*.

## 7. $\theta$ -assignment

This brings us to the problem of  $\theta$ -role assignment. Raising verbs are usually assumed to assign one internal  $\theta$ -role. I have proposed here that raising verbs obligatorily select AP complements and, furthermore, that raising verbs combine with their selected overt  $A^0$ s to form COMPLEX PREDICATES each of which have only one  $\theta$ -role to assign.

Assuming that adjectives also have  $\theta$ -roles to assign, how can we account for what appears to be the loss of a  $\theta$ -role in the formation of a complex predicate?

### 7.1. Raising verbs do not assign $\theta$ -roles

We could consider that raising verbs assign  $\theta$ -roles to their AP complements, but this move would require a radical modification of the concept of  $\theta$ -role that I do not feel is well founded. S. Lappin (personal communication) has suggested to me that if, in the spirit of Williams 1983, one is prepared to separate the syntactic and semantic components of L-marking, the raising verb can be seen as assigning the status of argument phrase to its AP complement without assigning it a semantic role. Williams (1994) describes the relationship between the raising verb and its AP complement as a FUNCTION COMPOSITION by which the raising verb transmits its complement's  $\theta$ -role to its subject. Although Williams is working in a PREDICATION as opposed to a RAISING framework, I think the idea of raising verbs as functors might be extended to cases where overt  $A^0$ s raise to  $V^0$ . In other words, overt  $A^0$ s raise to be in a function relation with the verb in order for their  $\theta$ -roles to be assigned.

This approach raises the question of the status of null  $A^0$ s with respect to  $\theta$ -role assignment. The ungrammaticality of (46) suggests that null  $A^0$ s do not have  $\theta$ -roles to assign since it is assumed that a small clause subject receives its  $\theta$ -role from the head of the small clause:

(46) \* $[_{IP}John_i [_{VP}seems [_{AP}t_i [_{A^0}]]]]$

However, if neither raising verbs nor null  $A^0$ s assign  $\theta$ -roles, how is the clause  $\theta$ -marked in (47)?

(47) It seems  $[_{AP}0 [_{CP}John \text{ is late}]]$

### 7.2. Propositional adjectives do not assign $\theta$ -roles

It could be the case that adjectives that predicate over propositions do not assign  $\theta$ -roles. However, I will not pursue this here, but merely suggest it as a possible analysis.

### 7.3. Complex predicates = conflation of $\theta$ -roles

In lieu of distinguishing propositional adjectives by their inability to assign  $\theta$ -roles, M. DeGraff (personal communication) has suggested the possibility that complex predicate formation results in the conflation of two  $\theta$ -roles into one. At present, the mechanics of such an approach remain to be worked out. One can speculate, however, that raising verbs do assign  $\theta$ -roles and that the  $\theta$ -role of the overt AP head is somehow absorbed in complex predicate formation. Under such an account, a null AP head (having only a syntactic role to play) would not have to assign a  $\theta$ -role as the  $\theta$ -role assigned by the raising verb would suffice.

## 8. Raising adjectives

In this discussion of raising verbs, I have proposed an alternative to CP-deletion I now consider whether this proposal can be extended to raising adjectives as well and account for the contrast between (34), repeated here as (48), and (49):

- (48) \*John<sub>i</sub> seems [<sub>AP</sub>t<sub>i</sub> [<sub>A</sub>'obvious [<sub>CP</sub>t<sub>i</sub> [<sub>C</sub>'0 [<sub>IP</sub>t<sub>i</sub> to be late]]]]]  
 (49) John<sub>i</sub> seems [<sub>AP</sub>t<sub>i</sub> [<sub>A</sub>'likely [<sub>CP</sub>t<sub>i</sub> [<sub>C</sub>'0 [<sub>IP</sub>t<sub>i</sub> to be late]]]]]

I have already considered two possibilities for ruling out (46). Either the government domain of V<sup>0</sup> cannot be extended as far as the trace in embedded Spec (IP), OR A<sup>0</sup> can't incorporate into the verb once it's been the host of a previous incorporation. We then have two possible accounts for the grammaticality of (47). If raising adjectives do not raise to V<sup>0</sup> to form complex predicates, proper-head government of the trace in Spec (IP) could obtain via C<sup>0</sup> raising to A<sup>0</sup>. Alternatively, we could assume that raising adjectives are somehow able to raise to V<sup>0</sup> despite having already served as host to a previous incorporation. At present, I have no grounds to select one analysis over the other, but offer both as possibilities.

## 9. Conclusion

In conclusion, I have tried to show that by postulating obligatory AP complements for raising verbs, and by assuming that in raising constructions CP complements are headed by null [+Affix] C<sup>0</sup>s, much of the phenomena associated with raising verbs follows from the interaction between A<sup>0</sup>s (overt and null) and null C<sup>0</sup>s, thereby precluding a need for CP-deletion. Furthermore, the inability of raising verbs to assign Case need not be stipulated as Case assignment would be blocked by the intervening A<sup>0</sup>. While questions regarding  $\theta$ -assignment remain to be worked out, I think such an approach is conceptually preferable and empirically motivated.

## NOTES

\* This paper benefited greatly from discussions with S. Franks, R. Kayne, S. Lappin, J. Nuñez, F. Ordonez, I. Stefanescu, M. Suzuki, and S. Utakis. Very special thanks are due to M. DeGraff who showed me how to get from Brooklyn to Illinois and to F. Gulinello who co-piloted.

<sup>1</sup> Exceptional Case Marking allows a matrix verb to assign accusative Case to the subject of its infinitival complement clause.

<sup>2</sup> These two stipulations—the inability to assign subject thematic roles and the inability to assign accusative Case—are captured by Burzio (1986:178) in Burzio's Generalization: '...all and only the verbs that can assign  $\theta$ -role to the subject and assign (accusative) Case to an object.' However, while this generalization may be descriptively accurate, it seems to lack explanatory power.

<sup>3</sup> Although Chomsky (1981) was not working in the framework of X-bar Theory, I follow Pesetsky (1991) in describing S-bar deletion in terms of its X-bar counterpart, CP-deletion.

<sup>4</sup> Pesetsky (1991:130) describes CP-deletion as '...dubious because it is an isolate in the LGB system.'

<sup>5</sup> Williams (1983), on the other hand, eschews the small clause analysis and instead analyzes examples such as (12) in terms of his theory of PREDICATION, giving (12) the following D-structure:

- (i) John<sub>i</sub> [seems<sub>0</sub> [late<sub>i</sub>]<sub>APi</sub>]<sub>VPi</sub>

Under Williams' analysis, *John* is base generated in Spec (IP) and co-indexed with the predicate. However, even under this analysis, *John* receives its  $\theta$ -role from the adjectival head.

<sup>6</sup> I assume here Rizzi's (1991:74) conjunctive formulation of the ECP: A nonpronominal empty category must be

- (i) properly head-governed (Formal Licensing)  
 (ii) Theta-governed or antecedent-governed (Identification).

<sup>7</sup> I am assuming here that the CP complement raises into Spec (IP) of the matrix clause, i.e., subject position, but see Koster 1978 for arguments against this view.

<sup>8</sup> The Stray Affix Filter: \*X if X is a lexical item whose morphological subcategorization frame is not satisfied at S-structure. (Pesetsky 1991:167, attributed to Lasnik 1981)

<sup>9</sup> The Government Transparency Corollary: A category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position (Baker 1988:64).

<sup>10</sup> According to Pesetsky (1991:153), 'An X which is phonologically null at D-structure (i.e. a zero morpheme) is not a governor.' Pesetsky's (1991) revision (the TRACE version) allows the trace of the incorporated item to have a government domain (which, via incorporation, extends the host's government domain) even if the incorporated item, prior to incorporation, was not a governor (i.e., was a zero morpheme).

<sup>11</sup> It seems to me that a zero morpheme that is not marked [+Affix] can be construed as being either marked as [-Affix] or simply unmarked for the feature. In the present discussion, nothing hangs on this distinction.

<sup>12</sup> Note that under this analysis, the embedded subject must raise through Spec (CP), Spec (AP) and Spec (VP) on its way to Spec (IP) of the matrix clause. This constitutes improper movement, as described in May 1985, as the NP moves to an A-bar and then back to an A position. However, J. Nuñez (personal communication) notes that if the incorporation of C<sup>0</sup> into V<sup>0</sup> allows the trace of C<sup>0</sup> to inherit

properties of the host, Spec (CP) might be analyzed as being an A position, given Spec-head agreement.

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**THE STRUCTURE OF CONTEXT:  
THE REPRESENTATION OF PRAGMATIC RESTRICTIONS  
IN HPSG\***

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One of the design considerations for HPSG is the integration of pragmatic information with grammatical and semantic information. This paper describes how the current framework might be adapted to reflect a general theory of pragmatics, and at the same time, enable more accurate accounts of pragmatic constraints on linguistic forms within HPSG. After fixing the denotations for some necessary terminology, I describe and elaborate some proposals that are incompletely sketched in the initial expositions of HPSG (Pollard & Sag 1987, 1994). I then demonstrate how two familiar pragmatic constraints on the use of lexical items (so-called extended reference, and Japanese empathy-sensitive verbs) can be represented more completely and more accurately. The paper concludes with a discussion of what is required to represent pragmatic conditions associated with particular syntactic constructions.

## **1 Some background**

This paper is about constraints on the felicitous utterance of signs. A sign is an abstract, structured object with phonological, syntactic, semantic, and contextual attributes—like a word or a phrase. An utterance event is what Austin (1962) called a *LOCUTIONARY ACT*, encompassing, to paraphrase Austin (1962:92-93), making some noise<sup>1</sup> that is intended to be recognized as belonging to a certain vocabulary and conforming to a certain grammar, and as having a certain intended sense and reference. An act of uttering a particular sign X is then an act of producing a noise that corresponds to the phonological attribute of that sign, with the intent that the product of that act be understood as intended to have syntactic, semantic, and contextual properties that correspond to the respective attributes of that sign. Thus, by *utterance* I will mean utterance as (sincere, communicative) use, not utterance as mention.<sup>2</sup>

Just as grammars limit the possible expressions of a language to those that satisfy certain constraints (including constraints on relations among details of the internal structure of those forms), cultures associated with languages impose conditions on the felicitous *USE* of those expressions, limiting felicitous use to those contexts which satisfy certain constraints. The felicitous utterance of signs is thus

the subject matter of pragmatics, and the constraints that linguists propose are its nuts and bolts and I-beams.

In HPSG, signs are modelled as completely specified sorted feature structures (Pollard & Sag 1994:8, 17-18; Shieber 1986, Pollard & Moshier 1990, Carpenter 1992).<sup>3</sup> The linguistic rules that constitute a grammar are formulated as constraints on the values of attributes defined for various classes of linguistic objects. They are represented in Attribute-Value-Matrices (AVMs) like (I) below, where values are written to the right of the names of the attributes they are values of. For perspicuity, sometimes values are labeled with the name (in *italics*) of the sort that structures their content. An appropriate use-utterance of a linguistic object must correspond to one or more of these formal objects in that a description of its properties must unify with the description of theirs.

## 2 The character of contextual constraints in HPSG

In general, contextual constraints on the appropriate use of a linguistic expression are represented in the value of the attribute `CONTEXT`. This value is of sort *context*, and has in turn an attribute `CONTEXTUAL-INDICES` (abbreviated `C-INDS`), whose values indicate the contextual anchors for an utterance (pointers to speaker, addressee, time of utterance, location of utterance, and so on). `CONTEXTUAL-INDICES` is always an attribute of contexts, but, for legibility, is suppressed in diagrams where it does not figure in any constraint. Contexts also include background assumptions, essentially presuppositions, which are represented as a set of (possibly open) propositions. These are called "psaos" in HPSG, for Parameterized-States-of-Affairs, with appropriate argument values declared independently for various subsorts (1994:338). The label on the sort description supplies the type of relationship among the values for the roles which are the attributes of the sort, as illustrated in Fig. 1 (next page),<sup>4</sup> which represents the constraint that use of the proper noun *John* is appropriate only when the intended referent of a particular third person singular index is named John. (The `BACKGROUND` psao with the label "naming" identifies the relation between a name and a bearer. For legibility, I have left out syntactic information, which is irrelevant to what is at issue here. The `CONTENT` representation of nominals will be discussed shortly.)

The `BACKGROUND` value would include assumptions about social relations of the sort that affects pronoun choice, as well as presuppositions of uniqueness or factuality associated with particular lexical items, as in Fig. II (next page), for English *regret*.

In Fig. II, the subject of *regret* is represented as the first item on the `SUBCAT` list, and the subscript [1] on it matches the value of the `EXPERIENCER` attribute in *regret*'s `CONTENT` value. This represents the constraint that the subject of *regret* is the regreter. The fact that the `CONTENT` of the state of affairs that is regretted is the same as

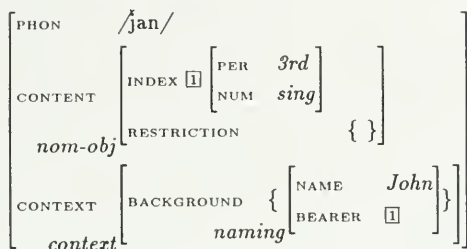


Figure I: Partial representation of lexical entry for a proper name according to Pollard & Sag (1994)

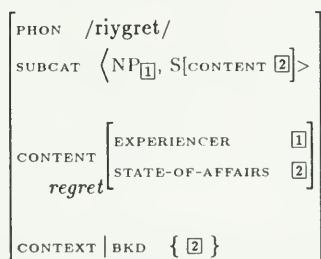


Figure II: Partial lexical entry for a factive verb, in the style of Pollard & Sag (1994)

the BACKGROUND proposition in the CONTEXT represents the constraint that the complement of *is* presupposed to be true.

Thus, in general, pragmatic constraints are represented in available articulations of HPSG as a set of BACKGROUND propositions, which can in principle be about anything at all, but typically are about entities and events mentioned in the description of the semantic content of the sign. There is one exception, however. The constraint that the referent of a common noun be an instance of the class referenced by the noun is part of the CONTENT of the noun, not the CONTEXT. The representation of referential NPs calls for a CONTENT value which has, in addition to an INDEX specifying values for grammatical person, number, and gender features, a RESTRICTION attribute whose values are

interpreted as placing semantic conditions on the entities that the indices appearing in them can be anchored to in a given context (or range over, in case an index is quantified). (Pollard & Sag 1994:26)

Fig. III (next page), for the meaning of *book*, is representative.

It is not entirely clear what it would mean for there to be SEMANTIC conditions on the unconstrained entities that populate a (model of a)

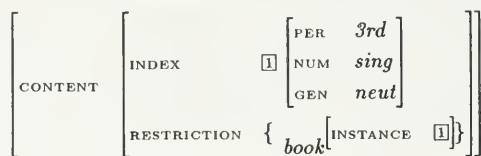


Figure III: A CONTENT value, after  
Pollard & Sag (1994) (1994: 26)

world, but Pollard & Sag explain their intentions, with regard to a representation like Fig. III, as follows:

The significance of the RESTRICTION value is that when the word *book* is used referentially (e.g. in a referential use of the phrase *a book*), the index [1] introduced by that use must be anchored to an entity which renders each psOA in the set (in this case, a single psOA) factual; that is, the index must be anchored to a book. (1994:26)

### 3 Some inadequacies in the current treatment

#### 3.1 Indexes and anchors

The constraints on the intended referents of nominal expressions (whether in BACKGROUND or in CONTENT) have been represented as constraints on indexes. But indexes are defined (1994:24-26) to be abstract LINGUISTIC objects (with attributes only for person, number, and gender), so it is a category error to say that indexes are constrained to instantiate such relations as 'dog' or 'book', or to be named John, that is, to be dogs or books, or be named John'. It is clear that the intent is to constrain the anchors of those indexes in such ways. For example, Pollard & Sag describe the BACKGROUND value in Fig. I as corresponding

to the presupposition that the referent of a use of the name *John* be named John, or, to be somewhat more precise, that the referent be identifiable in the utterance context by means of the name *John*. (1994:27)

This is an improvement on what Fig. I appears to say, since it is easy to show that the relevant relation is neither 'naming' nor 'calling', because both would make sentences like (1a) and (1b) contradictions, which they are not.

- (1) a. Haj Ross is not named Haj Ross.  
b. John Robert Ross is not called John Robert Ross.

Two problems remain. First of all, empirically this is a halfway measure. It does not indicate by whom the referent is to be identifiable, or according to whom the referent is supposed to be identifiable by that person.

Second, nothing in either the BACKGROUND representations or the representations of RESTRICTION values requires the interpreta-

tion that Pollard & Sag suggest, and it is hard to see how a model-theoretic interpretation of this could be made consistent with the rest of the theory. The gist of the interpretation quoted is that while indexes are just person, number, and gender-class information associated with a linguistic expression, a constraint of the sort in the BACKGROUND value in Fig. 1 constrains not the index [1], but the entity to which it is anchored, to be the bearer of the name John. The formal interpretation of this must be context-sensitive in that when an index is a value of the attribute INDEX, it represents person, number, and gender information, but when a referential index is the value of some role name in a psoa, it represents the entity to which that grammatical information is anchored.<sup>5</sup>

### 3.2 The domain of BACKGROUND propositions; names and factive verbs

The examples of BACKGROUND psoas that Pollard & Sag provide invite the inference that they constrain objective properties of the context. This inference is supported by such claims as:

...BACKGROUND psoas are not part of the CONTENT value but should rather be considered as felicity conditions on the utterance context. (1994:27)

...we...will treat honorification via constraints on when the speaker owes honor to the referent of the subject. (1994:93)

Quite likely, such characterizations are a response to accumulating evidence that certain aspects of linguistic form correlate with different kinds of facts about the situations in which those forms are appropriately used. Nonetheless, it cannot be right to say that objective facts of the sorts provided in the examples constrain utterance contexts. For example, taken at face value, a representation of proper nouns as NPs with CONTEXT\BACKGROUND values as in Fig. 1 above predicts that reference to an individual by a name that is not their name is incorrect or impossible. But any N' can be used as a proper name in context without supposing any formal or customary naming relation, as shown in (2).

- (2) A nurse glanced up from her paperwork through bifocal glasses. "Just a minute," Bifocals said. "You're supposed to be in traction."

(adapted from *People of Darkness*, by Tony Hillerman (Perennial Library, Harper and Row, 1988, p. 139))

This has implications for the proper treatment of reference in general, which I take up shortly.

Of course, it is nonsensical to think of either linguistic signs or utterances of them as actually limiting the world (in the form of contexts in which the signs might happen to be uttered), and in general, it is empirically incorrect to treat BACKGROUND propositions as propositions about the objective world in which the sign is used. It is (since Morgan 1973) trivial to show that the relevant background



propositions are not about objective aspects of any world, but rather are propositions about beliefs which the speaker supposes to be mutual.

For example, factive verbs are said to normally presuppose their complements. If this means that the proposition corresponding to the complement has to be true of the context of utterance for a factive verb sentence to be felicitous, then when that proposition is false of the context of utterance, EVEN IF NO SPEECH ACT PARTICIPANT KNOWS THAT IT IS FALSE, such sentences ought to be infelicitous. This prediction is wrong. For example, it predicts incorrectly that if it was the case that french fries were actually healthful, but no one knew it, everyone would still find it perfectly acceptable to say things like (3).

(3) Clinton realizes french fries are bad for him.

### 3.3 Common nouns and names

From the description of the RESTRICTION attribute of the CONTENT values for nominal objects quoted above, it is clear that restrictions on indices are pragmatic in character. The passage cited above not only refers (three times) to the USE of an expression, it invokes the notion 'intended referent' in referring to the entity to which the expression's index is anchored. This is necessarily something that is contextually determined (rather than grammatically or semantically determined), because its identification depends as much on the speaker's intention to refer to THAT entity as on the words she chose. Without information about what entity the speaker intended the index to be anchored to, the utterance of a sign containing an index cannot be evaluated, in the sense that its well-formedness in context cannot be determined. But if information about the identifiability of an intended referent of the use of a sign under a given description is pragmatic when the sign is a name, then that same sort of information is pragmatic when the sign is a common noun. It is the goal of the next section to show that treating both as involving BACKGROUND propositions, following Grice (1957), Kripke (1972) and Nunberg (1978), has the added attraction of suggesting a means for representing the regularities of transferred reference which reflects Nunberg's (1978) insights about polysemy.

## 4 Towards a fuller account of reference

All reference involves mutual beliefs about normal beliefs about what things are called by what names in which sub-communities, and about metaphor-like techniques for extending the usual domain of reference of a term to entities functionally related to entities in that domain. The aspects of situations that figure in restricting when a form is appropriately used all refer, at bottom, to conditions on attitudes (typically beliefs and intentions) of speech act participants and role-bearers (typically, agents and experiencers) in referenced state and event relations.



A more accurate account of the contextual condition on the use of proper names than that in Fig. 1 would refer to the speaker's belief described in (IV).

IV. CONDITION ON FELICITOUS USE OF A NAME X: The speaker believes that the addressee will be able to identify the intended referent FROM the reference to it by that name and will believe that the speaker intended him to do so by recognizing that belief of the speaker.

But since (IV) reflects a general condition on the use of referring expressions (Grice 1957), it shouldn't have to be represented as part of the grammar or lexicon, but should follow from the fact that language is used in accordance with a Cooperative Principle (Grice 1975, Green 1993a) which entails that general condition.<sup>6</sup> Perhaps all that has to be said with reference to particular proper names is that an entity anchored to the index the name introduces *is being called* by the proper name uttered.

Up to now, we have not addressed the well-known fact that the "restrictions" assigning indexes of common (and proper) nouns to entities of particular sorts are not linguistically constrained. That is, as language users, we are free to use any word to refer to anything at all, subject only to the purely pragmatic constraint that we have to consider how likely it is that our intended audience will be able to correctly identify our intended referent from our use of the expression we choose. We frequently exploit this freedom, referring to movies as turkeys, cars as lemons, and individuals in terms of objects associated with them, as when we say that the flute had to leave to attend his son's soccer game, or that the corned beef spilled his water. Yet we all ACT as if we believe, and believe that everyone else believes, that individual words differentially constrain the mapping from index to anchor.

We can represent such "normal" word meanings in terms of mutual belief in a normal belief about referential expressions,<sup>7</sup> following Nunberg (1978). The relation *mutually-believe* (abbreviated *mbelieve*) is a familiar relation that holds among two sentient beings (let us call them an experiencer and a standard) and a proposition. Mutual belief does not involve perfect mutual knowledge, but rather the recursive relation of the experiencer believing the proposition, believing that the standard believes the proposition, believing that the standard believes that the experiencer believes the proposition, and so on (Cf. Cohen & Levesque 1990). The relation *normally-believe* (abbreviated *nbelieve*) holds of a community and a proposition P when people in that community believe that it is normal in that community to believe P and that everyone in that community believes that. Figure V illustrates representing the meaning of *dog* in terms of a mutual belief that English speakers normally believe that *dog* will refer to dogs.

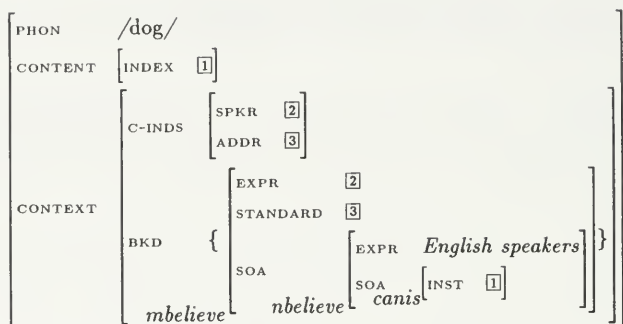


Figure V: Partial lexical entry for a common noun, following Nunberg (1978) (naive version)

Fig. V says, roughly, that when you use the word *dog* to refer to something, you take it for granted that people will take you to be referring to a dog. In saying this, it makes the treatment of common nouns quite parallel to that of proper names (cf. Kripke 1972, Green 1984, 1993b).

Some uses of referential expressions are not so much abnormal or less normal as they are normal in a more narrowly defined community. Their representations will reflect this difference, as well as their relations to less remarkable uses, which can be described in terms of fairly simple functions.<sup>8</sup> For example, *milkshake* as used in (4) might have a representation like that in Fig. VI (next page), where in addition to a mutual belief about what English speakers normally use *milkshake* to refer to, there is a mutual belief that it is normal for sales agents to use a description of a purchase to refer to the purchaser, as well as a mutual belief that the person identified as the plaintiff bought a milkshake.

(4) The milkshake claims you kicked her purse.

## 5 Representing constraints on the utterance of signs

An interesting property of these conditions on the referential use of expressions which is not represented so far is that they seem to require reference to properties of the expressions themselves. For example, just as it is the intentions accompanying the UTTERING of an expression that make it a warning, not any property of or condition on the expression itself, the general pragmatic condition on using a nominal expression to refer to some intended referent is not that the index of that expression have a certain name or instantiate a certain category. That doesn't make any sense, since an index is just person, number, and gender information associated with a USE of a nominal expression. The general condition is rather that the speaker believe that the addressee will recognize the speaker's intention in USING the expression that its index be taken to be anchored to that intended

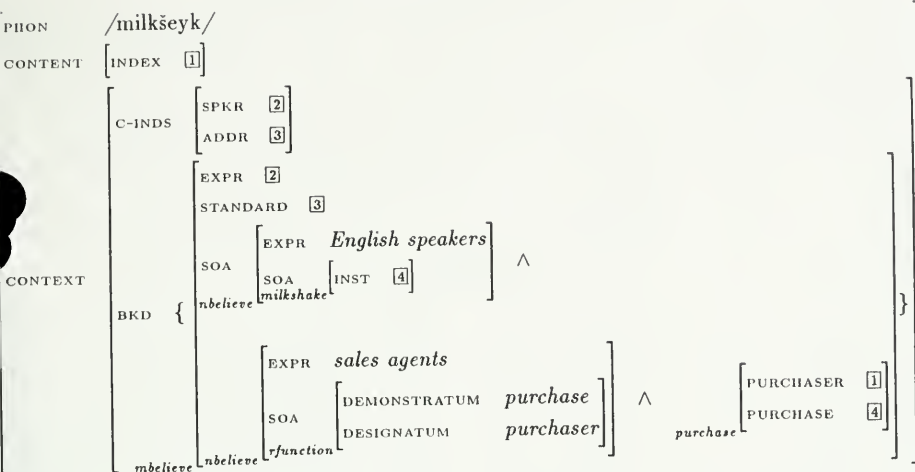


Figure VI: Representation<sup>9</sup> for a transferred reference, following Nunberg (1978) (preliminary version)

referent.<sup>10</sup> Figs. V and VI do not reflect this; Fig. V actually refers to English speakers normally believing that the index of the entity that the speaker is using the word *dog* to refer to is a dog.

Insofar as the structure-sharing capacity of HPSG ("the central explanatory mechanism" (1994:19)) allows the same feature structure to be the value of different attributes within a sign, it is possible to represent properties of the utterance act itself among the BACKGROUND psos by invoking the general HPSG sort *sign* as the value of a role-attribute like INSTRUMENT or UTTERANCE in an instrumental psos.<sup>11</sup> In the case of normal word meaning, all that is needed is to add to the CONTEXT|BACKGROUND set a proposition relating to intentions accompanying utterance of a sign which shares certain properties with the sign actually uttered, as shown in Fig. VII (next page).

This representation replaces the (bizarre) constraint that it is normally believed that the index anchored to the intended referent is a dog, with the constraint that it is normally believed that uttering the noun *dog* indicates intent to refer to an object which is a dog. The information that the actual anchor of the index [1] is a dog is then treated as a conversational implicature from this information.

This analysis requires adding to the HPSG ontology of objects only one new object type: *referent*. Referents are defined as having two attributes, INSTANCE (which takes any sort of object in the universe as its value (i.e., it is a completely free variable), and the RESTRICTION attribute which was formerly defined for nominal-objects. RESTRICTION continues to have sets of propositions (psos) as its value, and they can now legitimately restrict the class to which

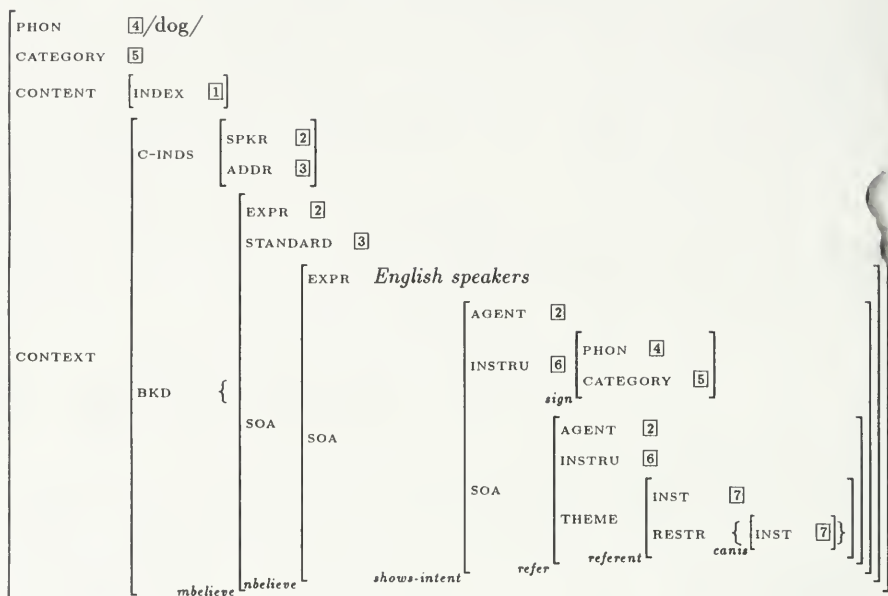


Figure VII: Lexical entry for a common noun, following Nunberg (1978) (closer approximation)

the anchor may belong. Since this analysis doesn't constrain indexes at all, but rather the class of entities to which they might be anchored, RESTRICTION is no longer declared for nominal-objects.

The representation of transferred reference uses is refined similarly, as shown in Fig. VIII (next page).<sup>12</sup>

## 6 Empathy verbs

Empathy-sensitive lexical items (words whose use reflects the speaker's degree of association with various participants and the relative social rank of participants) may now be seen as unexceptional. The constraints on them differ from other pragmatic constraints only in the particular relations invoked. Suppose the conditions on empathy verbs involve something like 'the anchor of this index bears such-and-such social or emotional relation to the anchor of that index.' For example, *yarū* is one of several Japanese verbs which refers to the 'giving' relation. It is used when the giver is associated with the speaker, and ranks higher socially than the recipient (so that it is typically appropriate to use it in saying 'my father gave that boy a yo-yo' but not in saying 'the beggar gave me a paper flower'). In any case, empathy is not measured between words, but rather between their referents. Thus, a particular empathy-sensitive verb is selected by an utterer (by act of will), to index the intended referents of words in accordance with particular social goals. It is not

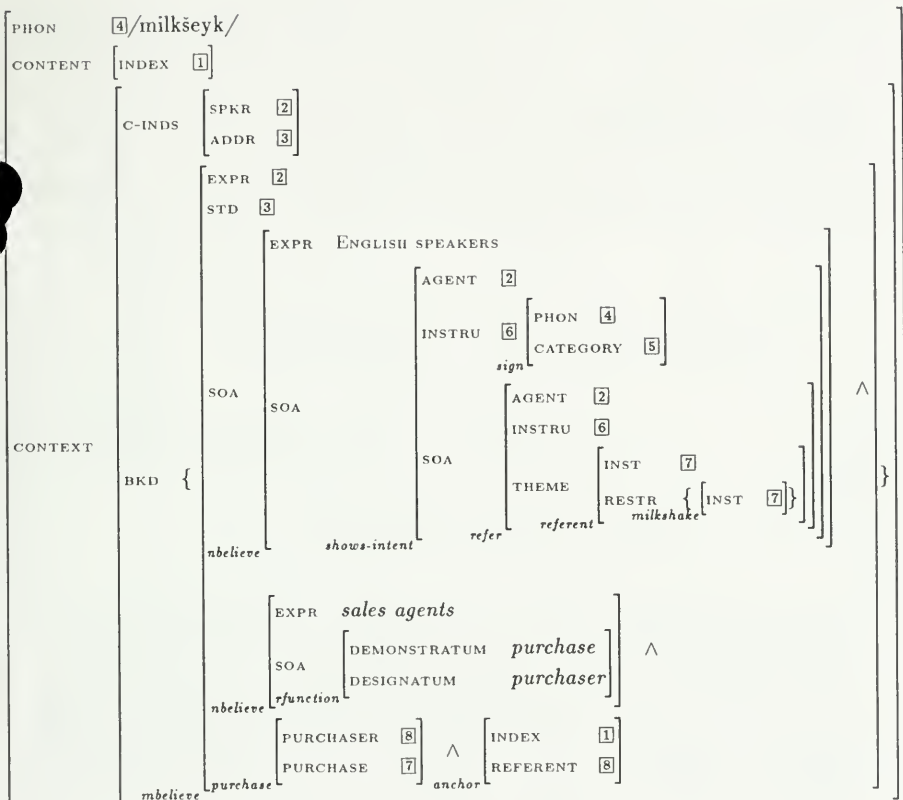


Figure VIII: Representation for a transferred reference, following Nunberg (1978)

ungrammatical to use *yaru* to describe a gift from a socially lower person, although it will implicate that the referent is not socially lower than the recipient.

At any rate, the condition is not strictly that the giver actually be associated with the speaker, or the recipient socially lower. The reflection of such social relations is a CONVERSATIONAL implicature of saying something, the saying of which presupposes that the speaker believes that the various conditions are met.<sup>13</sup> For concreteness' sake, Fig. IX illustrates the condition on the use of the verb *yaru*, described above (next page).

Note that it is not necessary to REPRESENT the speaker's intent that uttering the form will cause the addressee to believe that the speaker intends the addressee to believe the propositions in the

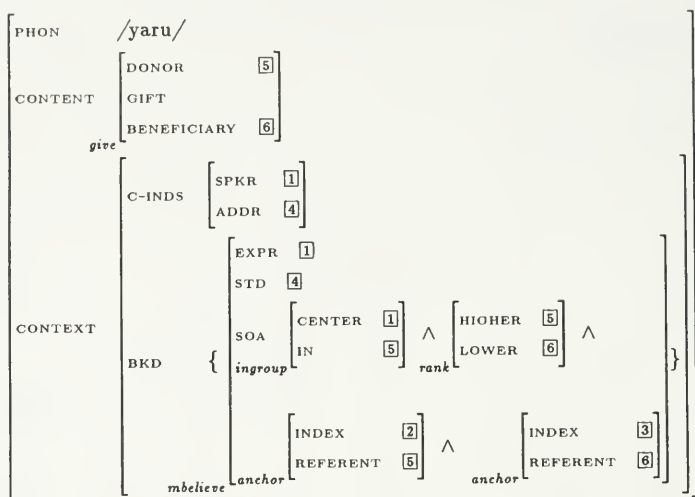


Figure IX: Partial representation of the constraints on a verb of giving

form's BACKGROUND value; the Cooperative Principle guarantees that on hearing the speaker utter some expression, the addressee will attribute intentions to the speaker in doing so, and they will include the intention to represent herself as believing the propositions required for the felicitous utterance of that expression. Because the use of such forms reflects beliefs about the speaker's association with participants which the speaker believes to be mutual, it will induce inferences when those beliefs are not in fact mutually held.

## 7 Constraints on constructions

All of the pragmatic constraints on forms (constraints on the use of forms) discussed so far have affected individual words or morphemes. Yet it has long been noted (e.g., Davison 1980, Borkin 1974, Prince 1978, Green 1981) that the use of syntactic construction types may also be constrained by speakers' assumptions about referents and their relations to each other, to speech act participants, and to properties of assumed worlds. For instance, Davison (1978) and others have observed that the use of passive constructions may imply that the passive subject is affected for good or ill by the event referenced by the passive verb. The use of raising-to-object constructions in English has been observed (Borkin 1974, Postal 1974) to be associated with an assumption that (roughly put) the referent of the subject (could) perceive the state of affairs involving the referent of the object through direct interaction with that individual. The use of focus constructions of various sorts (e.g. clefts, pseudo-clefts (Prince 1978), argument preposing (Ward 1985)) reflects assumptions about



the relation of the referent of the focused element to an appreciation of the state of affairs in which it figures.

There are two ways in which CONTEXT specifications can be associated with constructions in the framework being considered. First, if the construction is described by means of a lexical rule which specifies one set of constraints in terms of another, the contextual constraints can be included as part of the "derived" lexical entries. Thus, an affective passive lexical rule might look something like the function represented in Fig. X.<sup>14</sup>

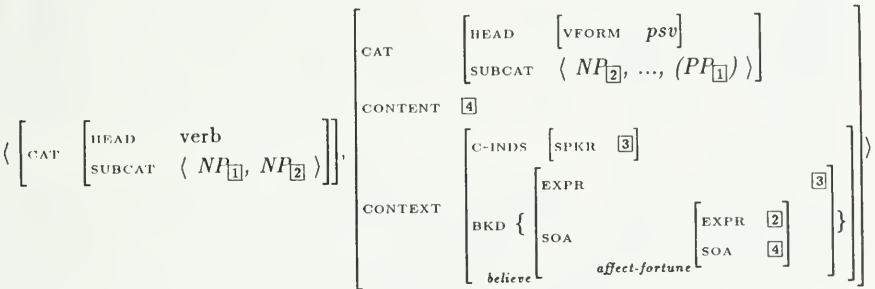


Figure X: Skeleton of a passive lexical rule for an affective passive

Focus Inversions (Birner 1992) would seem to be amenable to similar treatment (cf. Levine 1989, Green 1993c).

Not all constructions are described by lexical rules, of course. Raising-to-object verbs, for instance, are just the subtype of transitive verb which seeks for its object whatever its VP complement subcategorizes for. Insofar as raising-to-object verbs thereby define a subsort of transitive verbs, which are a subsort of verbs, the CONTEXT specifications can be described as part of the sort definition in the description of the lexical type hierarchy for verbs (cf. Pollard & Sag 1987:191-218). At the termini of such type hierarchies are individual lexical entries with non-disjunctive specifications; words with multiple subcategorizations, for instance, will occur at multiple terminals, each with a different specification. The verb *be*, to take an extreme example, will have different subcategorizations for its use in clefts, pseudo-clefts, property predications, identity predications, etc. Different CONTEXT constraints can be described along with the different subcategorization constraints as needed.

It appears, then, that the means for representing contextual constraints on constructions are built into HPSG, in the form of the basic multiple-inheritance lexical type hierarchy and the lexical rules which instantiate grammars.<sup>15</sup>

## 8 Conclusion and prospects

I hope to have demonstrated that it is possible, within the framework provided by HPSG for representing information about linguistic signs (and their use), to describe pragmatic constraints on forms at whatever level of detail is empirically necessary, without ad hoc SYNTACTIC features or auxiliary components or modules. Contextual information is necessarily a part of the representation of first and second person indexicals common to all languages, and to the representation of reference. The framework HPSG provides for describing those aspects of the relation between linguistic form and language use does not need to be distorted to describe more subtle contextual constraints. At the very least, I believe I have shown (by example, if nothing else) that this framework provides a means for articulating pragmatic constraints in such a way as to encourage their empirical investigation. That alone is a contribution to our understanding of them.

It would simplify matters if we could remove all mention of beliefs and intentions to an extralinguistic account of language behavior as just intentional action. Unfortunately, I do not see at the present time how this could be done. First, distinct references to mutual belief and reflexive intentions appear to be necessary because sometimes one is invoked and sometimes the other. Particular kinds of intentions are part of the description of particular illocutionary forces and intended perlocutionary effects, but the description of lexical elements and constructions involves invoking mutual beliefs.

Second, insofar as there are regularities in the invocation of beliefs and intentions, factoring them out will depend on having a fully explicit theory of their projection. Since the projection of presuppositions in particular (and probably of propositions about contexts, generally) is in part dependent on conversational implicature (Morgan 1973, Gazdar 1979), and since conversational implicature is a function of a general theory of intentional behavior and its interpretation (Grice 1975), not something specifically linguistic, a theory of the projection of background propositions would seem to be just the linguistic subcase of a more general theory of the interpretation of human behavior. In any case, it is a topic for another time, probably a rather long time.

## NOTES

\* This work was supported in part by the Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana-Champaign. The comments of Jerry Morgan, Andreas Kathol, Lynne Murphy and Tsuneko Nakazawa on earlier drafts have made this a better paper than it might otherwise have been.

<sup>1</sup> *Noise* being a technical term referring indifferently to whatever medium is employed, whether speech, gesture, writing, or something else.

<sup>2</sup> E.g., citation, recitation. Perhaps the proper treatment of mention is as a specialized subtype of use, but that cannot be resolved here.

<sup>3</sup> In fact, as totally well-typed and sort-resolved feature structures.

<sup>4</sup> For the sake of readability, AVMs in this paper routinely suppress information that is irrelevant to the purposes of the discussion, and readily reconstructible by a sympathetic reader who is familiar with the ontology of sorts in Pollard and Sag (1994) (e.g., sorts and complete path specifications where only the terminal information is made explicit).

<sup>5</sup> The option of saying that indexes have person, number, and gender class attributes AND refer to their anchors would seem to claim, contrary to experience, that the property of being named John (or being adog) and being third person can belong to the same sort of entity; but third person is a property of a linguistic expression, and linguistic expressions normally don't have personal names of their own, and barring witchcraft, are never dogs.

<sup>6</sup> When a speaker uses a proper name with a referent not resolvable by the addressee, in open defiance to the Cooperative Principle (rather than in honest error), that fact communicates information by conversational implicature in the familiar way.

<sup>7</sup> Including nominal expressions and also verbal and adjectival, insofar as they refer to events, states, and properties (or situation-types).

<sup>8</sup> For example, in lexical or (more likely — cf. Nunberg 1978, Green 1989, 1993a, Helmreich 1994) semantic or pragmatic rules.

<sup>9</sup> The symbol  $\Lambda$  is an ad hoc abbreviation whose purpose in this figure and those following is to keep the representation as compact and intuitively intelligible as possible. Strictly speaking, the value of BKD is a set of mutual-belief psoas, all of which involve the speaker and the addressee. One of them is about normal beliefs of English speakers, one of them is about normal beliefs of sales agents, and one of them is about a particular purchasing event.

<sup>10</sup> In the case of so-called extended referents (*ham sandwiches* and so on) the reasonableness of this belief depends on the addressee's ability to get from beliefs about normal beliefs about THE USE of the expression to contextually likely referents for it.

<sup>11</sup> The value of such an attribute has to be a sign with a particular phonstring rather than a fully specified sign in order to allow for the unintentional utterance of ambiguous expressions, and for the utterance of unassignable phonstrings such as expressions in foreign

languages. It can't just be a phonstring, because that would preclude the possibility of homonymy.

<sup>12</sup> The observant reader will note that the anchoring condition on the index is made explicit in Fig. VIII. If the values of the SPKR and ADDR values of C-INDS are objects of type referent, and not of type index, there is no need to include corresponding anchoring conditions for them in representations of expressions that do not include first and second person pronouns.

<sup>13</sup> For this reason, it is a mistake to assume that the use of forms which reflect conflicting assumptions necessarily results in a defective utterance (called "infelicitous" rather than "ungrammatical" because the "violation" is pragmatic rather than a matter of grammar). As often as not, when language users hear in context an utterance which would seem to require mutually inconsistent background assumptions, they will attribute to the speaker additional beliefs which eliminate the contradiction. For example: given the propositions that the Speaker respects Y and that the Speaker doesn't respect Y, they may add domains or reasons for each proposition and be content to assume that the Speaker respects Y in some role, but doesn't respect Y in some other role.

<sup>14</sup> In English, passives with sentential and prepositional subjects, such as (i) and (ii) obviously are not subject to the constraint mentioned in Fig. X.

- (i) That welfare encourages the expansion of single-parent families is taken for granted by a frightening number of people.
- (ii) In the garden was considered the best place to hide.

Whether this means that there are two passive lexical rules in English, one for derived NP-subjects, and one for any sort of subject, or that the constraint is better represented in the description of English as a detail in the multiple-inheritance lexical type hierarchy (see below), is tangential to the point being illustrated here.

<sup>15</sup> I have not described the propagation of these constraints from individual forms to larger expressions of which they are a part. That is a fairly complicated matter, the outlines of which are to be found in the treatment of the projection problem for presupposition described by Morgan (1973) and formalized by Gazdar (1979).

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"LA DOUBLE VIE DE W"  
OR  
THE STATUS OF [w] IN KARUK\*

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In Karuk there are two phonetically identical but phonologically distinct labial glides. Based on the patterning of these glides in glide deletion, coda nasalization, and vowel harmony, I will argue that one of the glides is consonantal in nature and the other is vocalic in nature.

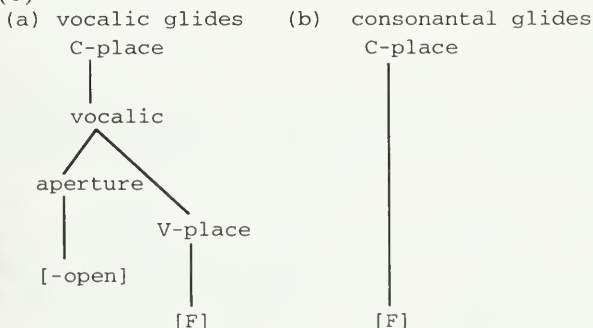
1. Introduction

Karuk has two phonetically identical but phonologically distinct labial glides. I will present evidence that one of the glides is consonantal in nature and the other is vocalic in nature. The existence of a contrast between vocalic and consonantal glides in a single language argues against the widely-held assumption that glides and vowels are featurally identical and differ only in prosodic properties.

2. Theoretical background

The distinction between vocalic and consonantal glides may be captured representationally using the model of feature organization presented in Clements & Hume (1994). (See also Clements, 1991, Herzallah, 1991, and Hume, 1992.)

(1)



In these representations, vocalic segments have a vocalic node dominating the aperture and V-place nodes. This is motivated by harmony processes in which all height and place features spread across intervening consonants. The separation of the vocalic node into aperture and V-place nodes is motivated by assimilation processes in which only height features, to the exclusion of place

features, or only place features, to the exclusion of height features, spread. The C-place node dominating the vocalic node is motivated by the spreading of minor articulations with major articulations, as well as by the cross-linguistic inability of consonant place features to spread from consonant to consonant across a vowel. (Since glides are redundantly high, the aperture features for glides are not crucial to my analysis and will be disregarded throughout.) Consonantal segments are represented with their place features immediately dominated by the C-place node, as in (1b) above.

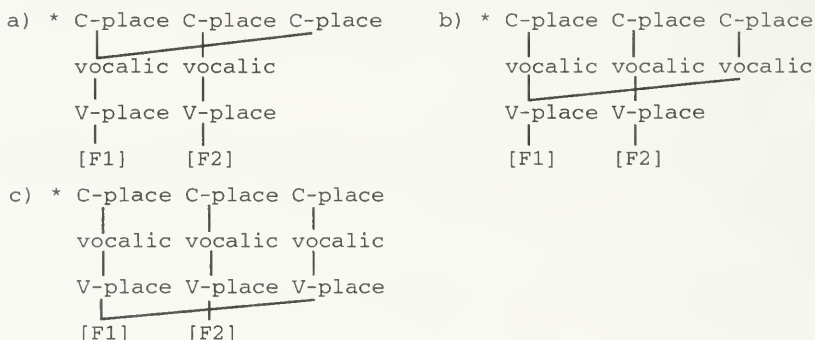
The No-Crossing Constraint in (2) successfully prevents elements from being multiply-linked for features across vowels.

### (2) No-Crossing Constraint

Association lines linking two elements on tier *j* to two elements on tier *k* may not cross. (Clements & Hume, 1994)

The ill-formed multiply-linked structures in (3), (adopted from Hume, 1992) which represent multiple-linking of features across a vocalic segment, all violate the No-Crossing Constraint.

### (3) Ill-formed multiply-linked structures



The well-formed multiply-linked structures in (4) on the next page, (adopted from Hume, 1992) which represent multiple-linking of features across a consonantal segment, do not violate the No-Crossing Constraint.

### 3. Vocalic and consonantal glides cross-linguistically

Cross-linguistic evidence has shown that there is a difference between vocalic and consonantal glides. (This analysis of vocalic and consonantal glides follows Hume, 1993.)

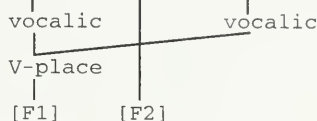
In Ainu the transitivizing suffix vowel assimilates completely to the stem vowel, so the vocalic nodes of the suffix and stem vowels are multiply-linked across the consonant. (Data in (5) drawn from Itô (1984), original data from Chiri (1952).)

## (4) Well-formed multiply-linked structures

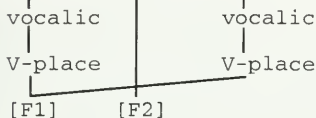
a) C-place C-place C-place



b) C-place C-place C-place



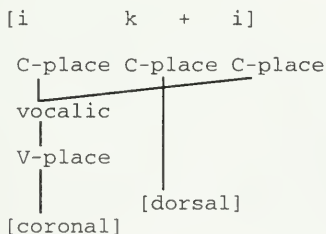
c) C-place C-place C-place



- (5) a. [mak-a] 'to open'                      f. [tas-a] 'to cross'  
 b. [ker-e] 'to touch'                      g. [per-e] 'to tear'  
 c. [pis-i] 'to ask'                          h. [nik-i] 'to fold'  
 d. [pop-o] 'to boil'                        i. [tom-o] 'to concentrate'  
 e. [tus-u] 'to shake'                        j. [yup-u] 'to tighten'

The multiply-linked surface representation of the vowels across the consonant from (5h), for example, is given in (6).

## (6)

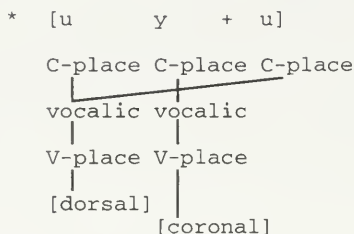


In Ainu, the glides are opaque to vowel harmony. The suffix vowel in these cases surfaces as [e]. This may be the underlying form of the suffix or this may be the default value for an unspecified vowel. The crucial point is that the suffix vowel is not assimilated.

- (7) a. [ray-e] 'to kill'                      g. [say-e] 'to wind'  
 b. [chaw-e] 'to solve'                    h. [taw-e] 'to pull'  
 c. [hew-e] 'to slant'                      i. [rew-e] 'to bend'  
 d. [piw-e] 'to cause to run'            j. [chiw-e] 'to sting'  
 e. [poy-e] 'to mix'                        k. [moy-e] 'to move'  
 f. [huy-e] 'to observe'                    l. [tuy-e] 'to cut'

The opacity of glides to vowel harmony in Ainu demonstrates their vocalic nature. If glides are represented as vocalic, as in (1a), then multiple linking of the vocalic node across a glide would be ill-formed, as shown in (8). This is the desired result, blocking harmony.

(8)



Therefore, glides in Ainu are best represented as vocalic. Some languages, on the other hand, have glides which are best represented as consonantal. Kirghiz (data and analysis from McDougall, 1994, original data from Herbert & Poppe, 1963) and Efik (data and analysis from Parkinson, 1994) are two such languages. One effect of the consonantal nature of glides in Kirghiz and Efik is their transparency in vowel harmony. In Kirghiz, a vowel agrees in coronality and labiality with the preceding vowel.

- (9) a. [išten] 'from the job'                    c. [köldön] 'from the lake'  
 b. [etten] 'from the meat'                    d. [asandan] 'from Asan'

Glides in Kirghiz are transparent to vowel harmony.

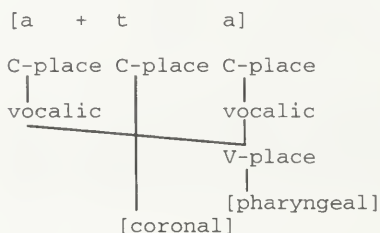
- (10) a. [üydön] 'from the house' b. [tokoydon] 'from the forest'

Similarly, in Efik the non-root vowel /ε/ (shown here using the second person singular subject marker and the negative particle /ke/) assimilates in place features to the following stem vowel.

- (11) a. [ɔ-bóp] 'you (sg.) build'  
 b. [o-bom] 'you (sg.) break'  
 c. [o-kút] 'you (sg.) see'  
 d. [ε-nék] 'you (sg.) dance'  
 e. [e-tí] 'you (sg.) remember'  
 f. [a-tá] 'you (sg.) chew'  
 g. [í-dε-ké-dε] 's/he is not sleeping'  
 h. [í-kot-kó-kot] 's/he is not seeing'

Following Parkinson (1994), this is analyzed as place assimilation which, as exemplified in (12), results in the V-place node of the root vowel being multiply-linked to both the root and the prefix vowels.

(12)





I transcribe all bilabial spirants as /w/. Bright transcribes what I am calling "consonantal /w/" as /v̥/ and what I am calling "vocalic /w/" as /v/. I transcribe all length on vowels as /:/. Bright transcribes underlying length on vowels with a single dot and derived length with a colon. I transcribe all rhotic approximants as /r/. Bright transcribes all stem-final /r/s as /r̃/, to indicate that they nasalize pre-consonantly (see part 6 for discussion of nasalization). The phoneme inventory of Karuk is presented in (16). Length is distinctive on vowels, but the phonemic status of [o:] and [e:] is questionable, since they only appear long and are often transparently the result of coalescence of a high vowel with a low vowel. Additional diacritics used here (as well as by Bright) include the high level tone marked [á], and the falling tone marked [â]. (Tonal phenomena and lengthening and shortening phenomena will not be addressed in this paper.)

### (16) Phoneme Inventory

|             | p | m | w | u | o | t | θ | s | č | n | y | r | i | e | k | x | ʔ | h | a |
|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sonorant    | - | + | + | + | + | - | - | - | - | + | + | + | + | + | - | - | + | + | + |
| continuant  | - | - | + | + | + | - | + | + | - | - | + | + | + | + | - | + | - | - | + |
| constr. gl. |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | + |
| labial      | • | • | • | • | • |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| dorsal      |   |   |   |   |   |   |   |   |   |   |   |   |   |   | • | • |   |   |   |
| pharyngeal  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| coronal     |   |   |   |   |   | • | • | • | • | • | • | • | • | • |   |   |   |   |   |
| distributed |   |   |   |   |   | - | + | - | + | - | + | - | + | + |   |   |   |   |   |

### 5. Glide deletion

The two types of glides in Karuk pattern differently in glide deletion. Vocalic glides delete between vowels.

- (17) a. /ikriw + išrih/ → [ikr̃i:šrih] 'to sit down'  
 b. /θiw + išrih/ → [θi:šrih] 'to put down'  
 c. /piw + išrih/ → [p̃i:šrih] 'to step down'  
 d. /ʔáxaw + ak/ → [ʔáxa:k] 'cliff'  
 e. /ikyaw + ara/ → [ikyá:ra] 'to make with'  
 f. /ʔay + at/ → [ʔá:t] 'was afraid of'

Evidence that this is deletion, not insertion, comes from the unpredictability of the word-final glide.

- (18) a. /ikyaw/ 'to make'  
 b. /iyway/ 'to pour'  
 c. /ʔáxaw/ 'to collapse, used esp. of earth'  
 d. /ʔáxay/ 'to take (something) from (someone)'  
 e. /ʔa:w/ 'California wild grape'  
 f. /ʔá:y/ 'face'  
 g. /ʔu:w/ 'to put, take'  
 h. /ʔu:y/ 'mountain, hill'



Further evidence that this is deletion, not insertion, comes from the appearance of these glides in other environments, such as pre-consonantly.

- (19) a. /piw + kara/ → [pí:wkara] 'to step out over'  
 b. /iyway + rárnih/ → [iywá:yramnih] 'to pour into'  
 c. /iyway + kurih/ → [iywá:ykurih] 'to pour (into a hole)'

Therefore, the glide-Ø alternation must be analyzed as glide-deletion, not glide-insertion.

Other segments do not delete intervocalically.

- (20) a. /tásir + ara/ → [tásirara] 'brush for acorn flour'  
 b. /ʔá:kram + ar/ → [ʔa:kramar] 'to go argue'  
 c. /ikrup + ara/ → [ikrúpara] 'to sew with'  
 d. /iškax + išrih/ → [iškaxišrih] 'to quiet down'  
 e. /ihyárih + išrih/ → [ihyárihišrih] 'to stand still'  
 f. /ʔč:θ + e:p/ → [ʔč:θe:p] 'to take away from'

The difference between segments which delete intervocalically and those which do not is that the segments which delete have a vocalic node. The distinguishing feature of segments which delete cannot be [sonorant], because [r m] do not delete, as shown in (20a, b), nor can it be [continuant], because [x h θ] do not delete, as shown in (20d, e, f), nor can it be a place feature, because there are labials which do not delete, as shown in (20b, c), coronals which do not delete, as shown in (20f), dorsals which do not delete, as shown in (20d), and placeless segments which do not delete, as shown in (20e). The only feature unifying the deleting segments and excluding all of the non-deleting segments is their vocalic node.

(21)

|         |                 |
|---------|-----------------|
| * μ     | μ               |
| :       | :               |
| :       | :               |
| vocalic | vocalic vocalic |

Another set of glides does not delete intervocalically.

- (22) a. /ikyiw + išrih/ → [ikyíwišrih] 'to fall down'  
 b. /ʔaw + at/ → [ʔawat] 'ate'  
 c. /ikraw + ara/ → [ikráwara] 'to grind with'  
 d. /ʔiw + iruw/ → [ʔíwiruw] 'to be nearly dead  
 from exhaustion'  
 e. /saw + a/ → [sawa] 'river'  
 f. /ʔaraw + uk/ → [ʔaráwuk] 'to start from'  
 g. /ʔátiw + a/ → [ʔátiwa] 'burden-basket load'

Given the argument that deleting segments are characterized with a vocalic node, the non-deleting segments in (22) must not be characterized with a vocalic node. (23) shows how the distinct behavior of

glides which delete and glides which do not may be attributed to their feature structure.

- (23) a. /piw + iʃrih/ → [pi:ʃrih]      b. /ʔiw + iruw/ → [ʔiwiruw]
- |           |          |           |           |          |           |
|-----------|----------|-----------|-----------|----------|-----------|
| root      | root     | root      | root      | root     | root      |
| ⋮         | ⋮        | ⋮         | ⋮         | ⋮        | ⋮         |
| C-place   | C-place  | C-place   | C-place   | C-place  | C-place   |
|           |          |           |           |          |           |
| vocalic   | vocalic  | vocalic   | vocalic   | vocalic  | vocalic   |
|           |          |           |           |          |           |
| V-place   | V-place  | V-place   | V-place   | V-place  | V-place   |
|           |          |           |           |          |           |
| [coronal] |          | [coronal] | [coronal] |          | [coronal] |
|           | [labial] |           |           | [labial] |           |

## 6. Coda nasalization

The two types of glides also pattern differently in coda nasalization. /r/ nasalizes in non-final coda position (alternatively: pre-consonantly).

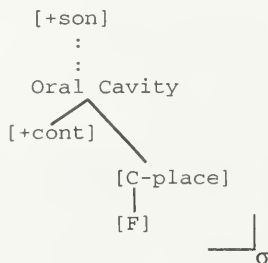
- (24) a. /kú:r + taku/ → [kuntaku] 'to sit on'  
 b. /ʔíhar + ko:/ → [ʔihanko:] 'to go there to dance'  
 c. /tásir + reduplication/ → [tásínsir] 'to brush repeatedly'  
 d. /wur + tih/ → [wú:ntih] 'to be flowing'  
 e. /ikmar + reduplication/ → [ikmánmar] 'to beat up'

The consonantal /w/ also nasalizes pre-consonantly. The stems with final /w/s which nasalize (25) are exactly those stems whose final /w/s did not delete in glide-deletion (22). (/r/ nasalizes following a nasal segment, as shown in (25c, e, g).)

- (25) a. /ikiyw + suru/ → [ikiyí:msuru] 'to fall off'  
 b. /ʔaw + tih/ → [ʔá:míh] 'to be eating'  
 c. /ikráw + raw + a/ → [ikrá:mnawa] 'hopper for meal'  
 d. /ʔiw + kara/ → [ʔí:mkara] 'to drown'  
 e. /saw + rupu/ → [sá:mnupu] 'to flow downriver'  
 f. /ʔaraw + sipriw/ → [ʔáramsipriw] 'to start out'  
 g. /ʔátiw + ram/ → [ʔátimnam] 'pack basket'

There seems to be a constraint against [+son, +cont] segments with a consonantal constriction in non-final coda position.

(26)



The language is otherwise quite free in allowing coda consonants, and all consonants except /r/ and consonantal /w/ may occur in coda. Neither /y/ nor the vocalic /w/ is a [+son, +cont] segment with a consonantal constriction, so they do not violate the constraint in (26), and so they do not nasalize. Note that these are exactly the same stems whose final glides deleted in (17).

- (27) a. /ikriw + ra:m/ → [ikriwra:m] 'house'  
 b. /θiw + taku/ → [θi:wtaku] 'to lie on'  
 c. /piw + kaθ/ → [pi:wkaθ] 'to step over (a creek)'  
 d. /ʔáxaw + suru/ → [ʔáxawsuru] '(earth) to cave off'

/y/, which is always vocalic, does not nasalize either.

- (28) a. /ikwa:y + ku/ → [ikwá:yku] 'to lean against'  
 b. /iyway + kurih/ → [iywá:ykurih] 'to pour into a hole'

To summarize, the vocalic labial glides are allowed in non-final coda position. The consonantal labial glides and the /r/ (together defined as the natural class of [+son, +cont] segments with a consonantal constriction) nasalize in non-final coda position.

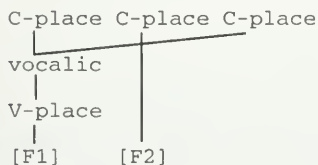
## 7. Vowel harmony

The two types of glides also pattern differently in vowel harmony. There are a few suffixes with harmonizing initial vowels (which are represented with V).

- (29) a. /ikxíp + Vwraθ/ → [ikxí:p-iwraθ] 'to fly over'  
 b. /taxarap + Vwraθ/ → [taxaráp-awraθ] 'to stride over'  
 c. /ikfuk + Vwra:/ → [ikfúk-uwra:] 'to climb over'  
 d. /taknih + Vθuna/ → [takní:h-iθuna] 'to roll around'  
 e. /paθ + Vθuna/ → [paθ-aθuna] 'to throw around'  
 f. /ikfuk + Vθuna/ → [ikfuk-uθuna] 'to crawl around'

The harmony produces a suffix vowel multiply-linked with the vocalic node of the stem vowel.<sup>2</sup>

(30)



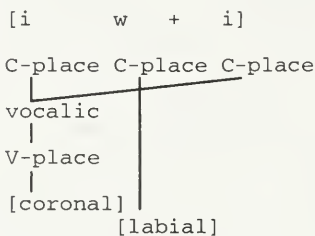
If the consonantal /w/ is specified with [labial] immediately dominated by C-place, the prediction would be that it should be transparent to vowel harmony (similar to the examples from Kirghiz and Efik discussed above in (10) and (13)). The following forms provide suggestive evidence that the consonantal /w/ is transparent. These are the only available examples of a stem with a final glide which has been shown to be consonantal (see (22a) and (25a)) combining

with harmonizing suffixes. The harmonizing vowel does have the same quality as the final stem vowel.

- (31) a. /ikyiw + Vwraθ/ → [iky<sup>h</sup>iw-iwraθ] 'to fall into a sweathouse'  
 b. /ikyiw + Vwruk/ → [iky<sup>h</sup>iw-iwruk] 'to fall over (a bank)'

The well-formed structure that would result from multiple-linking of vocalic nodes across a consonantal glide is shown here.

(32)

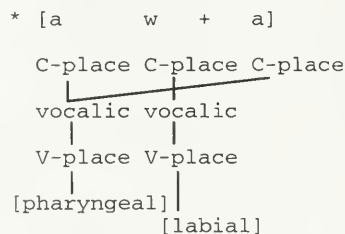


As expected, the vocalic /w/ patterns differently than the consonantal /w/ in vowel harmony. The only available example of a stem with a final glide which has been shown to be vocalic combining with a harmonizing suffix is shown here. (See 17d and 27d for evidence of this glide's vocalic nature.)

- (33) /ʔaxaw + Vwruk/ → [ʔaxawruk] '(earth) to slide down over (a bank)'

One possible explanation for this form is that multiple-linkage across the vocalic glide is prohibited.

(34)



Since the unspecified vowel remains unspecified on the surface, it is deleted by well-formedness constraints. The degemination of adjacent identical oral sonorants which results is seen elsewhere in the language. Despite a lack of independent supporting evidence for this proposal, the crucial point here is that the vocalic /w/ does not pattern with the consonantal /w/ in being transparent to vowel harmony.

## 8. Conclusion

In conclusion, there are two phonologically distinct /w/s in Karuk—one which patterns with /r/ and one which patterns with /y/.

The /w/ which patterns with /r/ can be characterized as consonantal in nature. It does not delete between vowels, it nasalizes in coda position, and it is transparent to vowel harmony. It can be represented as bearing only a C-place node. The /w/ which patterns with /y/ can be characterized as vocalic in nature. It deletes between vowels, does not nasalize in coda position, and is opaque to vowel harmony. It may be represented as bearing also a vocalic and V-place node. The facts from Karuk are significant because they provide new evidence regarding the status of glides in the world's languages. Not only can languages have *either* vocalic or consonantal glides, but also a single language can have *both* vocalic and consonantal glides.

### NOTES

\* Grateful acknowledgment to D. Odden and E. Hume for help with this project. Thanks also to M. Bradshaw, C. McDougall, and F. Parkinson for comments on earlier drafts. Any mistakes are, of course, my own.

<sup>1</sup> Pronunciations of the name of this language vary. "Karak" is the more anglicized version of the name while "Karuk" is preferred by native speakers. Therefore, most recent works written about this language used the name "Karuk." (Monica Macaulay, personal communication.)

<sup>2</sup> Problems with assuming that this is total assimilation arise from cases involving [e:] and [o:]. When the stem vowel is [e:], the suffix vowel is [i] and when the stem vowel is [o:], the suffix vowel is [u]. There are two possible analyses. Either this is complete harmony linking vocalic nodes, but [e:] derives from /ai/ and [o:] derives from /au/, or else this is place harmony linking V-place nodes to pre-specified high suffix vowels, and a constraint against high pharyngeal vowels produces the correct result when the stem vowel is /a/.

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CONTRA [CONSONANTAL]\*

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In this paper we challenge the assumption that there exists a distinctive feature [consonantal]. Examination of cases in which [consonantal] has traditionally been used to describe natural classes of sounds, phonemic contrasts, or changes that a sound undergoes, reveals that there is no evidence in support of the feature. We therefore conclude that [consonantal] is superfluous and can be eliminated from feature theory.

**1. Introduction**

The status of the major class features has been brought into the theoretical limelight recently, with McCarthy's 1988 proposal that [sonorant] and [consonantal] are contained inside the root node, and thus cannot spread or dissimilate except via total segmental assimilation or deletion. This proposal is challenged by Kaisse 1992 for the feature [consonantal], citing examples where it appears to spread. Cho & Inkelas 1993 challenge the evidence presented by Kaisse, re-analyzing certain cases of [consonantal] spreading. In this paper we approach the question differently, by questioning the assumption that there EXISTS such a feature. The question of whether [consonantal] spreads then becomes meaningless, since it depends on 'consonantal' which we claim is not a distinctive feature at all.

This paper reviews some of the evidence for postulating the feature [consonantal]. Evidence in support of a feature can take various forms. For example, a feature might be necessary to describe changes that a sound or class of sounds undergoes; it might be crucial in describing sounds as a natural class; or it might be needed to describe existing phonemic contrasts. Our conclusion will be that there is no such evidence for [consonantal], and, consequently, the feature should be dispensed with entirely.

Before examining the evidence, it is important to be clear about what this supposed feature entails. For this, we draw on the SPE definition below.

- (1) Consonantal sounds are produced with a radical obstruction in the midsagittal region of the vocal tract; nonconsonantal sounds are produced without such an obstruction. (Chomsky & Halle 1968:302)

The intent of this definition is to group vowels, glides, and laryngeal consonants as one natural class, and the remaining sounds as an-

other. Yet, ambiguity in this and subsequent definitions suggests that doing so is not a trivial matter. Take the seemingly straightforward notion VOCAL TRACT, for example. As the sampling of definitions in (2) reveals, there is disagreement among phoneticians concerning what actually constitutes the vocal tract; that is, does it include the larynx or not, an issue which is crucial to the SPE definition since it bears on the question of whether glottal stop is [-consonantal].

(2) **Definitions of vocal tract**

The vocal tract includes all of the air passages above the larynx from the glottis to the lips. (Borden & Harris 1980:90)

The organs of speech...namely the lungs, trachea, larynx, the pharyngeal and oral cavities with their component parts, and the nasal passages, constitute as a group what is termed the **vocal tract**. (Clark & Yallop 1990:14)

The **vocal tract** is that tube-like series of cavities which begins at the vocal folds and ends at the opening of the lips. The nasal cavities provide an alternate outlet to the vocal tract. (Daniloff 1973:169)

The air passages above the larynx are known as the **vocal tract**. (Ladefoged 1975:3)

During the production of vowels the vocal tract may be viewed as a tortuously shaped tube open at one end (the opening between the lips) and bounded at the other end by a vibrating valve which has the effect of closing off the tube at the larynx. (Minifie 1973:235)

In a recent definition, Halle avoids the ambiguity associated with the term VOCAL TRACT by replacing it with the term ORAL CAVITY, thereby clearly excluding laryngeals from the set of [+consonantal] segments.

- (3) Consonantal sounds are produced with a constriction in the central passage through the oral cavity; nonconsonantal sounds are produced without such a constriction. (Halle 1992)

Despite this terminological change, ambiguity remains, although in this instance it concerns the term CONSTRICTION. As illustrated in (4), research indicates that the notion constriction is central in describing the production of not only consonants, but vowels as well (see Clements & Hume 1995, Gorecka 1989, Wood 1979, 1982 and references therein).

- (4) The preference for the four constriction locations is apparently universal. These locations are acoustically and physiologically significant. They divide the spectral space into four vowel quality families. (Wood 1979:40)

Issues in the phonetic definition of [consonantal] aside, it is the phonological predictions made by these definitions that we challenge. In doing so we assume the classical understanding of [consonantal],

which predicts that vowels, glides, and laryngeal consonants will act as a natural class, and that the converse of this collection will act as a class. Thus, when we address the question of [consonantal], this is the object whose existence we challenge. We do not consider approaches such as that of Hyman 1985 where [consonantal] essentially becomes a stand-in for [syllabic], such that glides are specified as [+consonantal]. One of the main reasons to specify glides in this manner is to avoid certain classes of OCP violations, specifically the supposed violation incurred by glide plus homorganic vowel sequences such as *yi* and *wu*. We suggest that such sequences are not a problem given a detailed understanding of the OCP. It has been argued in Odden 1988 that the OCP is not inviolable, and therefore it is possible for *yi* and *wu* to be ruled out in Korean while being allowed in English. We thus claim that there is no compelling reason to modify the standard definition of [consonantal] based on OCP considerations.

## 2. Changes in the value of [consonantal]

Turning to the argument, we consider first the evidence from the patterning of sounds. Our first examples involve cases in which the value of [consonantal] appears to change; that is, where a surface form differs from the corresponding underlying form in its value of [consonantal], as is the case in lenitions and hardenings. In each example we will show that reference to [consonantal] is unnecessary; this same conclusion holds for the many additional examples that we are unable to discuss due to space limitations.

### 2.1 Changes yielding [-consonantal]

To begin, consider cases of lenition such as that found in Axininca Campa (Payne 1981) where /k/ and /p/ surface as [y] and [w̃]<sup>1</sup> after a vowel. In (5), the underlying stop is revealed in the uninflected noun, while after the pronominal prefix *no*, /k/ becomes [y] and /p/ becomes [w]. Since lenition occurs only in the context of a vowel, this looks like a good candidate to attribute to [-consonantal] assimilation. However, since the values of [sonorant] and [continuant] also change, lenition could equally well be explained as assimilation to the sonorancy or continuancy of the preceding vowel.<sup>2</sup>

|     |                      |                |                            |                   |
|-----|----------------------|----------------|----------------------------|-------------------|
| (5) | kanari               | 'wild turkey'  | no-yanari-ti               | 'my wild turkey'  |
|     | kosiri               | 'white monkey' | no-yosiri-ti               | 'my white monkey' |
|     | pač <sup>h</sup> aka | 'gourd'        | no-wāč <sup>h</sup> aka-ti | 'my gourd'        |
|     | porita               | 'small hen'    | no-worita-ti               | 'my small hen'    |
|     | yaarato              | 'black bee'    | no-yaarato-ti              | 'my black bee'    |

Continuancy assimilation is precisely what is required to handle lenition in the Australian language Djapu (Morphy 1983). As illustrated in (6) with the dative suffix *ku* (6a), the ergative suffix *tu* (6b), and the associative suffix *puy* (6c), /p/ and /k/ become the labio-velar glide [w], and dental /t/ becomes the palatal glide [y] when they are preceded by vowels and liquids. The underlying stop values of *p*, *t*, *k* are motivated by the fact that lenition does not apply

in pronouns and demonstratives, so a stop can appear after a vowel, as in the two initial forms. When preceded by an obstruent stop or nasal, the underlying stop value of the suffix is revealed, and when the suffix is preceded by a vowel or liquid, the lenited variant surfaces. Note that since /r/ and /l/ also trigger lenition, it would be impossible to treat this as [-consonantal] assimilation, even though the value of [consonantal] seems to change. Instead, we analyze this as assimilation to [+continuant].<sup>3</sup>

(6)

|    |                              |                |                             |                 |
|----|------------------------------|----------------|-----------------------------|-----------------|
| a. | ḍiya-ku                      | 'this'         | ḥaṛa-k                      | 'l sg'          |
|    | buurut <sup>y</sup> -ku      | 'mosquito'     | waayin-gu                   | 'animal'        |
|    | bumbaru-w                    | 'rock'         | gaa-ḥaṛa-w                  | 'give'          |
|    | ḥaymil-wu                    | 'Ngaymil clan' | baṛukaḥuṛ-wu-n <sup>y</sup> | 'fruit type'    |
| b. | balkur-tu                    | 'rain'         | guuḥ-d u                    | 'hand'          |
|    | maḥut <sup>y</sup> i-y       | 'eye'          | gaṛapa-y                    | 'spear'         |
|    | miil-yu                      | 'eye'          | ḥaaḥar-yu                   | 'tongue'        |
|    | gaaḥumay-u                   | 'pelican'      | (gaaḥumay                   | 'pelican nom.') |
| c. | rawalk-puy                   | 'sorcery'      | guuḥ-buy                    | 'hand'          |
|    | garrt <sup>y</sup> ambal-wuy | 'kangaroo'     | guḥdirr-wuy                 | 'antbed'        |
|    | riit <sup>y</sup> a-wuy      | 'jungle'       | ḥarpu-ḥaṛa-wuy              | 'spear-nom'     |

A similar lenition of /p/ and /k/ to [w] exists in Gurindji (McConvell 1988 and p.c.); here, dental /th/ changes to [y] only after vowels.<sup>4</sup>

|     |    |                                           |                            |
|-----|----|-------------------------------------------|----------------------------|
| (7) | a. | t <sup>y</sup> arrakap-kat <sup>y</sup> i | 'tape-recorder, talkative' |
|     |    | waḥu-wat <sup>y</sup> i                   | 'fireplace'                |
|     |    | pamarr-wat <sup>y</sup> i                 | 'money bag'                |
|     | b. | wankat <sup>y</sup> -pa-ḥiḥan             | 'the same bad one'         |
|     |    | t <sup>y</sup> uwal-wa-ḥiḥan              | 'the same tall one'        |
|     | c. | wurkaḥ-t <sup>y</sup> awuḥ                | 'with green grass'         |
|     |    | miyaḥ-t <sup>y</sup> awuḥ                 | 'having an initiated man'  |
|     |    | miḥa-yawuḥ                                | 'having a shield'          |

Treating the change as one of continuancy derives support from the fact that in these and many other Australian languages, the feature [continuant] plays a central role in the consonantal system. As shown in (8), the inventory can be divided into continuants and stops, with the latter being divided further into the oral and nasal stops. These languages lack obstruent continuants, so the labial and velar continuants are [w], the alveolar continuants are [l] and [r], the retroflex ones are [ḷ] and [ṛ], and the palatal and dental are [y].

|     |              |   |   |      |                |   |   |
|-----|--------------|---|---|------|----------------|---|---|
| (8) | Continuants  | w | y | r, l | ṛ, ḷ           | y | w |
|     | Stops (oral) | p | t | t, d | t <sup>y</sup> | k |   |
|     | (nasal)      | m | n | n    | n <sup>y</sup> | ṅ |   |

Similar lenitions can be found in many other Australian languages, as well as in the Tungusic languages Evenki and Negidal. We

would claim that in all of these cases [continuant] spreads; what is crucial to note about this class of lenitions is that the languages in question do not have contrasts between the surface glides which are lenited stops, and obstruent fricatives at that same point of articulation. That is, the appearance of a [consonantal] glide is essentially due to a phonetic detail about the language. What would motivate change to [-consonantal] would be the discovery of a language leniting /p/ to [w] after vowels, glides and laryngeals in particular, when the fricatives /v/ or /β/ also exist in the language. We take the lack of such examples to be evidence for the claim that lenition of stops to glides involves assimilation of [continuant].<sup>5</sup>

Lenition of *p* to *w* in coda position exists in Lama (Ourso & Ulrich 1990).

- (9) kpa:p-ə 'to be similar' kpa:w-s-ɯ 'to reconcile'  
 ya:p-ə 'to buy' ya:w 'buy!'

A further example of apparent change in [consonantal] triggered by syllable position comes from Klingenberg's Law in Hausa (Schuh 1972, Leben 1974, Inkelas & Cho 1993). As the examples in (10) show, coda consonants become sonorants: labials and velars become *w*, and coronals become trilled *ř*. Given the syllabification constraints of the language, the preceding segment is always a vowel, hence [-consonantal]. Notice that in the case of labials and velars the result is a glide, but in the case of coronals the result is the consonant [ř], so these changes could not be given a uniform characterization if this were a change in [consonantal]. These changes are the result of a constraint on possible coda segments in Hausa: a coda segment must be a sonorant, either a continuant or a nasal which is homorganic with the following segment. Klingenberg's Law is therefore characterized as a way of bringing representations into conformity with this requirement, by insertion of [+sonorant].

- (10) /jibjii/ juwjii 'trash heap' jibaajee pl.  
 /tařsii/ tawřii 'drum' tafaasee pl.  
 /talakči/ talawči 'poverty' talaka 'a poor one'  
 /hagni/ hawni 'left side' bahago 'lefthanded one'  
 /fatke/ fařke 'merchant' fataake pl.  
 /maz-maza/ mařmaza 'very fast'  
 /k'as-k'as-ii/ k'ařk'asii 'underside'

The simplest structure-preserving change which brings codas into conformity with this condition is turning labials and velars into glides.<sup>6</sup>

## 2.2 Changes yielding [+consonantal]

The hardening of vocoids is also a possible test for the existence of [consonantal]. As this section shows, reference to this feature is not crucial for this phenomenon either. As noted in Kaisse 1992, Cypriot Greek strengthens the palatal glide *y* to [k<sup>y</sup>] when it follows a consonant, resulting in a change in the values of [consonantal], [continuant]



and [sonorant]. The data in (9), drawn from Newton 1972, provide alternations between the nominative and genitive, where stem-final *i* becomes [y] before the genitive affix [u], and then hardens to [k<sup>y</sup>] after consonants, excluding [l] and nasals. It is important to note that glide-glide and laryngeal-glide clusters do not exist in the language, so we cannot properly test the relevance of [consonantal] here.

|      |            |                         |                |
|------|------------|-------------------------|----------------|
| (11) | NOMINATIVE | GENITIVE                |                |
|      | mantílin   | mantilyú                | 'handkerchief' |
|      | tiánin     | tianyú                  | 'frying-pan'   |
|      | psárin     | psarkú                  | 'fish'         |
|      | xoráfin    | xorafk <sup>y</sup> ú   | 'field'        |
|      | ammátin    | ammaθk <sup>y</sup> ú   | 'eye'          |
|      |            | ~ ammatk <sup>y</sup> ú |                |
|      | xáppin     | xapk <sup>y</sup> ú     | 'pill'         |

While Kaisse accounts for this by spreading [+consonantal] from the preceding consonant, hardening never applies after the sonorants /m n l/, showing that this is not true across-the-board assimilation to the consonantality of *all* consonants. Cho & Inkelas 1993 attempt to relate this hardening to a general continuancy template in Greek which requires nonsyllabics to have the form fricative-stop. However, the existence of the stop-stop sequences [pk<sup>y</sup>] and [tk<sup>y</sup>] in *ammatk<sup>y</sup>ú* and *xapk<sup>y</sup>ú* indicates that the continuancy value of the segments is not consistently relevant. A change in sonorancy or continuancy is sufficient to account for hardening, without recourse to [consonantal]. We suggest that glide hardening in Cypriot Greek is due to a general constraint, shown in (10), prohibiting /y/ from being preceded by a consonant other than a sonorant stop.

(12) \*Cy (C ≠ [+son, -cont])

The palatal glide *y* may not be preceded by a consonant, other than a sonorant stop.

Another case of hardening comes from Romansch where postvocalic glides /y w/ appear to strengthen to a velar stop before a tautosyllabic consonant (Kamprath 1986), a phenomenon analyzed in Kaisse 1992 as spreading [+consonantal] from a consonant to the preceding glide. Alternative accounts which do not rely on [consonantal] are also possible; we suggest two. First, since in each of the three synchronic examples of hardening offered, shown in (13), the glide is followed by /r/, hardening may be analyzed as the result of sonorant continuant dissimilation. Alternatively, one might argue that hardening occurs in response to a structural constraint of the language which prohibits glides in the coda of stressed closed syllables. Again, hardening is attributed to a change in the values of continuancy and sonorancy. While insufficient evidence from Romansch makes it impossible to determine which of these alternatives is superior, the point remains that [consonantal] is not required to characterize the alternation.





surface as [j] and [g<sup>w</sup>] after a nasal consonant. The underlying stem initial consonant is revealed in the infinitive on the left. Hardening takes place after the Class 9 nasal prefix on the right. As in the cases just presented, we attribute this to a change in continuancy. Support for this comes from the fact that the lateral continuant /l/ also hardens to [d] after a nasal; thus, sonorant continuants assimilate to the [-continuancy] value of the nasal.

|                 |                       |              |
|-----------------|-----------------------|--------------|
| (18) INFINITIVE | CLASS 9 ADJECTIVE     |              |
| yjúkúta         | n-júkútá              | 'full'       |
| wá              | n-g <sup>w</sup> aa.á | 'dead'       |
| líma            | ndimá.á               | 'cultivated' |

The same post nasal hardening exists in Luganda (Cole 1967); in this language labial *w* hardens to *p*.

|            |                     |          |                    |
|------------|---------------------|----------|--------------------|
| (19) ndele | 'thongs'            | lulele   | 'thong'            |
| njuza      | 'I tear'            | kuyuza   | 'to tear'          |
| mpaande    | 'measures of cloth' | luwaande | 'measure of cloth' |
| mpulila    | 'I hear'            | kuwulila | 'to hear'          |

Sotho and Setswana have similar hardenings, as illustrated in (20); interestingly in these languages, not only does /w/ harden to [k<sup>w</sup>], but fricatives become aspirated plosives. This is illustrated in (17) with data from Setswana (Cole 1955). What drives these changes is a constraint on nasal-plus-consonant sequences; the consonant in such a sequence must be a voiceless plosive.

|           |           |                         |                 |
|-----------|-----------|-------------------------|-----------------|
| (20) wεla | 'fall on' | xo-n-k <sup>w</sup> εla | 'to fall on me' |
| sexa      | 'cut'     | xo-n-tshexa             | 'to cut me'     |
| dirεla    | 'do for'  | xo-n-tirεla             | 'to do for me'  |

Hardening may also be due to syllable position alone and again reference to [consonantal] is superfluous. For example, in Lango (Okello 1975) seen in (18), word-final postvocalic /y/ becomes a palatal obstruent [c]; this we analyze as assignment of [-cont] to a coda consonant, pursuant to a general prohibition against coda continuants in the language.

|            |                      |                 |
|------------|----------------------|-----------------|
| (21) INFIN | AGENT NOMINALIZATION |                 |
| cɔɔyɔ      | acɔc                 | 'write'         |
| yeeyo      | ayéc                 | 'carry on head' |

A further case involving syllable initial position comes from Porteño Spanish as discussed in Lozano 1979, Harris 1969, 1977, 1983, 1985, Morgan 1984, where the glides /y/ and /w/ surface as homorganic obstruent fricatives in syllable-initial position.

|          |             |                                 |          |
|----------|-------------|---------------------------------|----------|
| (22) ley | 'law'       | ležes                           | 'laws'   |
| ir       | 'to go'     | yendo → žendo                   | 'going'  |
| bibir    | 'to live'   | bibyendo                        | 'living' |
| orfanato | 'orphanage' | werfano → γ <sup>w</sup> erfano | 'orphan' |

We suggest that this change involves onset glides becoming voiced stops, hence a change in the value of [continuancy]. The appearance of

fricatives in (22) is the result of a general lenition of all voiced obstruent stops in Spanish, which applies everywhere except after homorganic liquids and nasals. As Lozano 1979 points out, hardened glides appear as stops in these contexts, as in [uŋ g<sup>w</sup>erfano] 'an orphan', which is precisely the environment where obstruent stops cannot be lenited.

### 3. Natural classes

Next we turn to the possibility that [consonantal] is crucial for characterizing natural classes. Examples are actually very difficult to find in the literature. It is possible to find many cases where [consonantal] is used to characterize classes of segments, but quite difficult to find cases where it is apparently crucial. For example, rule (23) from Tibetan given in Odden 1978 spirantizes noncoronal stops between vowels, and this formulation employs the feature [consonantal]. However, inclusion of [consonantal] is entirely redundant: since all stops in the language (indeed in all languages) are consonantal, mentioning [consonantal] does not productively restrict the rule.

(23)

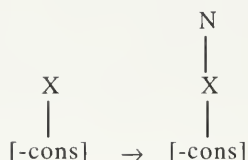
$$\left[ \begin{array}{l} +\text{cons} \\ -\text{cont} \\ +\text{grave} \end{array} \right] \rightarrow \left[ \begin{array}{l} +\text{voice} \\ +\text{cont} \end{array} \right] / \left[ \begin{array}{l} +\text{syl} \\ -\text{nas} \end{array} \right] \text{ \_\_\_\_ } \left[ +\text{syl} \right] \quad (p, k \rightarrow \beta, \gamma / V\_V)$$

A similar non-crucial use of [consonantal] can be found in Hayes 1986, which presents the Lithuanian vowel backing rule in (24). The intent of the rule is to back /e/ before [-consonantal] *u* and *w*, but not velar consonants. We would maintain that the correct account depends on the distinction between C-place and vocalic feature specifications (see e.g. Clements 1990a, Clements & Hume 1995); *u* and *w* are characterized with vocalic [dorsal], a specification which velar consonants do not have.

$$(24) \left[ \begin{array}{l} -\text{cons} \\ -\text{high} \end{array} \right] \rightarrow \left[ +\text{back} \right] / \text{ \_\_\_\_ } \left[ \begin{array}{l} -\text{cons} \\ +\text{back} \\ +\text{high} \end{array} \right] \quad (eu, ew \rightarrow ou, ow)$$

Our survey of the phonological literature reveals that most uses of [consonantal] are unwarranted, as in the two cases which we have just mentioned, or are technically incorrect. To cite just one example of the latter, the syllable structure algorithm presented for German in (25) from Rubach 1990 indicates that all [-consonantal] segments are realized as syllable nuclei. Without further qualifications, this incorrectly predicts that not only vowels, but also glides and the laryngeal /h/ are syllable peaks.

(25)



There are two legitimate phenomena which at first glance seem to motivate reference to [consonantal]. The first involves nasalization phenomena, and the second, the calculation of sonority. We argue that these cases are in fact related.

Consider nasalization first. A common process of nasalization, shown in (26), is documented in Arabela and Warao where nasality spreads rightward to vowels, glides and laryngeals, and in Capanahua, where nasality spreads leftwards to these same segments. This seems to provide the best evidence for [consonantal] since nasal spread in these languages groups together all of the putatively [-consonantal] segments. We know of no other cases where vowels, glides and laryngeals appear to function as a natural class.

(26) ARABELA (Rich 1963)

|             |              |                   |
|-------------|--------------|-------------------|
| /maanu/     | [mããnũ?]    | 'woodpecker'      |
| /nuwa/      | [nũwã?]      | 'partridge'       |
| /nyaari/    | [nyããri?]    | 'he laid it down' |
| /tinyakari/ | [tinỹãkari?] | 'afternoon'       |

WARAO (Osborn 1966)

|            |            |                     |
|------------|------------|---------------------|
| /inawaha/  | [inãwãhã]  | 'summer'            |
| /moaupu/   | [mõãupu]   | 'give them to him!' |
| /mehokohi/ | [mẽhõkohi] | 'shadow'            |

CAPANAHUA (Loos 1969)

|           |           |             |
|-----------|-----------|-------------|
| /boon/    | [bõõ]     | 'hair'      |
| /bawin/   | [bãwĩ]    | 'catfish'   |
| /ci?in/   | [ci?ĩ]    | 'by fire'   |
| /ciponki/ | [cipõŋki] | 'downriver' |
| /waran/   | [warã]    | 'squash'    |

Our survey of nasalization processes reveals a hierarchy of nasalizable segments. In Arabela, Warao and Capanahua, as we have seen, vowels and glides nasalize. In Urhobo (Kelly 1969 and p.c.), nasality spreads to all approximants, that is vowels, glides (including the labial approximant  $\beta$ )<sup>7</sup> and liquids excluding voiceless [ʃ].

|                |           |                   |
|----------------|-----------|-------------------|
| (27) /iwewuyẽ/ | [iŵẽwũyẽ] | 'grated material' |
| /erobõ/        | [ẽrõbõ]   | 'brass'           |
| /ozũ/          | [ozũ]     | 'palm-wine'       |
| /evun/         | [evũ]     | 'belly'           |
| /eḡerẽ/        | [eḡẽrẽ]   | 'anthill'         |
| /ɔmarẽ/        | [ɔmãrẽ]   | 'old man'         |

In Terena, nasalization proceeds through all segments except obstruents (Bendor-Samuel 1960). A 1 sg. pronoun is marked by prefixation of a nasalization feature which spreads until it encounters an obstruent.

|      |       |               |        |              |
|------|-------|---------------|--------|--------------|
| (28) | emoʔu | 'his word'    | ẽmõʔũ  | 'my word'    |
|      | ayo   | 'his brother' | ãyõ    | 'my brother' |
|      | owoku | 'his house'   | õwõ ŋu | 'my house'   |

In Applecross Gaelic all segments except obstruent stops can nasalize (van der Hulst & Smith 1983).<sup>8</sup>

|      |             |              |               |
|------|-------------|--------------|---------------|
| (29) | /šẽnẽ.var/  | [šẽnẽ.vãr̃]  | 'grandmother' |
|      | /tʰrĩi.šar/ | [tʰrĩi.šãr̃] | 'plate'       |
|      | /sNãnʲdʲan/ | [sNãnʲdʲãñ] | 'thread'      |
|      | /kʰõispaxk/ | [kʰõĩspaxk̃] | 'wasp'        |

In other words, there is a scale of susceptibility to nasalization that is reminiscent of the sonority scale.

(30) Vowel, laryngeal, glide > liquid > sonorant > fricative

However, when viewed in terms of sonority, a problem arises when we consider the role of laryngeals. While they pattern with vowels and glides in being maximally susceptible to nasalization, they are not themselves high sonority segments.

Though sonority calculations have not always included [consonantal]—see Steriade 1982—certain works such as Levin 1985, Clements 1990b and Zec 1988 invoke [consonantal] or its converse [vocoid] in calculating sonority. This can be seen in (31) from Zec 1988 where [-consonantal] makes vowels and glides more sonorous than liquids, nasals and obstruents.

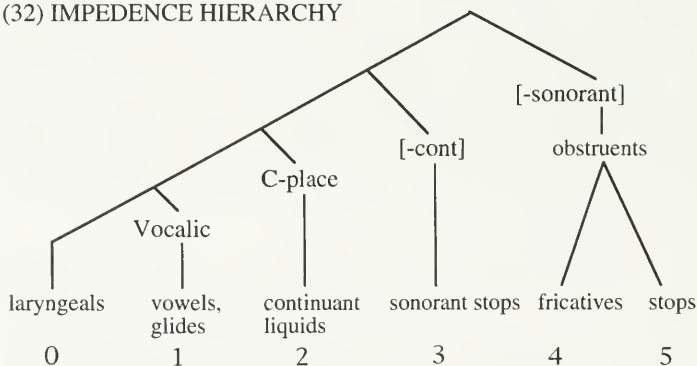
|      |     |     |     |   |             |
|------|-----|-----|-----|---|-------------|
| (31) | O < | N < | L < | V |             |
|      |     |     |     | - | consonantal |
|      |     |     | +   | + | approximant |
|      | +   | +   | +   | + | sonorant    |

Yet, constructing the hierarchy in terms of [consonantal] implies that the laryngeals /h/ and /ʔ/ would be high-sonority items. The literature on sonority is conspicuously quiet on where laryngeals should fit. One empirical test for sonority is fitness-for-peakhood: more sonorous segments are most likely to be syllable peaks and less sonorous segments are least likely to be peaks. We know of no case where laryngeals are peaks.

We offer a reconstruction of sonority which, we show, correctly ranks sounds according to the observed hierarchy in (30). Furthermore, this is done with no reference to [consonantal]. Following Clements and Zec, we distinguish between the classes vowel and glide, liquid, nasal, and obstruent, with obstruents further divided into fricatives and stops. As in these works, the presence of certain features contributes to the sonority of segments.

Our reconstruction of the hierarchy reinterprets sonority in terms of the notion IMPEDANCE, which is the resistance offered by a sound to the flow of air through the vocal tract, defined to exclude the larynx. Impedance is roughly the converse of sonority. This change in terminology is paired with a change in conception, and it entails an empirical dividend. Our claim is that certain properties inherently increase the impedance of a sound, and these properties are weighted. This is spelled out in (32) where right-branch elements have greater impedance than left-branch elements, and impedance decreases as you move down the hierarchy. As can be seen, being an obstruent contributes significantly to impedance; being a noncontinuant contributes, though less so; having a C-place articulation contributes a bit to impedance and having a Vocalic constriction contributes very little. As a result, laryngeals have no impedance.

(32) IMPEDANCE HIERARCHY



Linguistic generalizations stated in terms of high sonority are stated in terms of low impedance. Laryngeals have a special status since they have zero impedance, thus, thinking in terms of sonority, sonority would be undefined for them. Our typology of syllable peaks is that they are required to have some impedance value, which must not exceed a certain language-specific maximum. Thus laryngeals cannot be syllable peaks. We claim that variation in nasalization is also stated in terms of impedance, such that the target of nasalization cannot have an impedance greater than some language-specific maximum. Laryngeals and vocoids are thus most susceptible to nasalization, since they will generally not exceed that value.<sup>9</sup>

#### 4. Phonemic contrasts

Thus far we have shown that reference to the feature [consonantal] is unnecessary in describing changes that a sound or class of sounds undergoes, or in describing sounds as a natural class. The final class of evidence we examine concerns the question of whether [consonantal] is necessary for characterizing existing phonemic contrasts. Once again, our conclusion will be that it is not.



Since, as shown in (33), languages contrast oral and nasal vowels, or front round and unrounded vowels, or voiced and voiceless consonants, or homorganic fricatives and stops, distinctive feature theory must include features such as [nasal], [labial], [voice] and [continuant].

|                            |       |        |      |         |
|----------------------------|-------|--------|------|---------|
| (33) Nasalization (Yoruba) | kõ    | 'one'  | kɔ   | 'teach' |
| Rounding (French)          | vü    | 'view' | vi   | 'life'  |
| Voicing (English)          | beat  |        | peat |         |
| Continuant (English)       | thigh |        | tie  |         |

The same cannot be said about [consonantal]. In the realm of vowels, no language has [-consonantal] vowels contrasting with [+consonantal] vowels, and we have a hard time imagining what a [+consonantal] vowel would be. Furthermore, it is tautological that languages cannot exploit a consonantal contrast with laryngeals, since [+consonantal] segments require a particular degree of supraglottal constriction, and laryngeals necessarily have no supraglottal constriction. Thus, certain contrasts simply aren't attested, while those that seem to exist, can be handled by other features. That is, unlike [nasal] or [continuant], [consonantal] never functions as the sole feature responsible for distinguishing segments. For example, as (34) indicates, the contrast between the labial glide [w] and the bilabial fricative [β] can be expressed on the basis of the feature [sonorant].<sup>10</sup> Similarly, the palatal glide [j] and the palatal approximant [ɰ] can be distinguished by the feature [lateral]. In short, [consonantal] is not critical to the representation of phonemic contrasts.

|      |                                      |                                      |
|------|--------------------------------------|--------------------------------------|
| (34) | w                                    | β                                    |
|      | [ +sonorant<br>LABIAL ]              | [ -sonorant<br>LABIAL ]              |
|      | y                                    | ɰ                                    |
|      | [ +sonorant<br>-lateral<br>CORONAL ] | [ +sonorant<br>+lateral<br>CORONAL ] |

## 5. Conclusion

As we have argued here, in no case is reference to [consonantal] crucial. Based on these and other findings, we conclude that the feature [consonantal] is superfluous and therefore can be eliminated from feature theory.

## NOTES

\* We would like to thank Abigail Cohn, Ellen Kaisse, John Kelly, Patrick McConvell, Paul Newman and Glynn Piggott for discussion and examples which are relevant to this paper.

<sup>1</sup> Payne 1981 describes [w̄] as a bilabial approximant, lacking velar constriction.

<sup>2</sup> One might expect the velar *k* to lenite to a velar approximant  $\gamma$ . Such a segment does exist in Axininca Campa, but as noted in Black 1991,  $\gamma$  cannot be morpheme initial and may only be preceded by a low vowel. Thus  $\gamma$  cannot appear in root initial position, and in its place one finds the nearest approximant, *y*.

<sup>3</sup> Two other processes affect these examples. Final vowels may be deleted as long as a consonant cluster does not result, as in *ɲarək* from underlying *ɲaraku*. In addition, there is a process of degemination applying to *gaalumayu*, from *gaalumayyu*.

<sup>4</sup> It is possible that there are two lenition rules with different conditions, the one affecting /t/ being more restricted.

<sup>5</sup> In all cases that we are aware of, this could equally well be described as spreading of [sonorant] since the triggering segment is always a sonorant, though following McCarthy 1988, we avoid doing so since there is little evidence that [sonorant] spreads.

<sup>6</sup> Spreading of [continuant] would not be appropriate, since that would not explain the change of the fricatives /s/ and /z/ to [r̃] (a continuant *r*) and *f* to *w*. We do not assume that this involves spreading [sonorant] from the preceding vowel.

<sup>7</sup> We assume that the contrast between *w* and the bilabial approximant that Kelly 1969 transcribes as  $\beta$ , which we treat as both [+sonorant] owing to their nasalizability, is that Labial in *w* is dominated by Vocalic, whereas in  $\beta$  it is dominated by C-place: see Clements & Hume 1995 for discussion of that contrast; see Herman (this volume) for discussion of a similar structure in Karuk where, however, the two segments are phonetically identical.

<sup>8</sup> The vowels  $\text{ə}$ ,  $\text{ɛ}$  and  $\text{ɔ}$  also do not nasalize; this restriction we do not attribute to sonority, but suspect is due to a perceptual constraint.

<sup>9</sup> Cohn (1993) notes that nasal spread in Sundanese targets vowels and laryngeals, but not the glides *w* and *y*. She proposes that glides in Sundanese be specified as [+consonantal]: our account of this assigns the place features of glides in Sundanese to C-place, and thus glides have a higher impedance than laryngeals and vowels.

<sup>10</sup> Or, as indicated in note 7, the distinction may also be rendered in terms of C-place versus vocalic features.

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## A CONSTRAINT-BASED ANALYSIS OF PLACE ASSIMILATION TYPOLOGY\*

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Attested patterns of place assimilation display variability in targets, triggers, and domains. However, crosslinguistic generalizations about place assimilations show that certain constraints govern the range of variability. The purpose of the present study is to provide an explicit formal analysis of such variable, but constrained, patterns of place assimilation. More specifically, within the framework of Optimality Theory (Prince & Smolensky 1993, McCarthy & Prince 1993), I propose several sets of functionally and physically motivated constraints and their universal rankings.

### 1. Introduction

There are three criteria for classifying place assimilations. First, place assimilations can be classified as either local or non-local depending on whether they occur between adjacent or non-adjacent segments. Second, place assimilations can be either regressive or progressive depending on the direction of spreading. Finally, place assimilations can occur either within the same articulator or across articulators. In this paper, I focus on local, regressive, crossarticulatory assimilations, although reference to other types will be made when necessary.

It has been observed that targets, triggers, and domains of place assimilation vary across languages (Mohan 1993). For instance, variability in target can be seen in English, Korean, and Labrador Eskimo. In English, only coronal stops are targets of place assimilation; in Korean, not only coronals but also labials are targets (Kim-Renaud 1974 and Cho 1990, among others); in Labrador Eskimo, consonants of all places can be targets (Smith 1979). Such variability has been an obstacle in providing an explicit formal analysis of place assimilation typology. However, the following cross-linguistic generalizations show that certain constraints govern the range of variability (Mohan 1993, Ohala 1990):

- (1) a. Stops are more likely targets than fricatives.
- b. Nasals are more likely targets than stops.
- c. Coronals are more likely targets than non-coronals.
- d. Non-coronals are more likely triggers than coronals.
- e. Stops are more likely triggers than nasals.
- f. Codas are more likely targets than onsets.

In (1), interesting acoustic correlations can be observed: more likely targets are acoustically weaker than less likely ones, whereas more likely triggers are acoustically stronger than less likely ones. For instance, regarding (1a,b) fricatives in general have stronger place cues than stops (Kohler 1991:189); and in turn, stops have stronger cues than nasals (Ohala 1990:261 citing House 1957 and Malécot 1956).

Why should place assimilation typology have such parallel relations with acoustic properties? To answer this question, we need to consider the motivation for place assimilation in general. It has been most commonly assumed that the motivation for **place assimilation** is EASE OF ARTICULATION, although as Ohala (1990:260) points out, 'the notion of "ease" or "simplicity" has never been satisfactorily defined'. But, what could be the motivation for the **non-occurrence of place assimilation**? Obviously, not every language displays consonant place assimilation; not every consonant cluster is subject to place assimilation. Why are some underlying sequences preserved, resisting weakening due to 'ease of articulation'? The plausible functional explanation is certainly EASE OF PERCEPTION, i.e. maintaining contrasts. The more alike underlying and surface forms, the easier its perception. If heterorganic consonant clusters undergo full place assimilation, they run the risk of neutralizing with underlyingly geminates, causing problems in recoverability. Thus, effort for obtaining an easy, or maximum, perception resists place assimilation.

Now, what kind of segment occurring in target position needs to be preserved for maintenance of contrasts? And, what kind of segment had better be weakened for minimization of articulatory effort, losing contrasts? What is the criterion for preserving and weakening a segment? I assume that acoustic salience is the decisive criterion, following the hypothesis in (2) which has been discussed and claimed by Kohler (1990, 1991, 1992), Steriade (1993), and Byrd (1994):

(2) Production Hypothesis

Speakers make more effort to preserve the articulation of speech sounds with powerful acoustic cues, whereas they relax their articulation of sounds with weak cues.

According to the hypothesis in (2), which I call the Production Hypothesis, speakers are reluctant to exert effort on an acoustically weak segment since its preservation would not be very helpful for its perception; but speakers are eager to exert effort on an acoustically salient segment since the effort crucially enhances the perceptibility of the segment. In other words, speakers make more effort for those sounds which will produce dividends in terms of enhanced perceptibility.

From (2), the answer to the question given above (i.e. why does place assimilation typology have such parallel relations with acoustic properties?) can follow. Since consonants with weak acoustic cues are more likely subject to weakening processes, they are more likely targets of place assimilation. In contrast, consonants with strong cues

are rarely subject to weakening, resisting place assimilation. Concerning triggers of place assimilation, since consonants with strong acoustic energy can make the adjacent consonant acoustically weaker, the adjacent consonant can be targeted in place assimilation. Thus, consonants with strong cues can be more likely triggers than those with weak cues.

Consequently, the variable, but constrained, patterns observed in place assimilation typology result from diverse ways of reconciling two conflicting demands, EASE OF ARTICULATION and EASE OF PERCEPTION; the reconciliation is determined on the basis of the acoustic salience. Therefore, to account for universal patterns of place assimilation, we must explore physiological and functional components which conspire to satisfy these two conflicting goals. More specifically, within the framework of Optimality Theory (Prince & Smolensky 1993; McCarthy & Prince 1993), I first provide two main groups of universal constraints which are motivated by the physical properties of the speech mechanism. Each group of constraints is guided by one of the two conflicting goals, ease of articulation and perception; the first one will be called Weakening constraints and the second one Preservation constraints. Each group can be divided into several sets of constraints on the basis of criteria such as place, manner, and prosodic domain.

## 2. Weakening

Place assimilation in consonant clusters can be decomposed into two parts, deletion of target segment (3a) and lengthening of trigger segment (3b):

- $$(3) \quad C_1C_2 \rightarrow C_2C_2$$
- a.  $C_1 \rightarrow \emptyset$
  - b.  $C_2 \rightarrow C_2C_2$

I assume that different deletion mechanisms operate in different types of place assimilation—gradient vs. categorical. In this section, I mainly discuss deletion of target in place assimilation. Based on experimental studies on gradient place assimilation (Nolan 1992, Jun 1994), in this section I claim that the articulatory process which perceptually deletes target consonants in gradient place assimilation is the reduction in spatio-temporal magnitude of the target gesture. I then argue that the articulatory process which leads to categorical change in place assimilation is the deletion of the target gesture. Finally, I propose constraints which govern the weakening processes in place assimilation.

### 2.1 Gradient place assimilation

Gradient place assimilation is typically postlexical; it applies in casual speech, and it is optional. For instance, English coronals assimilate in place to a following non-coronal across word boundaries: e.g. /leyt kis/ → [leyk kis] 'late kiss'. This alternation does not occur all the time with all speakers. Its occurrence is subject to the speed and

style of speech: it is more common in casual, fast speech than in formal, slow speech. In addition, as shown in many studies (Barry 1985, 1991; Browman & Goldstein 1990; Nolan 1992; and Byrd 1994), residual gestures of target coronals are often observed. This gradient alternation is beyond the scope of phonological theories such as classical generative phonology, autosegmental phonology and underspecification in which segmental and featural changes are represented in a categorical way. (See Barry 1985, 1991; Nolan 1992; and Zsiga 1993 for the relevant discussion.)

Let us now consider what articulatory process yields gradient place assimilation. More specifically, what articulatory process can perceptually delete target consonants in a gradual way? I believe that gestural reduction is the articulatory process which perceptually deletes target segments, based on the findings of Nolan (1992) and Jun (1994).

To investigate the distinct roles of gestural reduction and overlap in place assimilation, Jun (1994) measured oral pressure during the production of *pk* clusters in Korean and English.<sup>1</sup> In both languages, coronals assimilate in place to a following consonant, but only in Korean do labials also assimilate to a following velar. The results of the production test show that (i) Korean speakers often reduce the labial coda in *pk* clusters, but English speakers do not; (ii) both Korean and English *pk* clusters are mostly highly overlapped; and (iii) Korean speakers do not reduce the labial coda in *pt* clusters. In its related perception test, it was found that *pk* clusters are rarely perceived as assimilated even with a marked overlap, unless *p* is reduced. These findings suggest that gestural reduction is the main factor giving rise to place assimilation, and that the reduction process must be speaker-controlled.

The results of these oral pressure experiments are consistent with those of Nolan's (1992) experiments on English alveolar place assimilation. Nolan's experiments support the hypothesis that gestural reduction is the main factor giving rise to place assimilation, by showing that in English alveolar place assimilation, extents in reduction of the alveolar closure govern the perception of assimilation. Also, as place assimilation is not universal, but variable across languages, Nolan argues that place assimilation is 'a phenomenon over which speakers have control'.

Based on the results of these experiments, it seems clear that gestural reduction is the articulatory process which perceptually deletes the target segment in casual speech place assimilation, and that it must be speaker-controlled.

## 2.2 Categorical place assimilation

In the previous section we concluded that gestural reduction is responsible for the (perceptual) deletion of the target segment in gradient place assimilation. In this section, I discuss what process is

responsible for the deletion of the target segment in categorical place assimilation. Unlike gradient place assimilation, categorical place assimilation is typically obligatory and lexical: in the change  $C_1C_2 \rightarrow C_2C_2$ , no residual gesture of the target consonant  $C_1$  can be observed. Thus, based on the total absence of target gesture at surface, it seems that deletion, not reduction, of the gesture plays a role in deleting the target segment in place assimilation.

In summary, gestural reduction is the articulatory process which (perceptually) deletes the target segment in gradient place assimilation, whereas in categorical place assimilation, gestural deletion deletes the target segment. In other words, gestural reduction and deletion demonstrate the same effect—namely, deletion of the target segment in place assimilation—to different degrees.

### 2.3 Weakening constraints

In this section, I provide weakening constraints, which formalize the notion of minimization of articulatory effort. As discussed in section 2.1, I assume that the main articulatory process of gradient place assimilation is the spatio-temporal reduction of target gesture. This reduction process itself is not confined to place assimilation. Independent of place assimilation, consonantal gestures typically reduce in both magnitude and time in fast, casual speech (Gay 1981). Variability of consonant reduction depending on the speed and style of speech seems to parallel gradiency of consonant place assimilation which also depends on speed and style of speech. Thus, we may plausibly assume that gestural reduction which yields place assimilation is a subset case of the general consonantal reduction process. I now propose the following constraint which characterizes the general reduction process of consonantal gestures:

(4) Reduction Constraint

Red(C): Form as reduced a constriction as possible depending on speech rate and style.

The constraint Red(C), which has the effect of reducing the magnitude of target gesture, is responsible for gradient gestural reduction and, indirectly, for gradient place assimilation.

As discussed in section 2.2, I assume that the lexical counterpart of gestural reduction is the deletion of the target gesture. Thus, the following deletion constraint is responsible for place neutralization and, indirectly, categorical place assimilation:

(5) Deletion Constraint

Del(C): Form no constriction at all.

In the following section, I provide preservation constraints which conflict with the proposed weakening constraints, while discussing the acoustic facts observed in place assimilation typology.



### 3. Preservation constraints

Recall that the Production Hypothesis claims that speakers make more effort to preserve the articulation of acoustically stronger sounds. Based on this hypothesis, I propose the following general preservation constraint:

- (6) Pres(Art): The magnitude of a constriction is preserved  
 Universal ranking: Pres(Art1) >> Pres(Art2), where the acoustic cues for Art1 are stronger than those for Art2.

Thus, preservation constraints for consonantal gestures with strong acoustic cues are more highly ranked than those with weak cues. In the following sections, with the above general format at hand, I provide the sets of preservation constraints which can be classified by several categories, while discussing the hierarchy in the acoustic effects within each category.

#### 3.1 Manner constraints

In this section, I discuss the acoustic hierarchy of fricatives, stops and nasals when they are the first constituent of a consonant cluster. Let us first consider the acoustic structure of fricatives and stops. As shown in Borden & Harris (1984:193, Figure 5.20), for fricatives and stops, the prominent place cues are the formant (mainly F2) transition of the neighboring vowel and the frequency of the noise components: the noise component of fricatives is friction, and that of stops is the release burst. In the consonant cluster  $C_1C_2$ , if  $C_1$  is a stop, it is typically unreleased due to overlap with  $C_2$ . Unreleased stops lack the place cues which bursts provide. Thus, formant transitions in the preceding vowel will be the only available place cue for stops. In contrast, if  $C_1$  is a fricative, in addition to the F2 transition there are place cues in the friction even under its overlap with  $C_2$ : a short period of non-overlapping friction at the beginning of the fricative articulation will provide place cues for the fricative. Thus, fricatives have more robust place cues than stops.

For nasals, the prominent place cue is the formant transitions of the neighboring vowel (Malécot 1956; Nord 1976; Borden & Harris 1984).<sup>2</sup> The acoustics of nasal consonants is characterized by resonance of the pharyngeal and nasal cavities, and antiresonances of the oral cavity. (See Borden & Harris 1984; Ohala & Ohala 1993:233-4.) The resonance is low, below 500 Hz (Borden & Harris 1984:180). And, resonance and antiresonance may cancel each other out if close in frequency. Thus, 'the obvious change in spectrum from an orally produced vowel to a nasal includes...a weakening of the upper formants [F2,3,...]' (Borden & Harris 1984:180). Such weakening of the upper formants can lead to weakening of place cues for the following nasal, implying that nasals have weak place cues in the formant transitions of the neighboring vowel, in comparison with stops.

More directly relevant data is found in Malécot (1956). Malécot carries out a perception test employing a tape-splicing technique. He



separated and recombined the part for nasal resonance and its neighboring vowel of utterances recorded on magnetic tape. From his results (his tables 2, 4, and 5), it follows that in combination with nasal resonance, the vowel transition of stops dominates the perception of place of articulation more consistently than that of nasals. This can indicate that the vowel transition of stops is a stronger place cue than that of nasals. In summary, nasals have weaker place cues than stops, which in turn have weaker cues than fricatives. This hierarchy in strength of acoustic cues leads to the following ranking among constraints which formulate preservation of constrictions of fricatives, stops, and nasals:

(7) Universal ranking for target manner

$$\text{Pres}(\overline{[\text{fric}]} \text{C}) \gg \text{Pres}(\overline{[\text{stop}]} \text{C}) \gg \text{Pres}(\overline{[\text{nas}]} \text{C})$$

This ranking indirectly captures a cross-linguistic generalization about place assimilations—nasals are more likely targets than oral stops, which are in turn more likely targets than fricatives.

### 3.2 Place constraints

Let us discuss the acoustic hierarchy among coronals, labials and velars when they are unreleased. As discussed above, for unreleased stops and nasals the vowel transitions are the primary place cues. It has been claimed (Ladefoged 1975 among others) that the vowel transitions are smaller for coronals than for velars or labials. This suggests that unreleased coronals are acoustically weaker than unreleased velars and labials with respect to place cues.

Also, there seems to be a difference in robustness of place cues between velars and labials. Like coronals, labials' articulator, i.e. the lips, are independent of vowels' articulator, i.e. tongue body, whereas velars share the articulator with vowels. Thus, the acoustic cues for the velars may be overlaid more on the preceding vowel than those for labials and coronals. Consequently, velars' place cue of the preceding vowel is more robust than labials and coronals. This can be implied by the fact (Ladefoged 1975) that 'the formant transitions [in velars] take longer than in the corresponding alveolar or bilabial sounds'.

In summary, coronals, labials, and dorsals are acoustically strong in increasing order when they are unreleased. Based on this acoustic hierarchy, I propose the following ranking for preservation constraints which formulate the preservation of each place of articulation.

(8) Universal ranking for target places<sup>3</sup>

$$\text{Pres}(\text{dor}^0) \gg \text{Pres}(\text{lab}^0) \gg \text{Pres}(\text{cor}^0).$$

This ranking indicates that unreleased velars are more preserved than unreleased labials, which are, in turn, more preserved than unreleased coronals. It indirectly captures a cross-linguistic generaliza-

tion on place assimilation—coronals are more likely targets than labials, which are, in turn, more likely targets than velars.

### 3.3 Prosodic constraints

Prosodic contexts may affect the strength of the acoustic cues for the consonantal place of articulation. As discussed by Ohala (1990:261) and Kohler (1990, 1991), the reason why codas are more likely targets of place assimilation than onsets is because onset consonants have stronger place cues than codas. Onsets are released, but codas are often unreleased. Thus, acoustic cues to place which are in the release are weakened or lost in the unreleased coda. Acoustic strength of onsets over codas leads to the following universal ranking in constraints which formulate the preservation of codas and onsets:

(9) Universal ranking for prosodic context

Pres(onset) >> Pres(coda)

This ranking indirectly captures a cross-linguistic generalization on place assimilations—codas are more likely targets than onsets; in other words, regressive place assimilations are much more common than progressive ones.

### 3.4 Trigger place constraints

In this section, I discuss the acoustic salience of place cues for the first constituent of consonant clusters which vary depending on the place of the following consonant. In the consonant cluster  $C_1C_2$ ,  $C_2$  of different place may obscure place cues of  $C_1$  to different degrees. To determine the relative strength of the effect of coronals, labials, and velars in obscuring place cues of  $C_1$ , I depend on the following speculation. In the sequence  $V_1C_1C_2$ , the formant transitions of  $V_1$  are affected by both  $C_1$  and  $C_2$ , as shown by Byrd (1992) and Zsiga (1992), although  $C_1$  is in general stronger than  $C_2$ . Thus,  $C_2$ , whose place cues are robust in the formant transitions, is likely to affect the formant transitions of  $V_1$ , obscuring place cues of  $C_1$ . In other words, consonants ( $C_2$ ) which have robust formant transitions can obscure  $C_1$ 's place cues in the formant transitions more than those ( $C_2$ ) which have weak transitions. In section 3.2, we saw that unreleased coronals, labials, and velars have robust place cues in increasing order. From this claim, it follows that the place cues of  $C_1$  can be obscured before coronals, labials, and velars in increasing order. Based on this speculation, I claim that consonants have acoustically strong place cues before coronals, labials and velars in decreasing order. This leads to the following universal ranking in constraints which formulate the preservation of  $C_1$  before each of coronals, labials and velars:

(10) Universal ranking for trigger places

Pres(\_\_cor) >> Pres(\_\_lab) >> Pres(\_\_dor)

This ranking indicates that consonants are more preserved before coronals than before labials; in turn, consonants before labials are more preserved than those before velars. Thus this ranking indi-

rectly captures a cross-linguistic generalization about place assimilations: velars are more likely triggers than labials, which are in turn more likely triggers than coronals.

### 3.5 Trigger manner constraints

In  $C_1C_2$  clusters, the acoustic salience of place cues for  $C_1$  varies depending on the manner of articulation of  $C_2$ . Let us compare the effect of stops and nasals when they occur as the second constituent of a consonant cluster. In the previous section, we saw that in a  $V_1C_1C_2$  sequence, the formant transitions of  $V_1$  are affected by both  $C_1$  and  $C_2$ . We might speculate then, that the more robust  $C_2$ 's place cues, the more likely its formant transitions will be manifested at  $V_1$  offset, potentially obscuring those of  $C_1$ . Thus, if stops have more robust place cues in the formants of neighboring vowels than nasals, it follows that the place cues of  $C_1$  can be more obscured before stops than nasals. This leads to the following universal constraint ranking in constraints which formulate the preservation of the  $C_1$  before stops and nasals:

- (11) Universal ranking for trigger manner  
 Pres(\_\_nas) >> Pres(\_\_stop)

This ranking indicates that consonants before nasals must be more preserved than those before stops; thus indirectly capturing a cross-linguistic generalization on place assimilations—stops are more likely triggers than nasals.

## 4. Maintaining cluster duration

Not only categorical place assimilations but also gradient ones have been assumed in the literature to display compensatory lengthening of the target segment, as suggested by descriptions of gradient assimilations: e.g. 'late kiss' /leyt kis/ → [leyk kis]. This lengthening of the target segment in gradient place assimilation has been demonstrated by Barry's (1991) electropalatographic study on English postlexical place assimilation.

What could be the motivation for this compensatory lengthening? Compensatory lengthening found in gradient place assimilation is different from that found in categorical place assimilation due to the gradient reduction of the target segment. Nonetheless, as the term 'compensatory lengthening' suggests, both types have the same goal, i.e. maintaining cluster duration. More specifically, I believe that compensatory lengthening of place assimilation is the result of maintaining the canonical duration of the consonant cluster, for the purpose of cueing the underlying length status. Based on the duration of the underlying cluster, listeners may figure out that the uttered long trigger segment is not a single segment. They may further guess the correct underlying heterorganic cluster, probably with the aid of their native knowledge of common consonant weakening. I now provide the following constraint which is responsible for maintaining the canonical duration of consonant clusters:

## (12) Constraint for maintaining cluster duration

MnDur(clst): Maintain the canonical duration of the underlying consonant cluster

To obey this constraint,  $C_2$  in a  $C_1C_2$  cluster lengthens as  $C_1$  reduces. Thus, the constraint (12) is indirectly responsible for compensatory lengthening of place assimilation.

Thus far, I have provided several sets of constraints. Each set inherently ranked according to acoustic effects. This ranking is universal; it cannot be altered. What can change is not ranking within a set of constraints classified by the same criterion, but the interaction among sets of constraints, each of which is classified by different criteria. Consequently, actual patterns of place assimilation will be determined by the interaction of sets of constraints, maintaining the universal ranking within each set.

## 5. An analysis of Korean place assimilation

In this section, with constraints and their universal rankings proposed in previous sections, I provide an analysis of Korean place assimilation. In Korean, coronals assimilate in place to the following labials and velars, and in addition, labials assimilate in place only to velars:

(13) Korean consonant place assimilations<sup>4</sup>

- |                |              |  |               |
|----------------|--------------|--|---------------|
| a. /mit+ko/    | → [mikko]    |  | 'believe and' |
| b. /cinan+pam/ | → [cinampam] |  | 'last night'  |
| c. /ip+ko/     | → [ikko]     |  | 'wear and'    |

but,

- |               |             |            |                          |
|---------------|-------------|------------|--------------------------|
| d. /ip+ta/    | → [ipta]    | *[itta]    | 'wear + SE' <sup>5</sup> |
| e. /ik+ta/    | → [ikta]    | *[itta]    | 'ripe + SE'              |
| f. /kuk+pota/ | → [kukpota] | *[kuppota] | '(more) than soup'       |

It has been assumed in the literature (Kim-Renaud 1974; Cho 1990 among others) that Korean place assimilation is an optional, and it applies in casual speech. Supporting this assumption, the results of Jun's (in prep.) experiments show that the labial reduction giving rise to place assimilation is basically partial and it can apply across word boundaries (14) but not in the prepausal position (15).

## (14) Across word boundaries

- |         |         |                |                                  |
|---------|---------|----------------|----------------------------------|
| a. /ip  | kalita/ | → [ik kalita]  |                                  |
|         | mouth   | hide           |                                  |
|         |         |                | '(Somebody) hides his/her mouth' |
| b. /cip | kuhata/ | → [cik kuhata] |                                  |
|         | house   | get            |                                  |
|         |         |                | '(Somebody) gets a house'        |

## (15) Prepausal position

- |          |         |        |         |
|----------|---------|--------|---------|
| a. /ip/  | → [ip]  | *[iP]  | 'mouth' |
| b. /cip/ | → [cip] | *[ciP] | 'house' |

Thus, I assume that Korean place assimilation is a gradient postlexical process which result from the gestural reduction of coronals before noncoronals, and labials before velars. To deal with the Korean data, a general constraint for preserving codas needs to be divided into more specific constraints:

## (16) Preserve coda constraints (New)

Pres(\_\_%) >> Pres(\_\_C)

[% denotes a pause; Preservation of constrictions of a prepausal coda is more highly ranked than that of a coda followed by another consonant]

The above ranking falls out from the acoustic fact that a coda followed by another consonant has acoustically weaker place cues due to the overlap with C<sub>2</sub> than a prepausal coda.

The ranking of the complete set of constraints which are proposed for Korean place assimilation is in (17).

## (17) Ranking for Korean place assimilation

MnDur(clst), Pres(onset), Pres(\_\_%), Pres(dor<sup>0</sup>), Pres(\_\_cor)

>> **Red(C)** >>

Pres(lab<sup>0</sup>), Pres(cor<sup>0</sup>), Pres(\_\_lab), Pres(\_\_dor), Pres(\_\_C)

According to the proposed ranking for Korean place assimilation, both coronals and labials can be reduced in pre-consonantal coda position, since Pres(lab<sup>0</sup>) and Pres(cor<sup>0</sup>) are ranked below Red(C) with Pres(\_\_C). But, in addition to velars, labials do not reduce before coronals since Pres(\_\_cor) is ranked above Red(C). Thus, this relative ranking captures the different patterns of reduction between coronals and labials in Korean place assimilation. Notice that all universal rankings within a set of constraints are obeyed in (17). Based on the above ranking, I analyze /tk/ → [tK] as shown in the following tableau:

(In the tableaux below, only medial consonant clusters are considered in assessing violations of constraints. The following notations are employed: superscripted letter for a segment indicates its reduced counterpart; capital letter for a segment indicates a gesture lengthening; arrow indicates an optimal output; weak vertical line indicates a tie in ranking)

(18) /it+ko/ → [i<sup>t</sup>ko]

| Candidates                    | MnDur | Pres(onset) | Red(C) | Pres(__C) | Pres(cor <sup>0</sup> ) |
|-------------------------------|-------|-------------|--------|-----------|-------------------------|
| it ko                         |       |             | **!    |           |                         |
| i <sup>t</sup> ko             |       |             | *      | *         | *                       |
| i <sup>t</sup> k <sup>o</sup> | *!    |             | *      | *         | *                       |
| i <sup>t</sup> k <sup>o</sup> | *!    | *           | *      |           |                         |
| i <sup>T</sup> ko             |       | *!          | *      |           |                         |
| i <sup>t</sup> k <sup>o</sup> | *!    | *!          |        | *         | *                       |

Notice that the actual output is that which best satisfies the constraints. When *t* is sufficiently reduced, the output will be heard as [ikko].

Labials' assimilation to a following velar is shown in the following tableau:

(19) /ip+ko/ → [iP Ko]

| Candidates        | Pres(onset) | Red(C) | Pres(_C) | Pres(_dor) | Pres(lab <sup>0</sup> ) |
|-------------------|-------------|--------|----------|------------|-------------------------|
| ip ko             |             | **!    |          |            |                         |
| iP Ko             |             | *      | *        | *          | *                       |
| iP k <sub>o</sub> | *!          | *      |          |            |                         |

Notice that labials before velars need to be reduced to obey Red(C); this reduction violates only constraints which are ranked below Red(C).

Now we are in a position to consider cases in which place assimilation does not apply. The following tableau illustrates why labials do not reduce before coronals:

(20) /ip+ta/ → [ipta]

| Candidates        | Pres(onset) | Pres(_cor) | Red(C) | Pres(lab <sup>0</sup> ) |
|-------------------|-------------|------------|--------|-------------------------|
| ipta              |             |            | **     |                         |
| iP Ta             |             | *!         | *      | *                       |
| iP t <sub>a</sub> | *!          |            | *      |                         |

This analysis captures the fact confirmed by Jun's (1994) experiments that labials do not reduce before coronals. Notice that the constraint Pres(\_cor) plays the main role in preventing the reduction of labials before coronals. The case in which velars do not reduce before coronals is subject to the same mechanism. However, velars do not reduce before labials:

(21) /kuk+pota/ → [kuk pota]

| Candidates           | Pres(onset) | Pres(dor <sup>0</sup> ) | Red(C) | Pres(_C) |
|----------------------|-------------|-------------------------|--------|----------|
| kuk pota             |             |                         | **     |          |
| ku <sup>k</sup> Pota |             | *!                      | *      | *        |
| kuK Pota             | *!          |                         | *      |          |

Finally, the tableau in (22) illustrates the analysis of a prepausal coda:

(22) /ip/ → [ip]

| Candidates | Pres(_%) | Red(C) | Pres(lab <sup>0</sup> ) | Pres(_C) |
|------------|----------|--------|-------------------------|----------|
| ip         |          | *      |                         |          |
| iP         | *!       |        | *                       |          |

According to the ranking for Korean place assimilation (17), labials may reduce before a consonant, since both Pres(lab<sup>0</sup>) and Pres(\_C) are ranked below Red(C). However, due to the high ranked Pres(\_%), an output with a reduced prepausal labial is not optimal. This analy-



sis captures the fact that Korean coda consonants do not reduce in prepausal position.

In conclusion, I have provided an explicit, formal analysis of Korean place assimilation by proposing a single ranking of constraints in (17) which obeys all the universal rankings within each set of constraints.

## 6. Conclusion

The present study provides an in-depth discussion of perceptual and articulatory mechanisms in speech production, which enables us to employ independently motivated constraints in an analysis of place assimilation.

## NOTES

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<sup>1</sup> Oral pressure refers to suprapharyngeal pressure, which was recorded behind lips.

<sup>2</sup> Kurowski & Blumstein (1984) claim that the place cues of the nasal murmur are as effective as vowel transitions in conveying place information. However, they deal with NV sequences, not VN. As far as we are concerned with VC sequences, Malécot (1956), Nord (1976), Repp & Svastikula (1988) show that the vowel transition is very dominant place cues, as compared to the murmur.

<sup>3</sup> The superscripted 0 indicates UNRELEASED.

<sup>4</sup> Broad phonetic transcriptions are employed for Korean examples. Actual phonetic forms will be outputs of a regular process of Korean post-obstruent fortition in which lenis obstruents become fortis after an obstruent. See Kim-Renaud (1986) for more details about this regular process in Korean.

<sup>5</sup> SE represents Sentence Ender.

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**INTERVENTION PHENOMENA:  
TOWARDS AN EXTENDED MONOTONICITY CALCULUS\***

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It is known that intervening constituents may affect the licensing relation between negative polarity items (NPIs) and monotone decreasing elements. These facts can be accounted for by means of a simple monotonicity calculus which allows us to compute mechanically the semantic value of any chain of composed expressions. In order to deal adequately with the distribution of NPIs in languages like German and Dutch, this calculus must be extended to certain subsets of the class of monotonic elements. In addition, it can be shown that we must make a distinction between maximal and non-maximal compositions.

**1. Introduction**

It is well-known that negative polarity items (NPIs) can be licensed by a variety of constituents, which appear to have in common that they are associated with a monotone decreasing function as their semantic value. Typical examples are the sentences in (1), where the NPI *any credit* is triggered by the downward monotonic expressions *no critic* and *few writers*.<sup>1</sup>

- (1) a. No critic gives a writer any credit.  
b. Some critics give few writers any credit.

Less known is the fact that intervening constituents may affect the licensing relation. As is illustrated by the contrast in (2), the occurrence of a definite determiner in the chain between the NPI (*anyone*) and the trigger (*never*) is potentially damaging to the outcome.

- (2) a. I never met a critic who anyone tried to kill.  
b. \*I never met the critic who anyone tried to kill.

On the basis of earlier work by Van Benthem (1986; 1991), Kas (1993), Sánchez Valencia (1991), and Zwarts (1991), we will argue that these facts can be accounted for by means of what we shall refer to as the Monotonicity Calculus (MC).

**2. The Monotonicity Calculus**

In order to deal adequately with the distribution of NPIs, we must be able to compute the monotonicity properties of the linguistic context. This is necessary because it can be shown that an NPI only leads to an acceptable result if it is the argument of a monotone decreasing expression. One of the consequences of such a view is that the noun

phrase *few congressmen* in the sentence *Few congressmen attended any of the meetings* cannot be regarded as the licensing expression. Instead, the sentence must be analyzed in such a way that the well-formed occurrence of the phrase *any of the meetings* can be attributed to the logical properties of the complex expression *few congressmen attended*. To this end, we will make use of the device of function composition, which enables us to analyze compound expressions as the combination of two or more simpler expressions. As an illustration, consider the derivation in (3) which combines *few congressmen* and *attended* in such a way that the result is a composite function whose domain is the set of NPs and whose value at any expression of this type is S.

|                     |          |                     |
|---------------------|----------|---------------------|
| (3) Few congressmen | attended | any of the meetings |
| S/VP                | VP/NP    | NP                  |
| -----               |          |                     |
| S/NP                |          |                     |
| -----               |          |                     |
| S                   |          |                     |

This way of portraying the matter is logically meaningful, because it has been argued by Partee & Rooth (1983) and Keenan & Faltz (1985) that extensional transitive verbs invariably receive homomorphic functions as their semantic values. Since any homomorphism is upward monotonic, it becomes possible to analyze the compound expression *few congressmen attended* as the composition of a monotone decreasing expression (*few congressmen*) and a monotone increasing expression (*attended*). In view of the next theorem, this means that the whole expression *few congressmen attended* is monotone decreasing in nature.

(4) Theorem

Let  $B$ ,  $B^*$  and  $B^{**}$  be three Boolean algebras and let  $f: B \rightarrow B^*$  and  $g: B^* \rightarrow B^{**}$ . Then:

- a. If  $f$  is monotone increasing and  $g$  is monotone decreasing, then the composition  $g \circ f$  is monotone decreasing.
- b. If  $f$  is monotone decreasing and  $g$  is monotone increasing, then the composition  $g \circ f$  is monotone decreasing.

In other words, the fact that *Few congressmen attended any of the meetings* is a well-formed sentence must be attributed to the circumstance that the NPI *any of the meetings* is the argument of the monotone decreasing expression *few congressmen attended*. This state of affairs also helps to explain why the conditional in (5) is valid.

- (5) a. Few critics visited a museum  $\rightarrow$   
 b. Few critics visited a modern museum

Since the quantifier associated with *a modern museum* is a subset of the one associated with *a museum*, the downward monotonic nature of *few critics visited* allows us to pass from (5a) to (5b).



The ungrammaticality of *\*Many congressmen attended any of the meetings*, on the other hand, is a consequence of the monotone increasing nature of the expressions *many congressmen* and *attended*. In view of the theorem below, what this means is that the composite expression *few congressmen attended* is monotone increasing as well.

## (6) Theorem

Let  $B$ ,  $B^*$  and  $B^{**}$  be three Boolean algebras and let  $f: B \rightarrow B^*$  and  $g: B^* \rightarrow B^{**}$ . Then:

- a. If  $f$  and  $g$  are both monotone increasing, then the composition  $g \circ f$  is monotone increasing.
- b. If  $f$  and  $g$  are both monotone decreasing, then the composition  $g \circ f$  is monotone increasing.

This prevents the NPI *any of the meetings* from being analyzed as the argument of a monotone decreasing expression. As a corollary, we also have the invalidity of the conditional in (7).

- (7) a. Many critics visited a museum  $\rightarrow$   
 b. Many critics visited a modern museum

If we reverse the order of antecedent and consequent, however, the resulting proposition is valid, as shown by (8).

- (8) a. Many critics visited a modern museum  $\rightarrow$   
 b. Many critics visited a museum

Since the quantifier associated with *a museum* is a superset of the one associated with *a modern museum*, the upward monotonic nature of *many critics visited* allows us to pass from (8a) to (8b).

To understand the relationship between monotonicity and function composition fully, one does well to take figures 1 and 2 into consideration.

Figure 1

| f            | g            | f $\circ$ g  |
|--------------|--------------|--------------|
| $\uparrow$   | $\uparrow$   | $\uparrow$   |
| $\uparrow$   | $\downarrow$ | $\downarrow$ |
| $\downarrow$ | $\uparrow$   | $\downarrow$ |
| $\downarrow$ | $\downarrow$ | $\uparrow$   |

Figure 2

| x | y | x $\cdot$ y |
|---|---|-------------|
| + | + | +           |
| + | - | -           |
| - | + | -           |
| - | - | +           |

The above two tables clearly show that the behavior of monotonic functions under composition is comparable to the behavior of integers under multiplication. As an illustration of this monotonicity calculus, consider the conditionals in (9) and (10).

- (9) a. John didn't see any of the paintings  $\rightarrow$   
 b. John didn't see any of the modern paintings
- (10) a. John didn't see some of the modern paintings  $\rightarrow$   
 b. John didn't see some of the paintings

The validity of the entailment in (9) shows that the object noun phrase is the argument of a monotone decreasing function. This is not the case in (10), where the direction of the conditional inference is in fact the opposite of what we saw before. In other words, the object noun phrase in (10) must be the argument of a monotone increasing function. This can be explained if we assume that the occurrence of *some of the modern paintings* in (10) is the argument of the negative transitive verb phrase *didn't see*.

Before we address this matter in more detail, we do well to present an analysis of the sentence *John didn't see any of the paintings*. As (11) shows, the negative transitive verb phrase *didn't see* is regarded as being the result of composing the monotone decreasing function *didn't* and the monotone increasing function *see*. According to the table in figure 1, this compound expression is monotone decreasing in nature. In a similar way, we can use composition to analyze the complex phrase *John didn't see* as the combination of an expression which is monotone increasing (*John*) and one which is monotone decreasing (*didn't see*). The table in figure 1 tells us that the result is again a monotone decreasing expression.

|           |        |       |                      |
|-----------|--------|-------|----------------------|
| (11) John | didn't | see   | any of the paintings |
| S/VP      | VP/VP  | VP/NP | NP                   |
| ↑         | ↓      | ↑     |                      |
|           | -----  |       |                      |
|           | VP/NP  |       |                      |
|           | ↓      |       |                      |
|           | -----  |       |                      |
|           | S/NP   |       |                      |
|           | ↓      |       |                      |

It should now be clear that the expression *any of the paintings* in (11) occurs in a downward monotonic context. Hence, the validity of the conditional in (9).

In order to explain the entailment in (10), we must assume that English has not only sentence negation and predicate negation, but verb negation as well. From a semantic point of view this is by no means implausible, since Partee & Rooth (1983) and Keenan & Faltz (1985) have convincingly shown that transitive verbs, viewed as homomorphic functions from the algebra of noun phrases to the algebra of verb phrases, can themselves be regarded as a Boolean algebra. In practice, what this means is that the result of applying negation, regarded as the operation of Boolean complementation, to a transitive verb is another transitive verb with the same homomorphic properties as the original one. Thus, an expression such as *didn't see*, analyzed as a negative transitive verb phrase, denotes a homomorphic, hence monotone increasing, function.

By means of the semantics just described, we can associate a sentence such as *John didn't see some of the modern paintings* with the derivation in (12). Instead of analyzing the negative auxiliary *didn't* as a verb phrase modifier, we regard it as a modifier of the transitive verb *see*. This prevents us from composing the elements in question. The only available option is to apply the monotone decreasing function associated with *didn't* to the transitive verb *see*. Since the set of homomorphic functions from noun phrases to verb phrases is closed under Boolean complementation, this will give us the monotone increasing (more precisely, homomorphic) transitive verb phrase *didn't see*. The next step in the derivation uses the operation of function composition to analyze the complex phrase *John didn't see* as the combination of an expression which is monotone increasing (*John*) and one which is monotone increasing (*didn't see*). The table in figure 1 tells us that the result is again a monotone increasing expression.

|      |       |                   |       |                              |
|------|-------|-------------------|-------|------------------------------|
| (12) | John  | didn't            | see   | some of the modern paintings |
|      | S/VP  | ((VP/NP)/(VP/NP)) | VP/NP | NP                           |
|      | ↑     | ↓                 | ↑     |                              |
|      |       | -----             |       |                              |
|      |       | VP/NP             |       |                              |
|      |       | ↑                 |       |                              |
|      | ----- |                   |       |                              |
|      | S/NP  |                   |       |                              |
|      | ↑     |                   |       |                              |

This makes it clear that the noun phrase *some of the modern paintings* in (12) is the argument of a monotone increasing function—to wit, the Boolean homomorphism associated with the composite function *John didn't see*. It follows that the conditional in (10) is valid.

The monotonicity calculus displayed in table 1 enables us to compute mechanically the semantic value of any chain of composed expressions. To see this, it is sufficient to return to the conditional in (5). We have argued that the downward monotonic nature of the composite expression *few critics visited* allows us to pass from *Few critics visited a museum* to *Few critics visited a modern museum*. According to this analysis, the object noun phrase *a museum* must be regarded as the argument of *few critics visited*. It is also possible, however, to analyze the sentence in such a way that the common noun *museum* serves as the argument of the complex expression *few critics visited a*. As (13) shows, the combination of the monotone increasing determiner *a* and the monotone decreasing phrase *few critics visited* is an expression which is downward monotonic.

|                  |         |      |        |
|------------------|---------|------|--------|
| (13) Few critics | visited | a    | museum |
| S/VP             | VP/NP   | NP/N | N      |
| ↓                | ↑       | ↑    |        |
| -----            |         |      |        |
| S/NP             |         |      |        |
| ↓                |         |      |        |
| -----            |         |      |        |
| S/N              |         |      |        |
| ↓                |         |      |        |

The above analysis is consistent with the validity of the conditional inference in (5). More importantly, it shows that under appropriate conditions the downward monotonic nature of the noun phrase *few critics* is inherited by the complex expression *few critics visited a*.

With the aid of the monotonicity calculus we can also explain why certain inferences are blocked. As an illustration, consider the conditional below.

- (14) a. Few critics visited the museum                    →  
       b. Few critics visited the modern museum

The invalidity of (14) is due to the nonmonotonic nature of the definite article *the*, which causes the entire expression *few critics visited the* to be nonmonotonic. This can be seen in (15), where the composition of nonmonotonic *the* and downward monotonic *few critics visited* yields a nonmonotonic expression.

|                  |         |      |        |
|------------------|---------|------|--------|
| (15) Few critics | visited | the  | museum |
| S/VP             | VP/NP   | NP/N | N      |
| ↓                | ↑       | -    |        |
| -----            |         |      |        |
| S/NP             |         |      |        |
| ↓                |         |      |        |
| -----            |         |      |        |
| S/N              |         |      |        |
| -                |         |      |        |

The above analysis helps to explain why we cannot legitimately pass from (14a) to (14b). It also enables us to account for some of the intervention phenomena we have discussed. In particular, the contrast between (2a) and (2b) must be attributed to the fact that the nonmonotonic determiner *the* in *\*I never met the critic who anyone tried to kill* prevents the composite expression *I never met the critic who* from inheriting the monotone decreasing nature of the negative adverb *never*. If we look at the derivation in (16), we see that the property of downward monotonicity is lost when we combine the monotone decreasing expression *I never met* and the nonmonotonic article *the*. This prevents the NPI *anyone* in (2b) from producing an acceptable result.

|      |          |       |       |      |         |              |
|------|----------|-------|-------|------|---------|--------------|
| (16) | I        | never | met   | the  | critic  | who          |
|      | S/VP     | VP/VP | VP/NP | NP/N | N/(N\N) | (N\N)/(S/NP) |
|      | ↑        | ↓     | ↑     | -    | ↑       | ↑            |
|      | -----    |       |       |      |         |              |
|      | S/VP     |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/NP     |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/N      |       |       |      |         |              |
|      | -        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/(N\N)  |       |       |      |         |              |
|      | -        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/(S/NP) |       |       |      |         |              |
|      | -        |       |       |      |         |              |

However, if we replace the definite article in (16) by the monotone increasing determiner *a*, the resulting sentence is perfectly grammatical (*I never met a critic who anyone tried to kill*). On the basis of the analysis in (17), it is easy to see why. The monotonicity properties associated with *met*, *a*, *critic*, and *who* enable us to preserve the information that the composite expression *I never met a critic who* contains a negative element (*never*). As a consequence, the relevant string displays the same monotonicity behavior as the licensing element. This is what makes the NPI *anyone* possible in (2a).

|      |          |       |       |      |         |              |
|------|----------|-------|-------|------|---------|--------------|
| (17) | I        | never | met   | a    | critic  | who          |
|      | S/VP     | VP/VP | VP/NP | NP/N | N/(N\N) | (N\N)/(S/NP) |
|      | ↑        | ↓     | ↑     | ↑    | ↑       | ↑            |
|      | -----    |       |       |      |         |              |
|      | S/VP     |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/NP     |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/N      |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/(N\N)  |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |
|      | -----    |       |       |      |         |              |
|      | S/(S/NP) |       |       |      |         |              |
|      | ↓        |       |       |      |         |              |

The foregoing discussion may easily lead us to believe that the arithmetic of monotonic functions is sufficient to account for various intervention phenomena. It can be shown, however, that the mono-

tonicity calculus must be extended in order to deal adequately with the distribution of NPIs.

### 3. The Extended Monotonicity Calculus

As Zwarts (1993) and van der Wouden (1994) show, NPIs can be either of the weak, or of the strong, type. In order to get a clear view of the content of this distinction, one does well to take the following German examples into consideration.

- (18) a. Höchstens eine Frau wird sich zu verantworten brauchen.  
At most one woman will herself to justify need  
b. Keiner wird solch eine Prüfung durchzustehen brauchen.  
No one will such an ordeal to go through need
- (19) a. \*Höchstens zehn Kinder haben auch nur irgendetwas  
At most ten children have anything  
bemerkt.  
noticed  
b. Keiner von diesen Leuten hat auch nur irgendetwas  
None of these people has anything  
bemerkt.  
noticed

The contrast between (18) and (19) makes it clear that the NPI *auch nur irgendetwas* 'anything (at all)' differs from *brauchen* 'need' in that it is limited to a proper subset of the environments in which *brauchen* can occur. This distinction between weak and strong forms of negative polarity appears to correspond with different classes of licensing elements. Weak polarity items like *brauchen* occur when there is a monotone decreasing expression in the linguistic context. Strong polarity items like *auch nur irgendetwas*, on the other hand, require the presence of a so-called anti-additive expression as licensing element. In order to understand the difference between monotone decreasing and anti-additive expressions, one should keep in mind that monotonic expressions are typically associated with semantic functions that display the patterns in (20).

- |         | MONOTONE INCREASING <sup>2</sup>       | MONOTONE DECREASING                       |
|---------|----------------------------------------|-------------------------------------------|
| (20) a. | $f(x \cap y) \subseteq f(x) \cap f(y)$ | c. $f(x \cup y) \subseteq f(x) \cap f(y)$ |
| b.      | $f(x) \cup f(y) \subseteq f(x \cup y)$ | d. $f(x) \cup f(y) \subseteq f(x \cap y)$ |

It should be noted that the formulas in (20c) and (20d) correspond to one half of the first, and one half of the second, law of De Morgan, respectively.<sup>3</sup> Inasmuch as these laws can be said to characterize the use of negation, monotone decreasing expressions may be regarded as being weakly negative.

We can now explain what the difference is between a monotonic expression and one which is additive or anti-additive. An element which is additive exhibits the pattern in (21a); one which is anti-additive displays the pattern in (21b).



## ADDITIVE

(21) a.  $f(x \cup y) = f(x) \cup f(y)$

## ANTI-ADDITIVE

b.  $f(x \cup y) = f(x) \cap f(y)$

In other words, anti-additive phrases embody a stronger form of negation than monotone decreasing ones in that they are governed by the entire first law of De Morgan. This logical difference is reflected in the behavior of the German NPIs in (18) and (19). Whereas *brauchen* is content with a monotone decreasing noun phrase like *höchstens n N* 'at most n N' as licensing element, *auch nur irgendetwas* requires the presence of an anti-additive expression like *keiner* 'no one' or *keiner von diesen Leuten* 'none of these people'.<sup>4</sup>

There is another class of expressions which represents a stronger form of negation than the monotone decreasing ones, but which is independent of the class of anti-additive expressions. These are the so-called anti-multiplicative elements, which are typically associated with the semantic pattern in (22b). Their multiplicative counterparts exhibit the pattern in (22a).

## MULTIPLICATIVE

(22) a.  $f(x \cap y) = f(x) \cap f(y)$

## ANTI-MULTIPLICATIVE

b.  $f(x \cap y) = f(x) \cup f(y)$

It is easy to see that anti-multiplicative phrases differ from their anti-additive counterparts in that they validate not the first, but the second law of De Morgan as a whole. Representatives of this group are expressions of the forms *not all N*, *not every N*, and *not always*.

The Extended Monotonicity Calculus (EMC) enables us to compute the semantic values of a larger class of expressions, among them compositions of anti-additive and additive elements. That this is necessary is shown by the Dutch example in (23), which features the strong NPI *ook maar enig krediet* 'any credit (at all)', the anti-additive expressions *geen criticus* 'no critic', and the additive expression *een schrijver* 'a writer'.

- (23) *Geen criticus geeft een schrijver ook maar enig krediet.*  
 No critic gives a writer any credit

The EMC tells us that such sentences are acceptable because the property of anti-additivity, associated with the universal negative *geen kind*, is preserved by the composite expression *geen kind geeft een schrijver*. To see this, it is enough to take the theorem in (24) into consideration.

## (24) Theorem

Let  $B$ ,  $B^*$  and  $B^{**}$  be three Boolean algebras and let  $f: B \rightarrow B^*$  and  $g: B^* \rightarrow B^{**}$ . Then:

- If  $f$  is additive and  $g$  is additive, then  $g \circ f$  is additive.
- If  $f$  is additive and  $g$  is anti-additive, then  $g \circ f$  is anti-additive.
- If  $f$  is anti-additive and  $g$  is multiplicative, then  $g \circ f$  is anti-additive.

- d. If  $f$  is anti-additive and  $g$  is anti-multiplicative, then  $g \circ f$  is additive.
- e. If  $f$  is multiplicative and  $g$  is multiplicative, then  $g \circ f$  is multiplicative.
- f. If  $f$  is multiplicative and  $g$  is anti-multiplicative, then  $g \circ f$  is anti-multiplicative.
- g. If  $f$  is anti-multiplicative and  $g$  is additive, then  $g \circ f$  is anti-multiplicative.
- h. If  $f$  is anti-multiplicative and  $g$  is anti-additive, then  $g \circ f$  is multiplicative.

These results have been collected in table 1. It should be noted that in a number of cases the composition  $g \circ f$  is neither additive or multiplicative nor anti-additive or anti-multiplicative. Since additive and multiplicative functions are monotone increasing, and anti-additive and anti-multiplicative functions monotone decreasing, the result will be a monotonic function.

**Table 1:** Compositions of additive, anti-additive, multiplicative, and anti-multiplicative functions

| $g \circ f$ | ADD   | A-ADD | MULTI   | A-MULTI |
|-------------|-------|-------|---------|---------|
| ADD         | ADD   | MON ↓ | MON ↑   | A-MULTI |
| A-ADD       | A-ADD | MON ↑ | MON ↓   | MULTI   |
| MULTI       | MON ↑ | A-ADD | MULTI   | MON ↓   |
| A-MULTI     | MON ↓ | ADD   | A-MULTI | MON ↑   |

With the aid of table 1, we can give a more accurate analysis of the sentence in (23). The following derivation provides the necessary details.

- (25) *Geen kind geeft een schrijver ook maar enig krediet*  
*No child gives a writer any credit*  
 S/VP (VP/NP)/NP NP NP  
 A-ADD ADD ADD  
 -----  
 A-ADD  
 -----  
 A-ADD

Since the ditransitive verb *geeft* is associated with a homomorphic, hence additive, function, the composition of the anti-additive noun phrase *geen kind* and *geeft* yields an anti-additive expression. If we combine this string with the additive noun phrase *een schrijver*, the result will be an expression which is still anti-additive. In other words, the property of additivity associated with *geeft* and *een schrijver* guarantees that the anti-additivity of the noun phrase *geen kind* is inherited by the composite expression *geen kind geeft een schrijver*. This is what makes the strong NPI *ook maar enig krediet* possible.

Note that (23) becomes ungrammatical if we replace the indefinite determiner *een* by an expression like *verscheidene* 'several' or *minstens zes* 'at least six'.

- (26) a. \*Geen kind geeft verscheidene schrijvers ook maar enig /  
 No child gives several writers any  
 krediet.  
 credit
- b. \*Geen kind geeft minstens zes schrijvers ook maar enig /  
 No child gives at least six writers any  
 krediet.  
 credit

The reason is that noun phrases of the forms *verscheidene N* and *minstens n N*, though upward monotonic, cannot be analyzed as additive expressions. Consequently, the composite expressions *geen kind geeft verscheidene schrijvers* and *geen kind geeft minstens zes schrijvers* are only monotone decreasing, which is not sufficient to justify the occurrence of strong NPIs.

Another class of examples which demonstrates the usefulness of EMC involves the composition of an anti-additive and a multiplicative element. Typical examples are those in which a universal quantifier intervenes between a universal negative, on the one hand, and the NPI, on the other. As is illustrated by the ungrammatical Dutch sentence in (27), strong NPIs are excluded from such environments.

- (27) \*Geen kind geeft iedere schrijver ook maar enig krediet.  
 No child gives every writer any credit

This follows immediately from EMC, since the composition of an expression which is anti-additive (*geen kind geeft*) and one which is multiplicative (*iedere schrijver*) is only downward monotonic, as the analysis in (28) shows.

- (28) Geen kind geeft                    iedere schrijver ook maar enig krediet  
*No child gives                    every writer any credit*  
 S/VP                    (VP/NP)/NP                    NP  
 A-ADD                    ADD                    MULTI  
 -----  
 A-ADD  
 -----  
 MON ↓

Sentences like (27) are also discussed in Linebarger (1981). She observes that the English counterpart involving the NPI *any N* is likewise ungrammatical. Particularly revealing in this respect is the contrast in (29), which shows that intervening proper names and NPIs introduced by *any* behave differently from universal noun phrases in that they behave like indefinites.<sup>5</sup>

- (29) a. \*No student gave every teacher any apples.  
 b. No student gave Mrs. Smith any apples.  
 c. No student gave any teacher any apples.

From a semantic point of view, the acceptability of (29b) and (29c) is not surprising, since proper names and existential expressions like *any teacher* are both associated with a quantifier which is additive. The ungrammaticality of (29a), on the other hand, is remarkable. It shows that expressions of the form *any N* not only behave like weak NPIs, but in certain cases also display the typical features of strong NPIs.

We conclude this paper by discussing some of the more controversial predictions of EMC. The Dutch sentence in (30) should be out because the composite expression *een kind geeft geen schrijver* 'a child gives no writer' is only monotone decreasing in nature. Yet, most speakers appear to accept such sentences.

- (30) Een kind geeft geen schrijver ook maar enig krediet.  
 An child gives no writer any credit

EMC tells us that such an outcome is to be expected because the composition of an additive and an anti-additive expression gives us a monotone decreasing one. More precisely, the string *een kind geeft geen schrijver* can be analyzed as the composition of two expressions which are additive (*een kind* and *geeft*) and one which is anti-additive (*geen schrijver*). As (31) shows, the resulting string is associated with a semantic function which is only downward monotonic in nature. We have seen that this is not sufficient to justify the occurrence of strong NPIs.

- |      |                      |                                      |  |
|------|----------------------|--------------------------------------|--|
| (31) | Een kind geeft       | geen schrijver ook maar enig krediet |  |
|      | <i>A child gives</i> | <i>no writer any credit</i>          |  |
|      | S/VP (VP/NP)/NP      | NP NP                                |  |
|      | ADD ADD              | A-ADD                                |  |
|      | -----                |                                      |  |
|      | ADD                  |                                      |  |
|      | -----                |                                      |  |
|      | MON ↓                |                                      |  |

EMC also predicts that the Dutch example in (32), which features two universal negatives, should be ungrammatical. Yet, many speakers accept such cases.

- (32) Geen kind geeft geen schrijver ook maar enig krediet.  
 No child gives no writer any credit

It is easy to see why EMC blocks such cases. The phrase *geen kind geeft geen schrijver* 'no child gives no writer' can be analyzed as the composition of an anti-additive expression (*geen kind*), an additive one (*geven*), and again an anti-additive one (*geen schrijver*). As (33) shows, the semantic function associated with the resulting string is monotone increasing.

|      |                       |            |               |            |      |      |               |
|------|-----------------------|------------|---------------|------------|------|------|---------------|
| (33) | Geen kind geeft       | geen       | schrijver     | ook        | maar | enig | krediet       |
|      | <i>No child gives</i> | <i>no</i>  | <i>writer</i> | <i>any</i> |      |      | <i>credit</i> |
|      | S/VP                  | (VP/NP)/NP | NP            |            |      |      | NP            |
|      | A-ADD                 | ADD        | A-ADD         |            |      |      |               |
|      | -----                 |            |               |            |      |      |               |
|      | A-ADD                 |            |               |            |      |      |               |
|      | -----                 |            |               |            |      |      |               |
|      | MON ↓                 |            |               |            |      |      |               |

It appears that we can make the right predictions by distinguishing between maximal and non-maximal compositions. What the examples in (30) and (32) have in common is that the anti-additive nature of the indirect object alone is sufficient to trigger the strong NPI *ook maar enig krediet*. This suggests that NPI licensing is not determined by semantic properties of the sentence. Instead, we seem to be forced to accept that local properties of expressions are the relevant parameter.

### NOTES

\* A grant provided by the Centre for Language and Cognition Groningen enabled the first author to visit the FLSM-5 conference and to present this paper, which is hereby gratefully acknowledged.

<sup>1</sup> Sentences such as those in (2) have been discussed by Ladusaw (1980: 163, 164). Linebarger (1981) introduces a significantly larger set of intervention phenomena, some of which will be treated in what follows.

<sup>2</sup> Monotone increasing functions are sometimes said to be isotone. Their monotone decreasing counterparts are accordingly referred to as antitone functions. See Birkhoff (1967) and Stoll (1974), among others.

<sup>3</sup> The laws in question are, of course, the familiar set-theoretical identities  $-(X \cup Y) = -X \cap -Y$  and  $-(X \cap Y) = -X \cup -Y$ . Quine (1952) speaks in this connection of the first, and the second, law of De Morgan, respectively.

<sup>4</sup> Laka Mugarza (1990) introduces the notion of an *n*-word to describe expressions like *nadie* 'no one', *nada* 'nothing' and *nunca* 'never' in Spanish. Though she regards these elements as polarity items, Zanuttini (1991) argues that they should be treated as universal negatives. Since the quantifier associated with a universal negative is anti-additive, the class of *n*-words may be regarded as being identical to the class of anti-additive expressions.

<sup>5</sup> These examples are due to Eric Jackson, who discussed them in a lecture at the University of Groningen (*Negative Polarity and 'Strong' Statements*, May 1994). In a recent talk under the title *Does negative polarity/concord marking serve as an explicit indicator for downward-monotone inference in natural logic?* (PIONIER colloquium on Negation and Polarity, University of Groningen, June 21-22 1994),

David Dowty has argued that a sentence such as *Sue didn't read every book to any student* differs from *Sue didn't read every book to a student* in that it lacks the reading in which the universally quantified expression *every book* occurs within the scope of the negation operator. Since the universal noun phrase *everybody* in *\*Sue didn't say everybody caught any armadillo's* cannot be given wide scope, the sentence in question must be classified as ungrammatical.

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## INFINITIVAL COMPLEMENTS IN A MINIMALIST THEORY OF GRAMMAR

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Infinitival verbal complements, treated as VPs in traditional grammars, have been assumed by most generative syntacticians to be clauses (IPs or CPs) with null subjects. In this paper I argue that most of the major motivations for considering these complements to be clauses—the Theta Criterion, the Extended Projection Principle, and the requirement that PRO be ungoverned—have been weakened or eliminated under Chomsky's Minimalist program for syntax, and suggest that at least some, if not all, infinitival complements should be considered VPs under Minimalist assumptions.

### 1. Introduction

One of the most significant ways in which Chomskyan syntax differs from other models is in its treatment of infinitival verbal complements. Syntacticians working in the Extended Standard Theory of syntax and its descendants (Chomsky 1981, 1986, 1993, 1994) have generally taken infinitival verbal complements to be full clauses, with null NP subjects (e.g. *John tried [<sub>S</sub> PRO to leave]*); in most other structuralist models of grammar, such complements have generally been considered VPs (e.g. *John tried [<sub>VP</sub> to leave]*).<sup>1</sup>

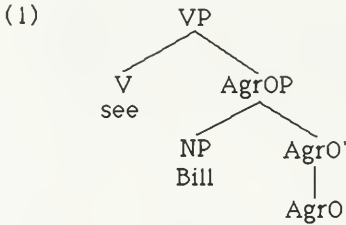
In this paper I suggest that under the minimalist theory of syntax outlined by Chomsky (1993), many of the most important motivations for infinitival complements being clauses have been eliminated or greatly weakened, and that at least some (and possibly all) such complements are best regarded as VPs in the revised framework. What follows will necessarily be somewhat programmatic, but I hope to show that the idea of infinitival complements as VPs is at least a plausible one given recent theoretical developments, and that possible objections to such a reanalysis are tractable.

### 2. Background and theoretical assumptions

I assume the basics of the Minimalist program as put forth in Chomsky (1993, 1994). One of the major ideas of this program is that of economy, both economy of derivation (the fewer steps the better, and the shorter the move the better), and economy of theoretical principles (the theory should involve as few such principles as possible). In keeping with this approach, Chomsky, in the above works, questions the need for such venerable principles as the Projection Principle and the Theta Criterion; he tentatively suggests that they

can be eliminated entirely, while recognizing that such a move requires rethinking of many established analyses. It is in this spirit that the present paper should be taken; I propose that treating infinitival complements as VPs is both desirable and justifiable under Minimalist assumptions, though space will not permit considering all the implications such a move will have.

I do break from standard assumptions in one other respect, namely the placement of AgrO. Like Chomsky, I adopt an "expanded INFL" model of syntax, with multiple functional heads; however, I suggest that AgrO is inside rather than outside VP, with the direct object of the verb base-generated in [Spec, AgrOP], as argued in Kathman (1992):



As in Chomsky's model, the object's Case features are checked in [Spec, AgrO], but unlike in Chomsky's model, the object does not have to move to get there. (This leads to shorter derivations, on the face of it a desirable consequence in the Minimalist program.)

A more significant difference involves theta-role assignment; if we eliminate head government, as Chomsky (1993) proposes (see Section 3 below), the verb cannot directly assign the object's theta role in the above configuration. This is not an insurmountable problem, though, if we treat theta roles as a type of phi-feature, similar to Case, which are checked (or assigned) in a Spec-head configuration rather than being assigned directly by the verb.<sup>2</sup> This is a rather natural step, given the direction the theory has been going; VP-internal subjects already get their theta role in a Spec-head configuration with the verb, and Case in Chomsky's model is always checked in Spec of AgrP. Whatever mechanism is used to insure the proper distribution of Case with various verbs—i.e., to insure that a sentence with a transitive verb has an AgrOP to check Accusative Case, while a sentence with an intransitive verb does not—can be used in a similar way to insure the proper distribution of theta roles.<sup>3</sup> Both Case and theta features can be distributed by the verb to AgrO via the head-head relation, but they are independent of each other; a verb's AgrO can have theta but not Case features (i.e. unaccusative verbs), or Case but not theta features (i.e. Raising to Object verbs, to be discussed below). I will assume that an AgrO must have either Case or theta features (or both) in order to be present.

It should be noted that this proposal about the position of AgrO is independent of the categorial status of infinitival complements; I am presenting it here so that the structures with multiple complements to be presented later will not require lengthy explanations. The major conclusion of this paper is perfectly compatible with a model such as Chomsky's where AgrOP is located above VP, but such a model will have to deal with multiple complements some other way, such as via Larsonian complex structures and movement.

### 3. The categorial status of infinitival complements

Throughout much of the history of generative syntax, infinitival complements have tended to be a significant battleground, where generative grammarians have differentiated themselves both from each other and from traditional grammarians. In classical transformational grammar (e.g. Rosenbaum 1970), infinitival complements were assumed to be surface VPs, since they do not have an overt subject, though they were assumed to be clauses in deep structure. In the early 1970s, with the introduction of empty categories into syntax, a split occurred between those who still believed that infinitival complements are syntactic (surface) VPs (e.g. Bresnan 1972) and those who believed, for reasons outlined below, that such complements are (surface) clauses with a null subject. The former branch evolved into LFG and related theories; the latter branch became Government-and-Binding and ultimately Minimalism.

Since the advent of empty categories, few linguists working in the GB/P&P tradition have seriously questioned the conclusion that infinitival complements are clauses.<sup>4</sup> The major motivations for this conclusion are the Theta Criterion, the (Extended) Projection Principle, and the requirement that PRO be ungoverned.<sup>5</sup> However, I argue below that, given recent developments in syntactic theory, these motivations are no longer as compelling as they once were, and suggest that the idea that such complements are VPs is at least worth considering.

#### 3.1 The Theta Criterion

The Theta Criterion states (in part) that every verb's theta roles must be assigned to some syntactic element; thus, in a sentence with an infinitival complement, there must be a position for the embedded verb to discharge its external theta role to. In a control sentence, this position is filled by PRO (cf. 2a), and in a raising sentence (2b) it is filled by the trace of an overt NP which has raised into the matrix clause:

- (2) a. John<sub>i</sub> tried [PRO<sub>i</sub> to leave]  
 b. John<sub>i</sub> seemed [<sub>t<sub>i</sub></sub> to leave]

In traditional GB the position in question had to be the subject of a clause, but Chomsky 1993 adopts the suggestion of numerous authors (e.g. Koopman & Sportiche 1991) that subjects receive their theta role inside VP, raising to [Spec, IP] in order to receive Case

(technically, to have their Case features checked). But since PRO has no Case features, and Raising subjects have their Case features checked in the matrix clause, the VP-internal subject hypothesis obviates any theta- or Case-theoretic motivation for having structure higher than VP in infinitival complements.

### 3.2 The (Extended) Projection Principle

In the framework of Chomsky (1981, 1986), the Extended Projection Principle (EPP) (Chomsky 1982:10) effectively requires every VP to be associated with a subject position, i.e. to be part of a clause. Chomsky 1993 explicitly abandons the Projection Principle (at least as it has been traditionally formulated), and though he does not directly address the EPP, various linguists (e.g. Jones 1984) have argued that its job can be done by proper formulations of Case- and theta-theory. Given the reductionist spirit of Minimalism and particularly the stripped-down theory of phrase structure presented in Chomsky 1994, the EPP seems a prime candidate for elimination.

Alternately, one could argue that the Extended Projection Principle does not, as is commonly assumed, inevitably require extra-VP structure. Manzini 1992 argues that the EPP can be reduced to the general requirement that a head associated with syntactic assignment features must assign them to some position. Given the possibility of the verb's external theta role being assigned within VP, this formulation of the EPP eliminates the need for a VP-external subject position in the absence of any independent motivation for such a position (such as the need to check Case features).

### 3.3 The properties of PRO

One of the defining characteristics of PRO, at least in traditional GB, is that it is ungoverned. In the *Barriers* framework, the complement in *John tried to leave* is a CP, with PRO in [Spec, IP] (as in (3a) below); if this complement were a simple VP with PRO in [Spec, VP] (as in (3b)), then under standard assumptions PRO would be head-governed by the matrix verb and the structure would be ruled out.

- (3) a. John<sub>i</sub> tried [<sub>CP</sub> C [<sub>IP</sub> PRO<sub>i</sub> to leave]]  
 b. John<sub>i</sub> tried [<sub>VP</sub> PRO<sub>i</sub> to leave]

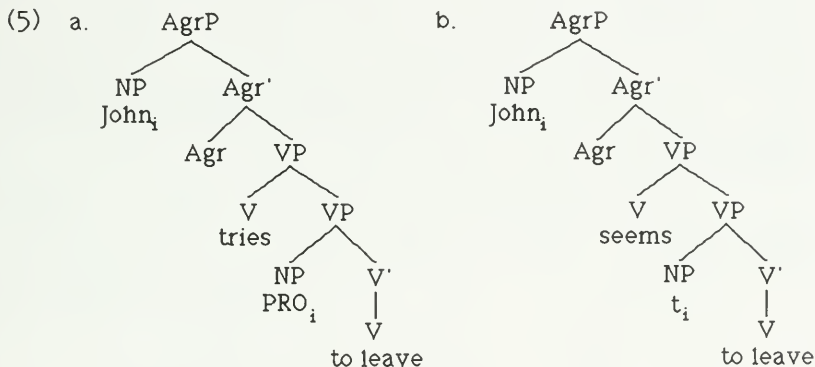
But Chomsky (1993:10) suggests that head government can be eliminated and that all syntactic relations are strictly local (i.e. restricted to Spec-head, head-complement, and head-head relations). If this suggestion is adopted, then PRO is not governed by the matrix verb in (3b), and there is no reason to rule this structure out.

### 4. Infinitival complements as VPs

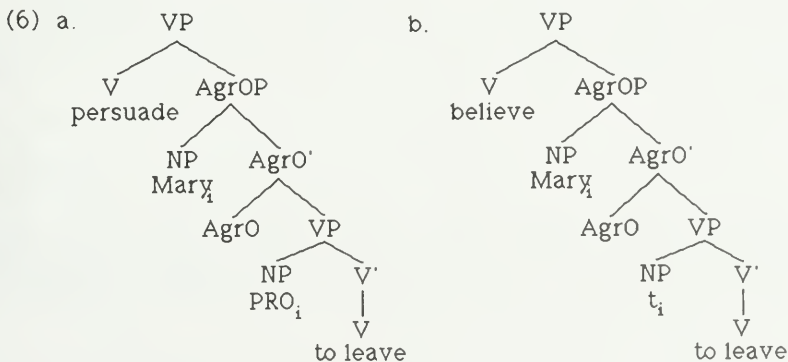
Given the above developments, and given the explicit desire of Chomsky's Minimalist program to simplify grammar wherever possible, I suggest that the null hypothesis is that ALL infinitival complements are simply VPs, as in (4a-b) below. Finite clausal complements are still CPs, as in (4c):

- (4) a. John<sub>i</sub> tried [<sub>VP</sub> PRO<sub>i</sub> to leave]  
 b. John<sub>i</sub> seemed [<sub>VP</sub> t<sub>i</sub> to leave]  
 c. John knows [<sub>CP</sub> that [<sub>IP</sub> Mary is intelligent]]

Subject-control sentences would then have the structure in (5a), with PRO in the Spec of the VP complement; subject-raising sentences would have the structure in (5b), with the embedded subject raising to Spec of AgrSP in order to get Case. (For simplicity's sake I have not included T or any other functional heads besides Agr which may be present in the matrix clauses, and I have not shown the trace of the matrix subject in [Spec, VP].)

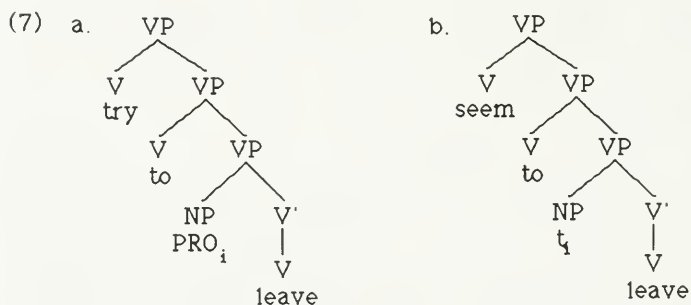


Next, consider sentences with both an NP direct object and an infinitival complement, such as *John persuaded Mary to leave* (object control) and *John believes Mary to have left* (ECM verbs). The structure I propose for these sentences is shown below in (6). Following Chomsky (1993), the second of these involves a form of Raising to Object, which is now allowed again due to the elimination of the Projection Principle and the fact that object Case is now checked in AgrO rather than being assigned directly by the verb:



The fact that AgrOP here is inside VP rather than outside it leaves the complement position of AgrOP available for a second complement in addition to the NP object, such as the infinitival complement in the above examples, or a Small Clause predicate in such sentences as *They elected Bill president* (cf. Kathman 1992). This allows us to preserve binary branching trees without any of the extra structure and elaborate mechanisms which have been proposed for such structures (e.g. by Larson 1991); the amount of movement in Larson's proposal seems inimical to the Minimalist view of movement as a 'last resort', possible only to satisfy morphological requirements of a word.

One question which the above sketch leaves unanswered is the position and status of infinitival *to*, which in traditional GB was generally treated as the lexical instantiation of I or T. I tentatively suggest that *to* is instead an athematic verb which takes a VP complement, as argued by Pullum 1982. Subject-control and raising-to-subject sentences would then actually have something like the structures in (7):



This verb could be seen as a lexical instantiation of the type of 'light verb' proposed by Larson and suggested by Chomsky (1994:33-4) to account for adverb placement in his theory. Such a verb does not have a thematic structure of its own, but is part of the extended projection of the lower verb ('leave' in the above examples).<sup>6</sup>

## 5. Consequences and conclusions

This analysis allows a symmetrical treatment of Control and Raising verbs, with the difference among the four types (subject control, object control, subject raising, object raising) reducing to the Case and Theta-marking properties of these verbs. All four type of verb select a VP complement, and their other properties vary according to whether they require object case and internal and external theta roles, as shown in the following table:



| (8)      | Object | Internal    | External    |
|----------|--------|-------------|-------------|
|          | Case?  | Theta Role? | Theta Role? |
| try      | no     | no          | yes         |
| persuade | yes    | yes         | yes         |
| seem     | no     | no          | no          |
| believe  | yes    | no          | yes         |

These are the four classic cases of complement-taking verbs, but there are other possible permutations of these properties, some of which are realized in English. For example, the passive of an object-control verb such as 'persuade' (i.e. *John was persuaded to leave*) has no object case, does assign an internal theta role, and does not assign an external theta role (no—yes—no in the above table). The archaic but still-used verb 'behoove' (i.e. *It behooves John to leave*) has object case and assigns an internal theta role, but does not assign an external theta role (yes—yes—no).

Thus, the elimination of the Projection Principle and Head Government leads to a tidier, more principled analysis of infinitival complements in general, suggesting that the minimalist program is on the right track. There are certainly many questions which remain to be answered, but I hope to have shown that the idea of treating infinitival complements as VPs is a feasible one, whose consequences should be studied in more detail.

### NOTES

<sup>1</sup> Ironically, 'traditional' grammars often treat subjectless infinitivals as clauses (for example, Curme (1925:166-7) calls them 'abridged clauses' and considers them a subset of subordinate clauses), and are thus closer to the Principles-and-Parameters approach than to other models.

<sup>2</sup> Note that such indirect theta marking is scarcely new in the literature. Chomsky & Lasnik (1993) explicitly abandon the long-standing assumption that theta role assignment requires sisterhood (some kind of indirect theta marking is needed anyway for such things as double objects), and Larson (1988) proposes structures very much like that in (1) for sentences involving multiple complements; the present proposal simply extends this configuration to all direct objects, whether or not there is a further complement of the verb.

<sup>3</sup> There must be some such mechanism, though Chomsky 1993 does not really address this question; he merely says (p.9) that in intransitive sentences, AgrOP is either absent or inert. But it must be the verb which determines whether AgrOP is present, presumably via the head-head relationship between V and AgrO.

<sup>4</sup> In the decade leading up to the publication of Chomsky 1981, several transformational grammarians (e.g. Brame 1976, Bresnan 1972, Lasnik & Fiengo 1974, Morin & Wehrli 1978) did propose that

infinitival complements might be VPs, but since 1981 such proposals have come almost entirely from practitioners of LFG, GPSG, and related theories.

<sup>5</sup> Koster & May 1982 explicitly argue within the context of early GB that infinitival complements are clauses (S-bars), rather than VPs as the linguists cited above have argued. The arguments which Koster & May adduce are primarily of two types: first, treating infinitival complements as VPs would complicate the phrase structure rules needed for English, and second, there is evidence for a null subject argument in such complements. But neither of these arguments applies to the present proposal; phrase structure rules were long ago eliminated from the theory, and null arguments such as PRO and traces can appear in Spec of VP, as outlined below in Section 4.

<sup>6</sup> In (7) I have shown PRO and trace in the Spec of the lowest VP, but it is an open question whether they belong there or in the Spec of the VP headed by *to*, as they should be if we follow the light verb analogy (cf. Chomsky 1994:33). If the latter, the verb's internal theta role features must be transferred to *to*, which seems a plausible option given the possibility of transferring of such features to AgrO.

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## PARASITIC "GAPS" IN GERMAN REVISITED\*

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A closer look at putative parasitic gap constructions in German reveals that they are not only considerably more limited in their occurrence but also do not exhibit any of the long-distance properties of their English counterparts. Instead, it can be shown that a lexical analysis is in closer accord with the observed facts. Such a lexically-based account is proposed in which modifiers and modifiees are linked by partial unification of their valence properties.

### 1. Introduction

Typical cases of English 'parasitic gap constructions' discussed in the syntactic literature are given in (1), from Postal 1994:63.

- (1) a. [Which article]<sub>1</sub> did Ted copy *t*<sub>1</sub> without reading *PG*<sub>1</sub>.  
b. The woman who your attack on *PG*<sub>2</sub> encouraged *t*<sub>2</sub>.  
c. It was Irving who they proved associates of *PG*<sub>3</sub> to have bribed *t*<sub>3</sub>.

It is standardly assumed that there is an asymmetric relationship between the different kinds of missing constituents in such constructions. Thus, the gaps in the adverbial phrase, subject, and raised object respectively, notated as 'PG', are dependent on the presence of another extraction site. While there is not exactly a shortage of theoretical attempts to explain this phenomenon of English (cf., for instance, the references in Postal 1994), there are relatively few studies that have investigated putatively similar constructions in other languages, Dutch possibly exempted. With the widely accepted view of syntax as an enterprise engaged in looking for cross-linguistically valid principles, there has often been the implicit or explicit assumption that the explanatory mechanisms uncovered for English should also be of relevance for other languages exhibiting the phenomenon.<sup>1</sup> The aim of this paper, however, is to show that this is in fact a mistaken assumption, at least as far as equating superficially similar constructions in German with English parasitic gaps is concerned.

### 2. The case for parasitic gaps in German

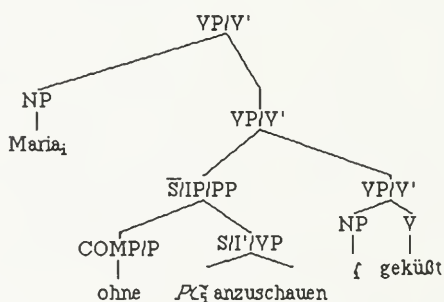
The first place in which the possibility of parasitic gap constructions in standard varieties of German<sup>2</sup> was extensively discussed is Felix 1985, who cites examples such as the ones in (2): (p. 190)

- (2) a. Hans hat Maria<sub>i</sub> [ohne *PG*<sub>i</sub> anzusehen] geküßt.  
Hans has Maria without to.look.at kissed  
'Hans kissed Maria without looking at her.'

- b. Man hat Hans<sub>i</sub> [ohne PG<sub>i</sub> zu verständigen] entlassen.  
 one has Hans without to notify layed.off  
 'They fired Hans without notifying him.'

Since then, their status in the syntactic description of German has had a somewhat peculiar quality. It appears that some researchers take their marginal status and variation of speakers' judgments as indicating that these phenomena, to the extent that the intuitions are shared, are only of limited interest in the syntactic description of German. For instance, no mention of German parasitic gaps is made in standard references for transformational German syntax (cf. Grewendorf 1988:189, v. Stechow and Sternefeld 1988). On the other hand, it has not been uncommon to cite such constructions as evidence in determining the nature of certain syntactic phenomena. In doing so, those researchers virtually always presuppose that the German construction is to be viewed as instantiating essentially the very same properties that have been reported to be exhibited by their English—or Dutch—counterparts. In particular, this means that the parasitic gap is to be licensed by means of an operator in an A-bar position which c-commands both gaps while no c-command relationship must hold between the real and parasitic gap. This approach, adopted for German by Felix 1985, has often been taken to yield a diagnostic for the nature of scrambling, which on this view is the process responsible for placing the A-bar operator into its structurally higher position, for instance along the lines sketched in (3), which subsumes a number of different positions on the categories involved that have been proposed at one point or another in the literature.

(3)



Take, for instance, Webelhuth 1989, 1992:209, who shares this general view. However, he argues that analyzing the landing site as an A-bar position will fail to explain why in (4), an element that has moved into that position, such as the NP *die Gäste*, is eligible for binding a reciprocal like *einander*:



- (4) ?Peter hat die Gäste<sub>i</sub> [ohne *PG<sub>i</sub>* anzuschauen]  
 Peter has the guests without to.look.at  
**einander<sub>i</sub>** *t<sub>i</sub>* vorgestellt.  
 each.other introduced  
 'Peter introduced the guests to each other without looking at  
 (them).'

Webelhuth's conclusion is that (4) shows that the landing site for scrambling is neither an argument nor an operator position, and hence that scrambling must lie outside of the usual GB dichotomy of A- vs. A-bar movement. Instead, scrambling is to be viewed as a third kind of movement so that 'elements in such positions' are not 'restricted in their binding potential' (Webelhuth 1992:209). If so, it can at the same time bind the anaphor *einander* as well as the parasitic gap *PG*.

Whether one adopts this proposal or tries to argue for a more conventional analysis of scrambling as A-bar movement, as Mahajan (1990) does, any movement-based theory of parasitic gap licensing poses a severe challenge to approaches to scrambling without dislocation, as for instance in much of the current unification-based literature. In particular, it is anything but clear how a landing site can be provided in theories (cf. Uszkoreit 1987, Pollard (in press)) that assume a flat structure analysis for the German *Mittelfeld*. The same holds for liberation-style proposals such as Reape 1993 (in press), in which constituent order is accounted for in terms of intermediate levels of structure which then in effect become invisible in the course of the successive linearization of the involved constituents. Crucially, in none of such theories is there is room for a general approach to *Mittelfeld* order variations in terms of true dislocations parallel to GB's move- $\alpha$ , which on the transformational view provide the necessary c-command relationships for licensing parasitic gaps.

Of central importance then in light of these opposing views of order variations is a critical assessment of whether what many, perhaps without much reflection, have taken to be cousins of the English/Dutch constructions are really instantiations of the same type of syntactic phenomenon. For terminological convenience, I will continue to refer to examples as in (2) as parasitic gap constructions, in short **PG**.

### 3. The case against parasitic gaps in German

It has often been observed that the range of **PG** in German is significantly smaller than that in English. While this is doubtless correct, it is not immediately clear whether this follows from the fact that German simply lacks particular structural properties that are involved in many of the English cases or whether deeper differences are at play. Thus, for instance, it is clear that one will not be able to find a grammatical German counterpart of the subject **PG** in (1b) because the language does not permit English-style preposition stranding, as shown in (5):

- (5) \*die Frau, welche<sub>i</sub> deine Attacke [auf PG<sub>i</sub>] t<sub>i</sub> ermutigte  
 The woman who your attack on encouraged

A rather similar situation presents itself in Dutch, where extractions from prepositional phrases is equally ruled out. Yet, it has been claimed by Huybregts and v. Riemsdijk (1984:186) that if the subject gap is contained in a postpositional phrase, which in general does allow extraction, 'licit' cases parallel to (1a) can indeed be found, as shown in (6):

- (6) ?Dat zijn incomplete systemen waar<sub>i</sub>  
 those are incomplete systems that  
 [ieder onderzoek PG<sub>i</sub> naar]  
 every investigation into  
 ernstig t<sub>i</sub> door belemmerd wordt.  
 seriously by impeded is

However, corresponding examples in German, given in (7), appear to provoke predominantly negative responses in terms of their grammaticality:

- (7) a. ?\*/\*weil mich da<sub>i</sub> [ein Bild PG<sub>i</sub> von] ...  
 because me there a picture of  
 { t<sub>i</sub> vor gewarnt hat.  
 against warned has  
 t<sub>i</sub> drüber aufgeklärt hat.  
 over enlightened has
- b. \*Dies ist die Stadt wo<sub>i</sub> mich [ein Bild PG<sub>i</sub> von] ...  
 this is the city where me a picture of  
 { t<sub>i</sub> vor gewarnt hat.  
 against warned has  
 t<sub>i</sub> drüber aufgeklärt hat.  
 over enlightened has

Other candidate **PG** constructions involve simultaneous gaps in complement clauses and matrix postpositional phrases. For instance, Huybregts and v. Riemsdijk (1985:179) state that the Dutch example in (8) is 'near perfect'.

- (8) ?Dit is een boek [waar ik e<sub>i</sub> van denk  
 this is a book which I of think  
 [dat Jan e<sub>i</sub> naar verlangt]]  
 that Jan for longs  
 'This is a book about which I think that Jan longs for it.'

While there is disagreement in the literature over which of the gaps is parasitic and which is real, it is clear that corresponding examples in German are plain ungrammatical, as demonstrated in (9):

- (9) \*Dies ist ein Umstand [wo ich e<sub>i</sub> von denke,  
 this is a circumstance which I of think  
 [daß Ed e<sub>i</sub> mit gerechnet hat]]  
 that Ed with counted has

However, one area in which Dutch and German do show a similar pattern—contrary to English—is the unavailability of parasitic gaps in relative clauses, exemplified by the contrast in (10): ((10b) from Bennis (1987:46))

- (10) a. This is the book that<sub>i</sub> [everyone [who reads *PG<sub>i</sub>*]  
becomes enthusiastic about *t<sub>i</sub>*  
b. \*Dit is het boek dat<sub>i</sub> [iedereen [die *PG<sub>i</sub>* leest]] *t<sub>i</sub>* bewondert.  
c. \*Dies ist das Buch welches<sub>i</sub> [jeder [der *PG<sub>i</sub>* liest]]  
*t<sub>i</sub>* bewondert.

The data in (11) show that extractions from postpositional phrases are similar in this respect:

- (11) a. \*Dit is een vraag waar [iedereen  
this is a question which everyone  
[die *PG<sub>i</sub>* over denkt]] een antwoord *t<sub>i</sub>* op weet.  
who about thinks an answer to knows  
b. \*Dies ist ein Umstand wo/welcher [jeder  
this is a circumstance where/which everyone  
[der *PG<sub>i</sub>* von gehört hat]] *t<sub>i</sub>* mit rechnen muß.  
who of heard has with count must

The explanation for this difference given in Bennis 1987 is that, in Dutch, the relative clause, following its head noun, is not *canonically* governed, where canonical government amounts to government to the left in an OV language such as Dutch. Because German is similar to Dutch in this respect, this explanation would then seem to carry over to the cases in (10c) and (11b). However, it is anything but clear how gap licensing in terms of canonical government can be made to work for German in general. As has been observed, for instance, by Webelhuth (1992:107), German does allow finite complement clauses to precede as well as follow the matrix head, as in (12):<sup>3</sup>

- (12) a. weil ich [daß Hans krank ist] nicht **glauben** kann.  
because I that Hans sick is not believe can  
b. weil ich nicht **glauben** kann [daß Hans krank ist].  
because I not believe can that Hans sick is

Bennis' account would thus predict that the verb *glauben* canonically governs its complement clause only in (12a). This would lead us to expect that in general, extraction is possible in this case, and not in (12b), hence mirroring the extraction asymmetries from PPs in Dutch and German. Yet, what we find is precisely the opposite; if a dialect allows extraction at all, it will only be in the case where the complement follows the verb, as in (13a):

- (13) a. Wen hast du geglaubt [daß Maria liebt]?  
who have you believed that Maria loves  
'Who did you believe that Maria loves?'  
b. \*Wen hast du [daß Maria liebt] geglaubt?  
who have you that Maria loves believed

Following Webelhuth, we may then take these facts as indicating that

CP complements in German are base-generated to the right of their verbal heads, which is also the direction of theta-government in this case. If this notion of government, rather than canonical government, is responsible for licensing A-bar positions, as Bennis & Hoekstra (1984:7) claim, it becomes difficult to see what exactly prevents long-distance dependencies within the adjunct phrase. As demonstrated in (14), such examples are ungrammatical in German: (cf. also Bennis 1986:54)<sup>4</sup>

- (14) \*Welche Bücher<sub>i</sub> hast Du  
 which books have you  
 [ohne zu wissen [CP t<sub>i</sub> [daß du anschauen PG<sub>i</sub> durftest]]]  
 without to know that you look.at could  
 t<sub>i</sub> durchgeblättert?  
 browsed.through

What I take this discussion to show is that the occurrence of candidate **PG** cases in German is significantly more limited than in Dutch, which in turn is more restrictive than English. While the Dutch facts may still be subsumable under a general syntactic theory of gap licensing, the case for this approach in German is much more tenuous. This strongly suggests that explanations for putative parasitic gap constructions such as in (2), repeated here, ought to be sought without appealing to generalizations about syntactic dislocation phenomena.

- (2) a. Hans hat Maria<sub>i</sub> [ohne PG<sub>i</sub> anzusehen] geküßt.  
 Hans has Maria without to.look.at kissed  
 'Hans kissed Maria without looking at her.'  
 b. Man hat Hans<sub>i</sub> [ohne PG<sub>i</sub> zu verständigen] entlassen.  
 one has Hans without to notify layed.off  
 'They fired Hans without notifying him.'

Thus, we now turn to evidence in favor of a lexically-based approach to **PG** constructions in German.

#### 4. The case for a lexically-based approach to parasitic "gap" constructions

The range of phenomena that remain as **PG** candidates consists of adverbial phrases with the verb in the form of a *zu*-infinitive. There are no more than three lexical items that can head such phrases: *ohne* ('without'), *(an)statt* ('instead of'), and *um* ('in order to'). When these elements take a full VP complement without gap, the phrases can occur either inside the Mittelfeld or extraposed, shown in (15) and (16):

- (15) a. Hans hat Maria [**ohne** sie anzusehen] geküßt.  
 Hans has Maria without her to.look.at kissed  
 'Hans kissed Maria without looking at her.'  
 b. Lisa hat Hans [**anstatt** ihn zu küssen] geohrfeigt  
 Lisa has Hans instead.of him to kiss slapped.the.face.  
 'Lisa slapped Hans in the face instead of kissing him.'

- c. Lisa hat Hans [**um** ihn zu überzeugen] belogen.  
 Lisa has Hans in.order.to ihn to convince lied.to  
 'Lisa lied to Hans in order to convince him.'
- (16) a. Hans hat Maria geküßt [**ohne** sie anzusehen].  
 Hans has Maria kissed without her to.look.at  
 'Hans kissed Maria without looking at her.'
- b. Lisa hat Hans geohrfeigt [**anstatt** ihn zu küssen].  
 Lisa has Hans slapped.the.face instead.of him to kiss  
 'Lisa slapped Hans in the face instead of kissing him.'
- c. Lisa hat Hans belogen [**um** ihn zu überzeugen].  
 Lisa has Hans lied.to in.order.to ihn to convince  
 'Lisa lied to Hans in order to convince him.'

Looking at the pattern of grammaticality that emerges if any of the phrases in (15) contains a gap, *anstatt*-phrases enjoy wide-spread acceptance, while *um*-phrases are universally rejected. Judgments on *ohne*-phrases range greatly, but appear to be better than marginally acceptable to many speakers.

- (17) a. Lisa hat Hans<sub>i</sub> [**anstatt** PG<sub>i</sub> zu küssen] geohrfeigt  
 Lisa has Hans instead.of to kiss slapped.the.face  
 b. \*Lisa hat Hans<sub>i</sub> [**um** PG<sub>i</sub> zu überzeugen] belogen.  
 Lisa has Hans in.order.to to convince lied.to

If what licenses the missing constituent in the acceptable cases were truly syntactic in nature, this pattern of variation would be somewhat surprising. Note also that if it is thought that the badness of (16c) is due to some semantic factor, we have no good account for why its English counterpart in (18) is okay.

- (18) This is the man that Lisa lied to in order to convince.

I want to argue then that the putative parasitic gap construction shows the characteristic of an essentially lexically-based phenomenon. Moreover, I propose to treat such constructions as containing no syntactically licensed gaps at all. If instead, we think of them as involving a much more local relationship between the PP-adjunct and the clause it modifies, the fact that no long-distance dependency may exist between the antecedent and its putative parasitic gap falls out for free. If the prepositional head is instrumentally involved in establishing the link between the adjunct and the modified verbal projection, it is immediately clear why no grammatical examples can be found without such a prepositional mediator.

Specifically, what I propose is that prepositions such as *ohne* and *(an)statt* be given partial lexical descriptions along the lines in (19):

- (19) 
$$\left[ \begin{array}{l} \text{COMPS} \left\langle \begin{array}{l} \text{HEAD} \mid \text{VFORM} \text{ zu} \text{ inf} \\ \text{SUBJ} \langle \boxed{1} \rangle \\ \text{COMPS} \langle \boxed{2} \rangle \end{array} \right\rangle \\ \text{HEAD MOD V} \left[ \begin{array}{l} \text{SUBJ} \langle \boxed{1} \rangle \\ \text{COMPS} \langle \boxed{2} \rangle \end{array} \right] \end{array} \right]$$

This description embodies a number of assumptions about the representation of lexical information assumed in recent versions of Head-Driven Phrase Structure Grammar (HPSG, cf. Pollard & Sag 1994). Specifically, the infinitival complement of the preposition is given as the value of the COMPS attribute, while the value of the feature MOD states what the whole PP modifies, that is, a verbal projection—which I will here call V-bar for convenience. Note that the level of saturation of the latter, again given by a COMPS attribute, is given as the tag [2], that is, a variable over lists including the empty list. Whatever the instantiation, though, the level of saturation of the PP-adverbial is guaranteed to be exactly the same as that of the modified V' due to structure sharing among both COMPS values. I refer to this characteristic (partial) unification of valence properties among modifier and modifiee as *Valence Matching*.

There is also structure-sharing involved between the understood subject of the PP-adverbial and the syntactically expressed subject of the V-bar. Yet, the information shared only consists of the index, not the entire informational content. This is typical of the treatment of control phenomena in HPSG, and so I regard the linkage between the subjects not as part of the Valence Matching phenomenon proper, but rather as an instance of control.

Given standard HPSG assumptions about how head-complement and head-adjunct relations project syntactically, the description in (19) will give rise to an analysis of sentences like (2a) as outlined in (20) (next page).

Thus, the prepositional head *ohne* first combines with its transitive complement *anzusehen*. The resulting PP adverbial *ohne anzusehen* in turn modifies the transitive verb *geküßt*, matching the latter's valence properties. Finally, the accusative NP *Maria* is supplied which, due to structure-sharing, serves as the direct object of both *anzusehen* and *geküßt*.

The description in (19) makes a number of predictions which I turn to next. First, it gives us a straightforward account of why the example in (21) (cf. Grewendorf 1990:305) is ungrammatical.

- (21) \*ein Mann, der [COMPS <NP[ACC]> ohne zu kennen]  
 a man who without to know  
 eingeladen wurde  
 invited was

Here, there is simply no NP in the matrix clause which could serve as the missing object in the PP-adverbial. The nominative relative pronoun *der* is not eligible as it cannot serve as a subject and object at the same time—the passive predicate notwithstanding.<sup>5</sup>





- b. \*Hans hat seine Tochter  
 Hans has his daughter-ACC  
 [COMPS <NP[DAT]> ohne Geld zu geben]  
 without money to give  
 unterstützen können.  
 support can

Fourth, since the variable [2] in (19) can instantiate lists of length greater than one, it should be possible to find examples where more than one complement is shared. While somewhat marginal, the example in (24) indeed seems to fulfill the prediction by allowing both direct and indirect object to be shared among PP and modified V-bar:

- (24) ?Maurice hat den Käfer seiner Tochter  
 Maurice has the VW Beetle-ACC his daughter-DAT  
 [COMPS <NP[ACC], NP[DAT]> anstatt zu verkaufen]  
 instead.of to sell  
 einfach geschenkt  
 simply given  
 'Maurice simply gave the VW to his daughter for free instead of selling it to her.'

Next, let me point out that on the Valence Matching approach to **PG** we have an alternative explanation of why PPs with missing constituents show poor extraposition, as shown in (25): (cf. Felix 1985:190)

- (25) a. \*Hans hat Maria geküßt  
 Hans has Maria kissed  
 [COMPS <NP[ACC]> ohne anzuschauen].  
 without to.look.at  
 b. Hans hat Maria geküßt  
 Hans has Maria kissed  
 [COMPS <> ohne sie anzuschauen].  
 without her to.look.at

Felix 1985 tries to reduce this fact to a configuration in which one gap c-commands the other. However, it is also a fact that in general, only fully phrasal constituents may extrapose in German, which in HPSG-terms correspond to constituents with an empty COMPS-list. Then, we can simply subsume the badness of (25) under this generalization without having to appeal to the existence of scrambling traces or parasitic gaps in the matrix clause and PP-adverbial respectively.

Finally, I would like to mention that the current proposal is similar in certain respects to the one advanced in Yatabe 1993. While there are some differences, the two crucially agree in the way they present a solution to a challenge to Webelhuth's analysis, reported in Mahajan 1990:56. The question is, why the sentence in (26), with both direct and indirect object before the PP-adverbial, should be bad.<sup>7</sup>

- (26) a. ??Peter hat jeden Gast seinem Nachbarn  
 Peter has each guest-ACC his neighbor-DAT  
 [<NP[ACC]> ohne anzuschauen]  
 without to.look.at  
 [<NP[ACC], NP[DAT]> vorgestellt].  
 introduced
- b. Peter hat jeden Gast  
 Peter has each guest-ACC  
 [<NP[ACC]> ohne anzuschauen]  
 without to.look.at  
 [<NP[ACC]> seinem Nachbarn vorgestellt].  
 his neighbor-DAT introduced

If we assume that the Valence Matching configurations impose a parallelism constraint in terms of how the PP and V' are linearized, it is clear that only in (26b), but not in (26a), do the juxtaposed constituents have matching valence properties. In this respect Valence Matching can be viewed as "quasi-coordinate". Yet, it should be clear that, due to its local nature in German, the construction is not an Across-the-Board phenomenon proper, as has occasionally been suggested for English, for instance by Huybregts and v. Riemsdijk 1984 and Williams 1990.

## 5. Conclusion

In concluding, I hope to have cast significant doubt on the often-made claim that German adverbial PPs with missing constituents are indeed isomorphic to English parasitic gap constructions. Rather, the lexically-based picture developed here suggests that they may, be more appropriately grouped with other local phenomena such as, perhaps, serial verbs, exemplified in (29) from Sranan (Suriname), where a single object serves as a complement of different verbs. (Migge 1993:101)

- (29) Me teki wan tiki naki a dagu.  
 I take one stick beat the dog  
 'I struck the dog with a stick.'

If I am right, it follows that if there is indeed evidence for scrambling in German as genuine movement, the alleged German parasitic gap construction will in all likelihood not be part of it.

## NOTES

\* I would like to thank Carl Pollard and Gert Webelhuth for discussion and support.

<sup>1</sup> Cf., for instance, Grewendorf 1990:304: "[T]he fundamental characteristics of parasitic gaps that are usually derived from universal principles with respect to other languages can also be established with respect to German."

<sup>2</sup> Felix also discusses PG-like constructions in Bavarian German,

- (i) Das ist der Kerl, den wenn ich *e* erwisch, erschlag ich *e*.  
 That is the guy who when I catch beat.dead I  
 'That is the guy who I will beat to death when I catch him.'

which, however, are utterly impossible in Standard varieties and hence will not be considered here.

<sup>3</sup> Note that the presence of the negation and the auxiliary do not challenge Webelhuth's basic claim about leftward government as examples like the following are also equally grammatical:

- (i) daß ich [daß Hans krank ist] glaube.  
 that I that Hans sick is believe

<sup>4</sup> Interestingly, Bennis:1987:52–54 does discuss the Dutch equivalent of (14), which is also ungrammatical. He argues that the ungrammaticality is an ECP effect induced by lack of canonical government under the assumption that parasitic gaps are licensed *non-derivationally*. This, however, is in contradiction to the position taken by Chomsky 1986:56, who argues for a null-operator, and hence *derivational* theory of PG licensing.

<sup>5</sup> Grewendorf argues that (21) is indirect evidence for *pro*-subjects in German because if (21) didn't contain such an empty subject element, there would be no way to rule out the sentence as a violation of the anti-c-command constraint on parasitic gaps. The fact that this argument is undermined by the arguably simpler explanation offered here is in accord with the generally dubious status of *pro*-subjects in German.

<sup>6</sup> Some native speakers report reduced acceptability for the example in (22). This would be expected if for them, complements combine with heads strictly according to obliqueness ordering, that is, if dative objects combine before accusative ones.

<sup>7</sup> Similar examples are actually judged to be only slightly marginal in Lee and Santorini 1991:8. While I do find a noticeable difference in grammaticality between (26a) and (26b), it is consistent with the overall position taken here that the extent to which a parallelism constraint exists for quasi-coordinate structures (in analogy to "true" coordination) should be among the many degrees of dialectal variation among speakers.

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## VP-INTERNAL SUBJECT HYPOTHESIS AND ATB GAP PARALLELISM

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This paper provides a structural characterization of across-the-board (ATB) gap parallelism through a contrastive analysis of English and Korean. I argue that the generalization underlying ATB gap parallelism involves a structural distinction between VP-internal and VP-external positions. I propose the generalization that ATB gaps must pertain either to VP-external or VP-internal positions across all conjuncts. I further show that the generalization is derived in a principled way from the Empty Category Principle (ECP).

### 1. Introduction

Since Ross's (1967) seminal work on ATB extraction in coordinate structures, various accounts have been given about the restrictions on ATB extraction (Williams 1978, Gazdar 1981, Woolford 1987 among others). In this paper, I argue, on the basis of the contrastive analysis of English and Korean, that ATB extraction should be licensed by a structural parallelism requirement for gaps. Specifically, I argue for the structural generalization that ATB dependencies pertain to VP-internal or VP-external positions throughout all conjuncts. Then I show that this generalization is derived in a principled way from Rizzi's (1990) formulation of the ECP. As a supporting evidence for my generalization, I present ATB extraction in Tagalog. Finally I briefly survey alternative analyses.

### 2. ATB gap parallelism

Consider the ATB gap phenomena in English in (1). (1a-b) show that two subject gaps or two object gaps are well-formed ATB dependencies. (1c-d) show that one object gap and one embedded subject gap form a well-formed ATB dependency. On the other hand, in (1e), one gap is object and one gap is subject, but ATB dependency is ill-formed. Likewise, in (1f), one gap is subject and one gap is embedded subject, but ATB dependency is ill-formed.

- (1) a. Tell me who *t* likes beer and *t* hates wine.  
b. Tell me what adults like *t* and children hate *t*.  
c. Tell me who Sarah likes *t* and Jill thinks *t* is a jerk.  
d. Tell me who everyone allows *t* to win and Margaret loathes *t*.  
e. \*Tell me who Jill admires *t* and *t* hates children.  
f. \*Tell me who everyone allows *t* to win and *t* is a jerk.

(Woolford 1987)

For the ATB phenomena in (1), Gazdar (1981) proposed the generalization that ATB gaps in English must be consistently either matrix subject gaps (matrix with respect to the clauses) or non-matrix subject gaps throughout all conjuncts. In (1a), both gaps are subjects in the conjoined matrix clause, hence they are acceptable. In (1b.c.d), no gaps are subjects in the conjoined matrix clause, hence they are unacceptable. In (1e,f), one gap is the subject in the matrix clause, whereas the other one is not, hence they are not acceptable.

However, data from Korean demonstrate that the subject-nonsubject distinction does not hold for some languages. Let us look at the examples in (2), which involve Topicalization.<sup>1</sup>

- (2) a. Mary-nun<sub>i</sub> salam-tul-i [ t<sub>i</sub> John-ul salangha-ko]  
 M.-Top person-PL-Nom J.-Acc love-and  
 [ t<sub>i</sub> Bill-ul miweha]-n-ta-ko malha-n-ta  
 B.-Acc hate-Pres-Dec-C say-Pres-Dec  
 'As for Mary, people say she loves John and hates Bill.'
- b. Mary-nun<sub>i</sub> [John-i t<sub>i</sub> salangha-ko] [Bill-i t<sub>i</sub> miweha]-n-ta  
 M.-Top J.-Nom love-and B.-Nom hate-Pres-Dec  
 'As for Mary, John loves and Bill hates her.'
- c. Mary-nun<sub>i</sub> [John-i t<sub>i</sub> ton-ul cwu-ess-ko] [ t<sub>i</sub> ku  
 M.-Top J.-Nom money-Acc give-Pst-and the  
 ton-ulo os-ul sa-ess]-ta  
 money-with clothes-Acc buy-Pst-Dec  
 'As for Mary, John gave her money and she bought clothes  
 with that money.'

In all these examples, ATB dependencies between the antecedent and gaps are well-formed. In (2a), *Mary* is the subject in both conjuncts and in (2b), *Mary* is the object in both conjuncts. On the other hand, in (2c), *Mary* is the indirect object in the first conjunct, while it is the subject in the second conjunct. Nevertheless, the ATB dependency is well-formed. These data are problematic from an analysis based on the subject-nonsubject distinction.

Relative construction also shows the same phenomena, as given in (3).

- (3) a. [ t<sub>i</sub> John-ul salangha-ko] [ t<sub>i</sub> Bill-ul miweha]-nun Mary<sub>i</sub>  
 J.-Acc love-and B.-Acc hate-Mod  
 'Mary who t loves John and t hates Bill.'
- b. [John-i t<sub>i</sub> salangha-ko] [Bill-i t<sub>i</sub> miweha]-nun Mary<sub>i</sub>  
 J.-Nom love-and B.-Nom hate-Mod  
 'Mary who John loves t and Bill hates t.'
- c. [John-i t<sub>i</sub> ton-ul cwu-ess-ko] [ t<sub>i</sub> ku ton-ulo  
 J.-Nom money-Acc give-Pst-and the money-with  
 os-ul sa]-n Mary<sub>i</sub>  
 clothes-Acc buy-Mod  
 'Mary who John gave t money and t bought clothes with that  
 money.'

(3a) and (3b) are relativization of subjects and objects, respectively. On the other hand, in (3c), an object and a subject are relativized, but the ATB dependency is still well-formed.

ATB extraction out of an embedded clause is consistent with the observation described above, as exemplified in (4).

(4) a. [apeci-ka t<sub>i</sub> cohaha-ko] [salamtul-i [emeni-ka t<sub>j</sub> miweha]-  
father-Nom love-and people-Nom mother-Nom hate-  
n-ta-ko malha]-nun Mary<sub>i</sub>  
Pres-Dec-C say-Mod

'Mary who father loves t<sub>i</sub> and they say that mother hates t.'

b. [t<sub>i</sub> apeci-lul cohaha-ko] [salamtul-i [emeni-ka t<sub>j</sub>  
father-Acc love-and people-Nom mother-Nom  
miweha]-n-ta-ko malha]-nun Mary<sub>i</sub>  
hate-Pres-Dec-C say-Mod

'Mary who t<sub>i</sub> loves father and people say that mother hates t.'

In (4a), ATB gaps are matrix object and embedded object. In (4b), the gaps are matrix subject and embedded object. In all these cases, ATB dependencies are well-formed.

Summarizing what we observed so far, the licensing of ATB dependencies is determined by the subject-nonsubject distinction in English, while it is not in Korean.

Why do ATB dependencies behave differently in English and Korean? How can we explain the variation in a principled way?

### 3. Analysis

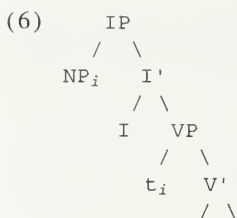
In this paper, I argue that, assuming the VP-internal subject hypothesis a la Koopman & Sportiche (1991), the variation regarding ATB dependencies between English and Korean can be derived independently from the structural generalization in (5).

(5) ATB gaps must pertain either to VP-external or VP-internal positions across all conjuncts.

This generalization relies on the assumption that the subject positions of the two languages are different, as will be discussed below. I begin with a brief discussion of the VP-internal subject hypothesis.

The key idea of the VP-internal subject hypothesis is that subject NP is generated in Spec VP or somewhere else inside VP (Koopman & Sportiche 1991, Kitagawa 1986, Burton & Grimshaw 1992 among others). To receive nominative case by the functional head INFL (more specifically, AGR) via Spec-head agreement (Chomsky 1986),<sup>2</sup> the subject NP is raised from Spec VP to Spec IP, as represented in (6, next page).

In the case of English, the subject is generated within VP and later raised to Spec IP due to case requirements (Koopman & Sportiche 1991, Burton & Grimshaw 1992).



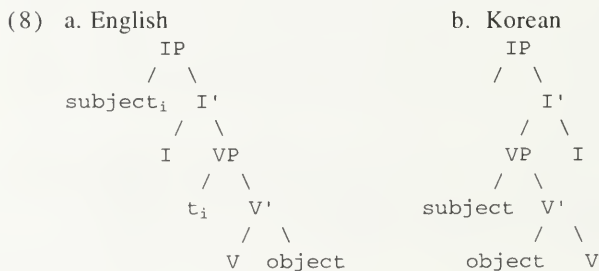
However, the story is different in Korean. It is fairly well known that languages like Korean and Japanese do not have AGR, which controls agreement between a verb and its subject, as argued in Y-S. Lee (1990) and Y-J. Kim (1990) among others. A natural consequence of lack of AGR is that the nominative case is not assigned by AGR in Korean. If so, there is no reason to raise a subject NP from Spec VP to Spec IP. Alternatively, one might say that TENSE inside INFL is a nominative case assigner.<sup>3</sup> However, this hypothesis is not convincing if we consider the case where the nominative case is assigned even in a tenseless clause. The causative construction is such a case, as shown in (7): In (7a), the embedded clause is not specified with tense, while it is in (7b).

- (7) a. John-i Mary-ka nolayha-key ha-ess-ta  
       J-Nom M-Nom sing-Caus make-Pst-Dec  
       'John made Mary to sing.'
- b. \*John-i Mary-ka nolayha-ess-key ha-ess-ta  
       J-Nom M-Nom sing-Pst-Caus make-Pst-Dec  
       'John made Mary to sing.'

What the contrast in (7) shows is that the causative construction does not allow TENSE in the embedded clause, but the embedded subject is still assigned nominative case, as shown in (7a).

If raising of the subject to Spec IP is motivated by case requirement, there is no reason to raise the subject to Spec IP in Korean, since nominative case is assigned without INFL. Therefore, the hypothesis that the subject remains in VP-internal position in Korean seems tenable.<sup>4</sup>

With this theoretical ground, I assume that the subject does not raise to Spec IP in the overt syntax in Korean. The sentence structures of English and Korean will then be as shown in (8).



Let us now see how the generalization in (5) accounts for ATB dependencies in English and Korean. Consider the case of English in (1), ATB dependencies between matrix subject and non-matrix subject in (1e-f) are ruled out, since the matrix subject position is VP-external, whereas other positions are within the VP of the conjoined IP. Other types of dependencies are all well-formed: ATB dependency between matrix object and embedded subject is also well-formed, since both are within VPs of conjoined IPs. Thus, ATB dependencies in English are correctly accounted for by the generalization in (5).

The ATB dependencies of Korean exemplified in (2), (3), and (4) are correctly explained by the generalization in (5) as well: Since the subject is VP-internal in Korean, it is predicted that no distinction is made between subject gaps and nonsubject gaps regarding ATB dependencies.

Therefore, the variation regarding ATB dependencies between the two languages is correctly accounted for in my generalization.

However, the generalization in (5) is not sufficient. Consider the contrast in (9), which shows that morphological case must match in ATB extraction.

- (9) a. *Kay-lul*<sub>i</sub> [*John-i* *t<sub>i</sub>* *sa-ess-ko*] [*Bill-i* *t<sub>i</sub>* *phal-ess*]-*ta*  
 dog-Acc J-Nom buy-Pst-and B-Nom sell-Pst-Dec  
 'A dog, John bought *t* and Bill sold *t*.'  
 b. \**Kay-lul/ka*<sub>i</sub> [*John-i* *t<sub>i</sub>* *sa-ess-ko*] [*t<sub>i</sub>* *Bill-ul mwul-ess*]-*ta*  
 dog-Acc/Nom J-Nom buy-Pst-and B-Acc bite-Pst-Dec  
 'A dog, John bought *t* and *t* bit Bill.'

In (9a), the sentence-initial NP *kay-lul* is scrambled across-the-board from object position in each conjunct. Since the NP is assigned accusative case in each conjunct, no case conflict arises, hence it is acceptable. In (9b), on the other hand, the scrambled NP is assigned accusative in the first conjunct, while it is assigned nominative in the second conjunct. Regardless of whether the scrambled NP *kay* is marked with nominative or accusative, the sentence is ruled out because of the incompatibility of morphological cases. If morphological case does not match, ATB extractions are independently ruled out. Therefore, we need the condition in (10) for morphological requirement in ATB dependencies.

(10) Condition on ATB dependencies:

Actual morphological case forms must match between the elements in ATB dependencies.

This morphological requirement is in general necessary for heavily agglutinative languages such as Korean, Hungarian (Szabolcsi, p.c.), and Polish (Dyla 1984), where all NPs are assigned morphological cases.

How can the generalization in (5) be explained in a principled way? Suppose that the distinction between VP-external and VP-internal positions is parallel to the classical distinction between subject and object positions. If so, the distinction between VP-external and VP-internal positions can be reduced to the ECP-theoretic asymmetry between subject and object.

I propose that the generalization in (5) is subsumed under Rizzi's (1990) head-government definition of the ECP. Some relevant definitions are given in (11).

- (11) a. **ECP:** A nonpronominal empty category must be properly head-governed
- b. X is **properly head-governed** if it is governed by a head governor within the immediate projection of the head.
- c. X **head governs** Y iff
- i) X is head governor ({[+/-V, +/-N], Agr, T}).
  - ii) X m-commands Y.
  - iii) no barrier intervenes (where a barrier (for government) refers to an XP which is not directly selected by an X<sup>0</sup> not distinct from [+V] (i.e. V, C, or I) (Rizzi 1990: fn 6. See also Cinque (1991:42))).
  - iv) Relativized Minimality is respected.

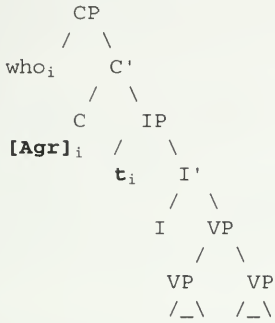
The intuition underlying the head-government approach is that since a Spec position is not properly head-governed by its head, a gap in the Spec position will be ruled out if it is not properly governed by an outside head. The fundamental distinction between English and Korean follows from the fact that INFL head-governs the VP-internal subject position, while it cannot head-govern the VP-external subject position.

Let us look at the examples one by one. First, all the English examples in (1) can be correctly accounted for. In (1b), both gaps satisfy the ECP, since each gap is properly governed by the verb in its conjunct. In (1d), the embedded subject gap in the first conjunct is properly governed by the matrix verb *allow*. In this case the embedded IP is not a barrier, since it is selected by the matrix verb. The second gap is also properly governed, because it is a complement of the verb. To explain (1a) and (1c), we need to mention another hypothesis which was argued for by Rizzi. The hypothesis is that a null complementizer becomes a head governor if its Spec is filled with a wh-phrase or an intermediate trace of a wh-phrase. Even if the null complementizer is not a head governor in itself as specified in (11c(i)), it is licensed to be a head governor by inheritance of [Agr] feature from a wh-phrase in Spec CP in terms of Spec-head agreement. Given that (1a) is considered a VP-coordination (Woolford 1987), the subject gap will be properly head-governed by C[Ag], satisfying the ECP, as shown in (12a). Likewise, (1c) satisfies the ECP. As shown in (12b), the first gap (t1) is properly head-governed by the verb and the second gap (t2) by the null C[Ag], which is licensed to be a head-governor by the intermediate wh-trace (t3) in its Spec.

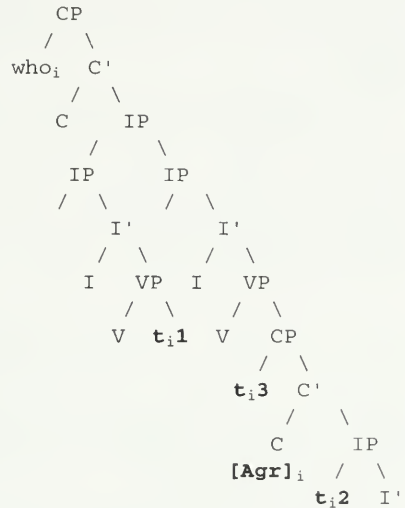


The intermediate trace (t3) is properly head-governed by the matrix verb *thinks*.

(12) a. (part of (1a))

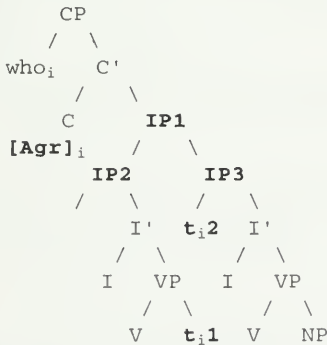


b. (part of (1c))



The unacceptable cases in (1e) and (1f) can be explained as follows: Let us look at (1e) represented in (13).

(13) (part of (1e))



The first gap is properly head-governed by the verb. However, the second gap is not properly governed because of the intervening barrier [IP1+IP3]. In (13), what C directly selects is IP2 and IP3, not the adjoined two-segment categories [IP1+IP2] and [IP1+IP3]. Given that the adjoined category [IP1+IP3] dominates IP3 (Chomsky 1994), it is an intervening barrier for government by the definition in (11c(iii)). Hence (1e) is ruled out by the ECP. Likewise, (1f) is ruled out by the ECP since the second gap is not properly head-governed just like the second gap in (1e).

On the other hand, in Korean, a subject-nonsubject distinction does not arise. The subject position is properly head-governed by the external proper head governor INFL (Tense in Rizzi's term). In this case, VP is not a barrier, since it is directly selected by INFL. The object position is properly governed by the verb. Therefore, both subject gaps and object gaps are properly head-governed, satisfying the ECP.

In summary, the difference in ATB dependencies between English and Korean follows from the structural generalization that ATB gaps must pertain either to VP-external or VP-internal positions across all conjuncts, given that morphological case is consistent with each other. The principle which governs the generalization is the ECP. What is significant in my analysis is that ATB phenomena are subsumed under independently motivated general principles.

One potential problem in my approach is that if adjoined IP category is a barrier, all ATB extractions are marked as I-Subjacency violation in Chomsky's (1986) terminology, despite the fact that ATB extractions are better in acceptability than I-Subjacency violation in syntactic islands. However, this problem does not arise, since adjoined IP creates a barrier for government, not for movement.

#### 4. Further examples

In this section, I present more cases which support my analysis. The first case is one where scrambling applies across-the-board to a subject and an object, as exemplified in (14), where the first conjunct in each sentence contains a psych predicate.

- (14) a. *Nwukwu-eykey*<sub>i</sub> *salam-tul-i* [<sub>VP</sub> *t*<sub>i</sub> [<sub>V'</sub> *yangsik-i*  
 who-Dat people-Pl-Nom food-Nom  
*philyoha-ko*]] [<sub>VP</sub> *John-i* [<sub>V'</sub> *t*<sub>i</sub> *towum-ul cwu-ess-ta*]]-ko  
 necessary-and J-Nom help-Acc give-Pst-Dec-C  
*sayngkakha-ni?*  
 think-Ques  
 'Who do people think [t needs food] and [John gave help to t]?'  
 b. *Nwu-ka*<sub>i</sub> [<sub>VP</sub> *John-eykey* [<sub>V'</sub> *t*<sub>i</sub> *salangsulep-ko*]] [<sub>VP</sub> *t*<sub>i</sub> [<sub>V'</sub>  
 who-Nom J-Dat lovely-and  
*yeyppukey hayngtongha*]]-ni?  
 cutely behave-Ques  
 'Who is lovely to John and behaves cutely?'

In these examples, the psych predicates take a dative or nominative (Experiencer) subject and a nominative Theme object. According to Belletti & Rizzi (1988) and Y-J. Kim (1990), the base position of the Experiencer subject is Spec VP, while the Theme object is inside V'. In (14a), dative-marked *Nwukwu* (who) is scrambled across-the-board. Given that scrambling is IP- or VP-adjunction (Saito 1985), the landing site of the scrambled phrase is VP-external. If so, scrambling leaves a gap in Spec VP position in the first conjunct, but the gap in the second conjunct is inside V', since the gap is the dative

object of the ditransitive verb *cwu-ta* (give). In this case, a morphological conflict does not arise because the extracted elements are assigned the same morphological Case. My analysis predicts this ATB dependency between subject and object to be acceptable, since both positions are VP-internal. In (14b), the gap in the first conjunct is inside V', since it is the nominative object of the psych predicate *salangsulep-* (lovely), while the gap in the second conjunct is in Spec VP, since the gap is the nominative subject of an agentive verb. ATB dependency in this sentence is also correctly predicted to be acceptable in my analysis.

Another case is the Focus construction, which I briefly explain below. The Focus construction appears in the context where elements of a sentence are extracted to the sentence-initial position, receiving focus like the cleft-construction in English. Examples are given in (15).

- (15) a. Mary-ka, John-i salangha-n-ta  
 M-Nom J-Nom love-Pres-Dec  
 'It is Mary who John loves.'

In (15), the NP *Mary-ka* is construed as object, even if it are marked with nominative. The Focus elements are given stress and need a little phonological pause afterwards. They are uniquely marked with focus case *-KA/-I*, which is morphologically the same as the nominative case marker. The focus phrase is interpreted exhaustively. In (15), *Mary* is the Focus phrase and the interpretation is that *it is Mary, not anyone else, who John loves*. The focus construction involves movement in that it is subject to island constraints, as shown in (16).

- (16) a. Pata-KA<sub>i</sub>, [Mary-ka [John-i t<sub>i</sub> kuliweha-n-ta-ko]  
 sea-Foc M-Nom J-Nom miss-Pres-Dec-C  
 sayngkakha-n-ta]  
 think-Pres-Dec  
 'It is the sea that Mary thinks John misses t.'
- b. \*Pata-KA<sub>i</sub>, [Mary-ka [t<sub>j</sub> t<sub>i</sub> kuliweha-nun salam<sub>j</sub>-ul]  
 sea-Foc M-Nom miss-Mod man-Acc  
 a-n-ta]  
 know-Pres-Dec  
 'It is the sea that Mary know the man who misses t.'

In (16a), a Focus phrase is extracted out of the complement clause, whereas in (16b), it is extracted out of the complex NP complement. The contrast between (16a) and (16b) shows island effects of Focus extraction. If island effects are diagnostic of movement (Chomsky 1977), the Focus construction involves movement.

With this background in mind, let us see the ATB dependencies in the Focus construction, given in (17), where the sentence-initial Focus phrases are ATB-extracted.

- (17) a. Mary-KA<sub>i</sub>, salamtul-i [ t<sub>i</sub> John-ul cohaha-ess-ko] [ t<sub>i</sub> Bill-ul  
 M-Foc            people-Nom J-Acc   love-Pst-and            B-Acc  
 miweha-ess-ta]-ko malha-n-ta  
 hate-Pst-Dec-C            say-Pst-Dec  
 'It is Mary that they say that t loved John and t hated Bill.'
- b. Mary-KA<sub>i</sub>, [John-i t<sub>i</sub> salangha-ess-ko] [Bill-i  
 M-Foc            J-Nom   love-Pst-and            B-Nom  
 t<sub>i</sub> miweha-ess]-ta  
 hate-Pst-Dec  
 'It is Mary that John loved t and Bill hated t.'
- c. Mary-KA<sub>i</sub>, [John-i t<sub>i</sub> salangha-ess-ko] [ t<sub>i</sub> Bill-ul  
 M-Foc            J-Nom   love-Pst-and            B-Acc  
 miweha-ess]-ta  
 hate-Pst-Dec  
 'It is Mary that John loved t and t hated Bill.'

In all these examples, ATB dependencies are well-formed. In (17a), both gaps are the subjects, and in (17b), they are the objects. On the other hand, in (17c), the gap in the first conjunct is the object, but that in the second conjunct is the subject. Nevertheless, the ATB dependency is well-formed. This is also predicted in my analysis.

## 5. Implications and consequences

The prediction of my analysis is that if ATB gaps are consistently VP-internal or VP-external, they are well-formed. In this section, I show ATB extraction in Tagalog as a supporting evidence for my generalization.

The generalization about extraction in Tagalog is that extraction is allowed only for the structural subject which has been called Topic, since it is uniquely marked with the Topic marker *ang* or *si*. (Keenan & Comrie 1977, Guilfoyle et al. 1992). Any argument, e.g. agent or theme, can be the structural subject and if an argument appears as the structural subject, then the verbal morphemes reflect the thematic role of the structural subject, as shown in (18).<sup>5</sup> In (18a), the verbal morpheme *um* indicates that an agent *tao* (man) is the structural subject. In (18b), the verbal morpheme *ni* indicates that a theme *kotse* (car) is the structural subject.

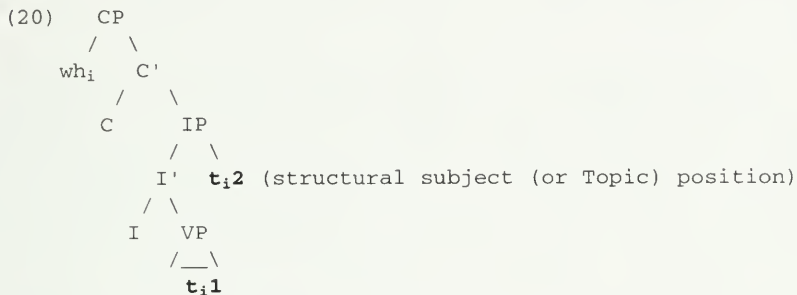
- (18) a. Bumili       ng kotse para kay Maria **ang tao**  
 AT-bought Acc-car for Obl-Maria Top-man  
 'The man bought the car for Maria.'
- b. Binili       ng tao       para kay Maria **ang kotse**  
 TT-bought Gen-man for Obl-Maria Top-car  
 'The car was bought by the man for Maria.'

If an argument becomes a structural subject, only that argument can be extracted in the sentence, as shown in (19).

- (19) a. Sino ang bumili       ng kotse para kay Maria?  
 Who Comp AT-bought Acc-car for Obl-Maria  
 'Who bought the car for Maria?'

- b. \*Ano ang bumili para kay Maria ang tao?  
 What Comp AT-bought for Obl-Maria Top-man  
 'What did the man buy for Maria?'

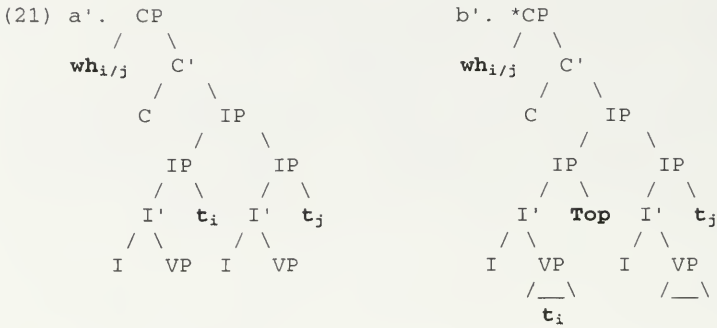
(19a) is acceptable since the structural subject, *tao* (man), is extracted. (19b) is unacceptable, since a nonsubject is extracted. According to Guilfoyle et al. (1992), the structural subject is base-generated within VP and raised to Spec IP to receive Case. Extraction occurs only from Spec IP position, as represented in (20).



Now, let us look at the extraction facts in coordination. ATB-extraction is well-formed if both gaps are in the VP-external position, regardless of whether they are agents or themes. However, ATB-extraction is ill-formed if one gap is VP-external while the other is VP-internal, as shown in (21): (21a) is well-formed, since both gaps are VP-external Topic. On the other hand, (21b) is ruled out, since the gap in the second conjunct is VP-external Topic, while it is not in the first conjunct. Note that gap positions are predicted by verbal morphemes.

- (21) a. Sino ang bumili ng kotse para kay Maria na  
 Who Comp AT-bought Acc-car for Obl-Maria and  
 ginagalang ni Juan?  
 TT-respects Gen-Juan  
 'Who bought the car for Maria and Juan respects?'
- b. \*Sino ang binili para kay Maria ang kotse na  
 Who Comp TT-bought for Obl-Maria Top-car and  
 ginagalang ni Juan?  
 TT-respects Gen-Juan  
 'Who bought the car for Maria and Juan respects?'

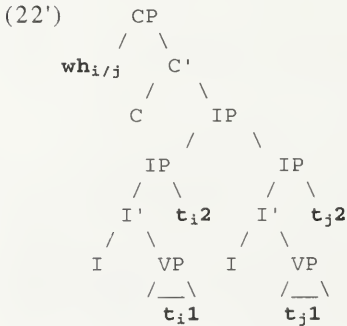
The derivation of the examples in (21a,b) will be like (21a',b'). In (21a'), extraction applied across-the-board to the Topic positions. However, in (21b'), one gap is VP-internal and the other is VP-external (i.e. Topic position). Therefore the contrast in (21) follows from the generalization that ATB dependencies pertain to VP-internal or VP-external positions.



Another prediction of my analysis is that if both gaps are VP-internal, ATB dependencies are also well-formed. Such a case is found in the Tagalog sentences with verbs in recent past (RP) tense, in which all arguments remain VP-internal. The hypothesis that all arguments remain VP-internal in RP tense construction is supported by the fact that in this construction, no argument is marked with Topic marker and any argument is extractable in a sentence. Given that all arguments in RP tense construction are VP-internal, ATB extraction of an agent and a theme will be predicted to be acceptable. Such is the case, as shown in (22), where the agent in the first conjunct and the theme in the second conjunct are ATB-extracted.

- (22) Sino ang kabibili lang ng tela para kay Maria na kakikita  
 Who Comp RP-buy just Acc-cloth for Obl-Maria and RP-meet  
 lang ni Juan ?  
 just Gen-Juan  
 'Who t has just bought some clothes for Maria and Juan has just met t?'

Following Guilfoyle et al.'s (1992) generalization that extraction is possible only from Spec IP, I assume that the extraction of VP-internal arguments occurs successive-cyclically via the empty Spec IP. The derivation of (22) will be represented like (22').



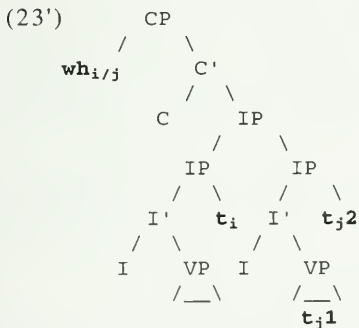
The hypothesis of successive-cyclic movement accounts for the apparently problematic case where VP-external subject of an ordinary



past sentence can be ATB-extracted with a VP-internal argument of a RP sentence, as shown in (23).

- (23) Sino ang **bumili** ng tela para kay Maria na  
 Who Comp AT-bought Acc-cloth for Obl-Maria and  
 kakikata lang ni Juan?  
 RP-meet just Gen-Juan  
 'Who bought some clothes for Maria and Juan has just met?'

In (23), the gap in the first conjunct is in Spec IP, as shown by the verbal morpheme *um*, but the gap in the second conjunct is VP-internal since this conjunct is RP. Given that extraction is successive cyclic via the empty Spec IP, ATB dependency in (23) is licensed between the structural subject and the intermediate trace, both of which are VP-external. The derivation of (23) will be like (23').



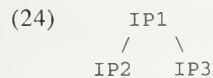
The difference between (21b) and (23) is that in the former, Topic position is occupied by the structural subject, while it is not in the latter. And so, successive-cyclic extraction occurs only in (23).

In summary, the ATB extraction patterns in Tagalog support my generalization of the VP-internal vs. VP-external distinction.

One implication of my hypothesis is that in the V-initial languages where both the subject and the object are VP-internal, ATB extraction of the subject and the object will be well-formed.

## 6. Alternative approaches: Woolford (1987)

Woolford (1987) provides an ECP-theoretic account of the ATB dependencies in English in (1), following Chomsky's (1986) *Barrier* system. Woolford's analysis is based on the assumption that since neither conjunct IP in the sentences in (1) is L-marked, the IP immediately dominating the conjunct IPs is a barrier by inheritance, given that a coordinate structure is a multiply headed flat structure like (24). That is, according to her analysis, IP2 and IP3 are not L-marked, hence IP1 is a barrier for government.



Under her view, (1e) and (1f), which are schematically represented as in (25), are ruled out by the ECP.

- (25) a (=1e)...[CP who<sub>i</sub> [IP[IP [VP V t<sub>i</sub> ] ] and [IP t<sub>i</sub> VP]]]  
 b (=1f)...[CP who<sub>i</sub> [IP[IP...[VP t<sub>i</sub>' [VP V [IP t<sub>i</sub> I' ] ] ] ] ] and [IP t<sub>i</sub> VP]]]

Here, the object gap is theta-governed by the verb, satisfying the ECP. However, the subject gap is not properly governed, since it is neither theta-governed by the verb nor antecedent-governed by the wh-phrase in Spec CP because of the intervening barrier: the topmost IP. Therefore, (1e) and (1f) are ruled out by the ECP.

On the other hand, (1a) satisfies the ECP, if it is considered an instance of VP coordination rather than IP coordination: The gap is antecedent-governed by the wh-phrase in Spec CP. (1b) satisfies the ECP: Object gaps are theta-governed by its head verb. (1c) and (1d) are consistent with the ECP, since object gaps are lexically governed, while the gaps of the embedded subjects are antecedent-governed by the VP-adjoined intermediate traces, which is later deleted (Lasnik & Saito 1984, 1992). Therefore, ATB gap parallelism in English is reduced to the ECP in this analysis.

However, Woolford's *Barrier*-type analysis raises theory-internal problems. In Chomsky 1986, where a segment of a category is not a barrier, the topmost IP (i.e. IP1 in (24)) cannot be a barrier because it is not a category but a segment of a category. Then the *Barrier*-type analysis does not actually rule out (1e) and (1f).

Furthermore, Woolford's analysis cannot predict the variation observed in this paper.

## 7. Conclusion

I have so far argued that ATB dependencies are structurally determined. The generalization for which I have argued is that ATB dependencies are consistent with VP-internal vs. VP-external positions. My generalization correctly accounts for ATB dependencies in English and Korean and the difference between the two languages. Furthermore, the generalization can be derived in a principled way from the ECP.

My analysis strongly supports the VP-internal subject hypothesis. One remaining question is how far my analysis reaches cross-linguistically, which I leave for future research.

## NOTES

\*Thanks to James Yoon and A. Benmamoun for insightful comments and criticism.

<sup>1</sup> In this paper, Topicalization is considered as involving movement. Evidence for the movement hypothesis is: First, Topic construction obeys the subadjacency condition, as shown in (i).

- (i) ?\*ku pyengj-un Mary-ka [ t<sub>i</sub> t<sub>j</sub> kkay-n salam<sub>i</sub>-ul]  
 the bottle-Top M-Nom break-Mod person-Acc  
 pinanha-ess-ta  
 accuse-Pst-Dec

'As for the bottle, Mary accused the person who broke t.'

Secondly, the Topic construction does not allow resumptive pronouns, as shown in (ii), where the pronoun *kunye* cannot be bound by the Topic phrase *Mary*.

- (ii) \*Mary<sub>i</sub>-nun John-i kunye<sub>j</sub>-lul salangha-n-ta.  
 M-Top J-Nom her-Acc love-Pres-Dec

'As for Mary, John loves her.'

<sup>2</sup> In Chomsky's (1993, 1994) minimalist framework, nominative case is 'checked off' by the functional head T(ense) and the subject agreement features by AgrS via Spec-Head agreement in the course of derivation in overt syntax. Whatever the case checking position may be is of no importance in this paper. What is important is that the subject raises in the overt syntax from the VP-internal position to a VP-external position for case (and agreement) reasons. Just for ease of exposition, I follow the standard assumption à la Chomsky (1981, 1986). However, my argument is valid in the minimalist framework as well.

<sup>3</sup> This is what is assumed in Chomsky (1993,1994).

<sup>4</sup> If we adopt Chomsky 1993, 1994, the distinction between English and Korean may be that in English, the subject has strong features to be checked off in overt syntax, while in Korean the subject has weak features to be checked off in covert syntax (This hypothesis seems reasonable if we consider the facts about nominative case marking discussed above). This difference leads to the same conclusion that the subject position in English is VP-external, while that in Korean is VP-internal. If this is correct, nominative case in Korean will be satisfied by covert movement.

A consequence of the hypothesis that subject raises covertly is that it accounts for scope facts of quantifier subjects, as in (i).

- (i) ta o-ci ani ha-ess-ta. (J-H. Suh 1990)  
 all come-C neg do-Pst-Dec

(i) is ambiguous, depending on scope relation between the quantifier subject *ta* (all) and negation: One reading is the case where the quantifier *ta* takes scope over negation, which means *No one came*. The other is the case where negation takes scope over the quantifier, which means *Not all came*. If subject is covertly raised at LF, wide scope interpretation of the quantifier can be correctly explained. Narrow scope interpretation of the quantifier follows from the VP-internal position.

<sup>5</sup> I thank A. Yambao (p.c) for Tagalog data used in this paper.

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## OVERT EXPLETIVES AND THEMATIC SUBJECTS IN WEST SLAVIC\*

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Phenomena exist in Czech and Sorbian which appear to pose problems for standard views of null subject properties. First, in a licensing/identification system for null subjects, the optional occurrence of overt non-referential pronouns in canonical NS-languages is unexpected since a language which allows null thematic subjects should not contain lexical expletives, in keeping with the Avoid Pronoun Principle. However, while overt expletives do frequently occur in Colloquial Czech and Sorbian dialects, this does not necessarily contradict theoretical predictions about possible language types. Second, the loss of null subject properties in some Sorbian dialects may reflect German influence on sentence structure.

### 0. Introduction

Slavic languages are surprisingly diverse from the perspective of 'null subject' phenomena. Some lexicalize referential subject pronouns while others do not. Moreover — and of central interest for this paper — some appear to have overt expletive subjects despite being otherwise null subject languages, although their properties show cross-linguistic variation. Most notable in this context are phenomena in colloquial Czech and Upper sorbian dialects which apparently pose serious problems for an identification/licensing approach to null subjects. This paper, after providing some general background, will analyze the status of overt expletives in Czech and Upper Sorbian as canonical null subject (NS) languages and discuss some implications for syntactic theory. I then go on to deal with the expression of thematic pronominal subjects in Sorbian dialects and provide some possible explanations.

### 1. Identification and licensing

In a canonical non-NS language, such as English, both theta-marked and expletive subjects must be lexically filled, as illustrated in (1).

- (1) a. I/\*e am reading a book  
b. it/\*e is getting dark

In a canonical NS language, on the other hand, both theta-marked and expletive subjects remain phonologically null, as illustrated in

the Serbo-Croatian example in (2).

- (2) a. e čitam knjigu '(I) am reading' [S-C]  
 b. e smrkava '(it) is getting dark'

A theta-marked subject pronoun, as in (2'), will be lexically realized only if it receives special emphasis.

- (2') ja čitam knjigu 'I (and not she) am reading the book'

Traditionally it has been assumed that the availability of null subject *pro* somehow depends on 'richness' of subject-verb agreement.<sup>2</sup> However, the existence of languages which exhibit 'mixed behavior' with respect to the lexicalization of pronominal subjects reveals that there is no monolithic 'null subject parameter'. Russian, for instance, expresses overt referential subjects in stylistically neutral contexts,<sup>3</sup> although expletives are omitted, as shown in (3).

- (3) a. on ljubit životnyh [Ru]  
 'he loves animals'  
 b. *pro* kažetsja, čto my zabludilis'  
 '(it) seems that we are lost'  
 c. *pro* temneet  
 '(it) is getting dark'

One might therefore argue for two distinct parametric choices that relate to null subject phenomena.

There have been specific proposals in the literature for two different kinds of morphological richness. A number of researchers, including Rizzi, Jaeggli and Safir, distinguish *licensing* and *identification* of null pronouns. Licensing is a purely formal criterion, something that all empty categories are subject to. Identification is a more substantive criterion, since it refers to the availability of some mechanism for recovering the essential grammatical information left unexpressed.

One standard approach to the problem of 'mixed languages' is to capitalize on the distinction between licensing and identifying conditions for null subjects. The licensing conditions specify the environment in which null subjects are allowed to occur. ALL null subjects, independent of their thematic status, must be formally licensed. However ONLY referential null subjects require additional identification to ensure unambiguous 'recoverability' of their pronominal content. Null expletives, on the other hand, merely need to be licensed. The distribution of null subject types in Russian can then be understood as the result of licensing but not identifying null subjects. Note that under a licensing/identification system the only reason for the occurrence of overt expletives — which by definition lack any referential function — is that the language does not license null subjects at all, as in English. This type of system predicts the THREE different language types in (4).

- (4) a. canonical null-subject languages (Italian, Serbo-Croatian)



- b. canonical overt-subject languages (English)  
 c. mixed type: overt referential pronouns; null expletives (Russian)

It makes no sense to talk about identification without licensing since if null subjects in some language were identified without being licensing they still could not exist. The practical impossibility of identification without licensing allows for just one type of 'mixed' null subject language, as in (4c). The essence of the licensing/identification dichotomy is that it is much 'easier' for expletives than for referential pronouns to be null, since their pronominal content does not need to be identified. Identification can perhaps be understood as 'more complete' licensing.

## 2. Overt Expletives in West Slavic: Czech and Sorbian

All West Slavic literary languages omit unstressed pronominal subjects, and thus qualify as canonical null subject languages. The colloquial languages, however, pose some interesting problems for the licensing/identification system.

### 2.1. Colloquial Czech

For example, overt expletive subjects seem to appear in Czech in (5)-(7).

- (5) a. **ono** je chladno                      b. **ono** prší                      c. **ono** se blýská  
       'it is cold'                                'it's raining'                      'it's lightning'
- (6) a. **ono** se tam nepracuje                      b. **ono** se tu tancuje.  
       it/refl./there/neg.-works                      it/refl./there/dances  
       'no work is being done there'                      'dancing is going on there'  
       (cf. Es wird nicht gearbeitet)                      (cf. Es wird getanzt) [Germ]
- (7) a. **ono** je možno, že ...                      b. **ono** je přece nutno, abychom ...  
       'it is possible that ...'                      'it is after all necessary that I ...'

First of all, these expletives are *OPTIONALLY* overt so that Colloquial Czech is not per se a counterexample to the three possible language types in (4).<sup>4</sup> Nevertheless, such constructions should be impossible, since if a language does not *REQUIRE* thematic subjects to be lexicalized, then it cannot *ALLOW* expletive subjects to be lexicalized. Such a combination would conflict with Chomsky's (1981:65) Avoid Pronoun Principle, stated in (8):

- (8) Avoid lexical pronominal if a null pronominal is possible.

Overt subject pronouns in a NS-language are only used for emphasis or to signal a change in topic. The use of overt subject pronouns in a NS-language is thus determined by 'functional' considerations. However, it is standardly assumed that expletive subjects by definition are void of any semantic content and therefore cannot signal emphasis or contrastive stress. Being 'functionally' useless they can, and by the Avoid Pronoun Principle must, always be avoided in a NS-language.<sup>5</sup>

The most immediate question is of course whether these expletives are really subjects. Assuming Spec-IP as the structural subject position, I claim that these are indeed in that position (or at least not in Spec-CP). This conclusion is based on *ono*'s compatibility with overt material in C, such as the complementizer *protože* in (9a,b) and the finite verb *neppracovalo* in the yes-no question in (9c).

- (9) a. *nemužu jít ven, protože ono tam prší*  
'(I) can't go outside, because it is raining there'  
b. ...*protože ono se nepracuje v neděli*  
'...because/expl./refl./neg.-works/on/Sunday'  
'because there is no work being done on Sunday'  
c. ?*neppracovalo se ono včera*  
*neg-worked/refl./expl./yesterday*  
'wasn't there any work done yesterday?'

Moreover, expletive *ono* 'subjects' in Czech can co-occur with referential NP subjects, as shown in (10).

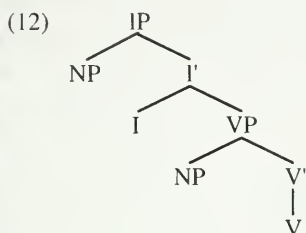
- (10) a. *ona ta myšlenka má něco do sebe*  
'expl.<sub>fem</sub> this thought<sub>fem</sub> has something to it'  
b. *ono se ti to lhaní jednou vymstí*  
'expl.<sub>neut</sub> this lying<sub>neut</sub> will come back to haunt you sometime'  
c. *oni si Polaci volili krále*  
'expl.<sub>plur</sub> the Poles<sub>plur</sub> elected a king'  
d. *ona se tu naskytla ta vosoba*  
'expl.<sub>fem</sub> that person<sub>fem</sub> appeared there'  
e. *on mu otec všechno dovolí*  
'expl.<sub>masc</sub> father<sub>masc</sub> allows him everything'  
f. *ono tam bylo moc lidí*  
'expl.<sub>neut</sub> many people<sub>gen.pl</sub> were there '

In most modern dialects, the expletive in such constructions has to agree with the associated referential subject in pronominal features. We thus have feminine *ona* in (10a), neuter *ono* in (10b) and masculine *on* in (10e), etc.<sup>6</sup> These expletives appear in the Nominative case. Moreover, expletives in constructions of this type are also compatible with material in C or Spec-CP, as shown in (11).

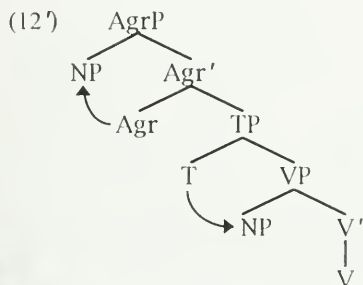
- (11) a. *najednou ona se tu naskytla ta vosoba*  
'suddenly that person appeared there'  
b. *myslím, že ona ta tvoje myšlenka má něco do sebe*  
'I think, that your thought has something to it'  
c. *proč ona se Mařenka stará o všechno*  
'why is M. taking care of everything'  
d. ...*protože ono se ti to lhaní jednou vymstí*  
'because this lying will come back to haunt you sometime'

Based on these facts I conclude that the expletive is in Spec-IP. However, according to the VP-internal subject hypothesis there is another subject position, namely Spec-VP which is assumed to be the D-structure position for all thematic subjects. I propose that the ref-

erential subject NP in the examples under (10) and (11) actually remains in Spec-VP at S-structure. This is illustrated in (12). At LF the referential NP moves up to Spec-IP to adjoin to (or replace) the expletive so that no violation of the Principle of Full Interpretation occurs.



The structure in (12) raises the question of how the NP in Spec-VP is assigned Nominative case. This could be achieved, in keeping with the Split INFL hypothesis, by projection of a separate Agreement phrase AgrP and Tense phrase TP, as in (12') below, under the assumption that either Agr or T can assign Nominative case as a matter of parametric choice (cf. Roberts 1993:27). According to Roberts, Agr can assign case under spec-head agreement or government ECM; T however can only assign case under government ECM. Therefore, Tense in some languages, including under this analysis Czech, assigns Nominative case under government of the subject NP in Spec-VP. For Colloquial Czech, I suggest that Agr is also able at the same time to assign Nominative to its specifier, occupied by the expletive, under spec-head agreement.



Another similar phenomenon is illustrated in (13). The distributional facts given in (14) demonstrate that the expletive in constructions of this type is also compatible with overt material in C, such as the complementizer *že* in (14a) or the finite verb *není* in the yes-no question in (14b).

- (13) a. **on** je to někdy **problém** (Koenitz 1988:10)  
 expl.<sub>masc</sub>/is/this/sometimes/problem<sub>masc</sub>  
 'it is sometimes a problem'
- b. **ona** je to **hodná holka** (Hirschová 1984:273)  
 expl.<sub>fem</sub>/is/this/nice<sub>fem</sub>/girl<sub>fem</sub>  
 'this is a nice girl'
- c. **oni** jsou to **zajímaví lidé** (zajímavý lidi) (ibid)  
 expl.<sub>pl</sub>/are/this/interesting<sub>pl</sub>/people<sub>pl</sub>  
 'these are interesting people'
- d. **ono** je to **těžké**  
 expl.<sub>neut</sub>/is/this/difficult<sub>neut</sub>  
 'that is difficult'
- (14) a. proč myslíš, že **ona** je to **hodná holka**  
 'why do you think that this girl is nice'
- b. není **on** to **hodný člověk**  
 'isn't that a nice guy!!'

I take the complement of copular 'be' to be a Small Clause, following proposals by Stowell (1978) and Safir (1985). Assuming a Small Clause structure for copula sentences, the analysis might then essentially be the following: the expletive is in Spec-AgrP of the matrix clause and agrees in pronominal features with the predicative NP of the Small Clause, while *to* ('this') is the subject of the Small Clause. This is illustrated in (15a). The ungrammaticality of (15b) further supports the idea that *to* is indeed the subject of the Small Clause, and not some sort of adverbial.

- (15) a. [AGRP expl.[AGR' AGR[TP T [SC to XP]]]]  
 b. \*Mařenka je to hodná holka.  
 M./is/this/nice/girl

## 2.2. Origin and meaning of Czech expletives

The Czech expletive is used for emotive emphasis. It always implies some sort of emotion from the point of view of the speaker, such as surprise, joy or disappointment. I therefore reject Hyams' (1986) position that non-referential elements (i.e. expletives) cannot occur in emphatic contexts. Instead, I claim that overt expletives in Czech should be subsumed under the generally possible occurrence of overt subject pronouns in marked discourse. One might therefore interpret the expletive in Spec-AgrP as an overt realization of the pronominal features of Agr to specially MARK the context as emphatic/emotive.

Expletives by definition lack any referential properties. How is it then possible that such an element can carry an emphatic reading? The use of expletive pronouns in Czech for emotive emphasis has an interesting history. As pointed out by Trávníček (1962), this emotive meaning developed out of the interjection *ano/ono*, the original translation of Latin *ecce*, which had sentential value on its own and was therefore positioned 'outside' the CP of the following clause. The

Old Czech example in (16) is an illustration of this. The later development of the various emotional nuances of this element was accompanied by the loss of its sentential value and incorporation into the sentence structure proper. According to Trávníček, agreeing forms, which may reflect this 'movement down the tree', developed as early as the 16th century, as illustrated by (17).

- (16) **ono**, klíč v zámce zkřechta (Trávníček 1962:18)  
'Lo, the key clanked in the door'
- (17) **oni všichni čerti** vyšli sú z pekla pro tu duši (ibid:25)  
'expl.<sub>pl</sub> all devils<sub>pl</sub> came out of hell for these souls'

### 2.3. 'Expletive subjects' in Upper Sorbian

Literary Upper Sorbian is a null-subject language as illustrated in the short excerpt in (18) taken from a novel by Jurij Koch (1991).

- (18) Moja maćerna řeč je serbsčina .. Z tutej řeču e sym wotrostł. e njemóžu so wjace wot njeje dželić, tež nic, hdyž e bych to chył. e njejsym sej ju wupytał. e bě tu hižo, hdyž e dóndžech.'  
'My mother tongue is Sorbian. With this language (I) grew up. (I) can't separate myself from it, even if (I) wanted to. (I) didn't chose it. (It) was already there when (I) arrived.'

However, the examples under (19) show that Upper Sorbian dialects have overt elements that look very much like expletive subjects.<sup>7</sup> Depending on the dialect zone, one finds *wono*, *wone* or *wón*. Interestingly, and in contrast to Czech, no emotive component is associated with the use of these expletives.

- (19) a. **wone/wón** hríma  
'it is thundering'
- b. **wone/wón** bě wětrokjta  
'it was windy'
- c. **wone/wón** so deščuje  
'it is raining'
- d. **wone/wón** taje  
'it is thawing'
- e. **wone** tež je tak potom, zo ....  
'it is then also so, that

Judging from my initial field work in Lusatia, there seems to be a syntactic incompatibility between expletives and *wh*-phrases or complementizers, as shown in examples (20) and (21). Although in Czech as well, some speakers find the co-occurrence of expletives with material in C and Spec-CP awkward, such incompatibilities can be attributed to pragmatic rather than syntactic considerations, since the use of overt expletives is reserved for emotive contexts in Czech. No such explanation is available for Upper Sorbian, which leads me to conclude that these expletives are actually in Spec-CP, perhaps under the influence of German non-argumental *es* in V2 contexts. For one thing, *wone* is incompatible with a *wh*-word, as shown in (20).

- (20) hdyž (**\*wone**) taje, nejmůžemy so smykać  
'when it thaws, we can't skate'

As in German constructions without external argument, the expletive *wone* similarly cannot follow a complementizer such as *dokelž* 'because', but it can follow a conjunction such as *ale* 'but', which is in a position 'outside' CP.<sup>8</sup> This is illustrated in (21).

- (21) a. nejńdu won, dokelž so (**\*wone**) deščuje  
'I don't go outside because it is raining'  
b. ja bych chcyła won hić, ale **wone** so deščuje  
'I would like to go outside, but it is raining'

A curious type of construction was discovered in a dialect text from the Mješic region, cited by Faške & Michałk (1989:41) Example (22) is an arbitrary third plural construction with a third person singular expletive in initial position. This indirectly supports my hypothesis that the overt expletive in Upper Sorbian is **not** in Spec-AgrP, since otherwise we would be faced with a very unusual situation of non-agreement between the singular pronominal subject *wón* and the plural verb *su pójdali*.

- (22) **wón** su jow wele **pójdali**, zo...  
expl.<sub>sg</sub>/aux.<sub>pl</sub>/here/often/said<sub>pl</sub>/that  
'One used to say here often, that...'

## 2.4 Summary

In Czech, expletives are indeed in the structural subject position of Spec-AgrP. However, they are invariably associated with an emphatic reading so that they should be subsumed under the generally possible occurrence of overt subject pronouns in marked discourse, thereby disproving the standard assumption that expletives cannot be emphatic and can therefore never be overt in NS languages. By the Avoid Pronoun Principle, a language that licenses null subjects will never use overt expletives *unless they convey some special emotive meaning*. I therefore speculate that Colloquial Czech is simply special in having such emphatic expletives. Moreover, since the subject NP may remain in Spec-VP, Spec-AgrP is freed up for agreeing expletives in subject doubling constructions.

In Sorbian, the syntactic incompatibility of expletives with *wh*-phrases and complementizers indicates that the expletive is **not** a subject, but rather occupies Spec-CP, presumably with a *pro* in Spec-AgrP, as is expected of a null subject language. Overt expletives in West Slavic are therefore no real problem for the predictions of possible language types made by the kind of identification and licensing system suggested by Jaeggli & Safir (1989) in conjunction with the Avoid Pronoun Principle.<sup>9</sup>

## 3. Null subject properties of Sorbian dialects

I take the properties in (23) below to be fairly reliable diag-



nostics of whether or not a language should be classified as "null subject":<sup>10</sup>

- (23) The following properties hold true for null subject languages:
- Overt** pronominal subjects are stylistically marked.
  - Overt** 3rd plural pronominal subjects cannot have arbitrary reference.
  - Overt** pronouns cannot function as bound variables.

By these criteria, although most West and South Slavic languages are canonical null subject languages, East Slavic languages are not.

First, there is nothing emphatic about expressing the subject *ja* 'I' in Russian (24a), although there is in Czech (24b) or Serbo-Croatian (24c).

- (24) a. **ja** ne ponimaju [Ru]  
       'I don't understand'  
       b. **ja** nerozumím [Cz]  
       c. **ja** ne razumem [S-C]

Second, in Russian the presence of overt *oni* 'they' in examples such as (25) — although prescriptively frowned upon — is still consistent with the arbitrary interpretation.

- (25) a. v Amerike **oni** govorjat po-anglijski [Ru]  
       'in America they speak English'  
       b. otec znaet, što **oni** syna ne primut v institut  
       'father knows that they won't accept his son into the institute'

In South and West Slavic, however, overt *oni* necessarily gives rise to the referential or specific reading. Thus, in the Serbo-Croatian examples in (26) or the Czech ones in (27), *oni* must refer to specific individuals.

- (26) **oni** ovdje prodaju kavu [S-C]  
       'they sell coffee here'  
       (27) **oni** v tom obchodě prodávají kavu [Cz]  
       'in this store they sell coffee'

Third, whereas Russian (28a) can admit the bound variable reading despite the presence of the overt *on* 'he', the otherwise identical Serbo-Croatian (28b) and Czech (28c) cannot.

- (28) a. každyj student dumaet, što **on** polučit pjatěrku [Ru]  
       'every student thinks that he will get an A'  
       b. svakí student misli da će **on** dobiti desetku [S-C]  
       c. každyj student myslí, že **on** dostane jedničku [Cz]

In Serbo-Croatian and Czech, the overt *on* can only have a deictic interpretation. Roughly the same results obtain if the QP is replaced by a referential NP, as in (29a-c):

- (29) a Ivan<sub>i</sub> dumaet, što **on**<sub>i</sub> polučit pjatěrku [Ru]  
       'John thinks that he will get an A'

- b. ?\*Jovan<sub>i</sub> misli da će **on<sub>i</sub>** dobiti desetku [S-C]  
 c. \*Jan<sub>i</sub> myslí že **on<sub>i</sub>** dostane jedničku [Cz]

Let us consider in this light some additional data from Upper Sorbian dialects. An examination of contemporary texts in Faßke and Michałk (1989) revealed a surprising level of overt subject pronoun use, comparable to that of Russian. Some typical examples are provided in (30).

- (30) a. do pównoce smó **mó** khodźili  
 'we walked until midnight'  
 b. a jako dyš je **wón** wumrěw, dys su delka kěrlus spěwali, je **wón** z wóknom horka deli ladaw a fajfu kuriw  
 'and when **he** died, when they sang a choral downstairs, **he** looked down from the window above and smoked his pipe'.  
 c. tujs sej **woni** žane(j) rade wejdźili nejsu...  
 'and since **they** didn't know what else to do ....  
 d. ale **ja** sn něk tam wele moli ribach bów a **ja** (ja)c jich ničo widźiw nejsym  
 'but **I** often used to go for mushrooms there and **I** didn't see anything'

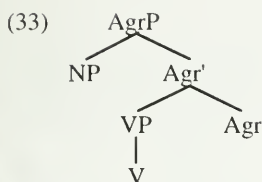
In keeping with the null subject criterion in (23a), the frequent use of unemphatic pronouns strongly suggests that such a dialect does not qualify as a null subject language in the sense just defined.<sup>11</sup> A similar conclusion can be drawn from the appearance of overt *wón* 'he' in the bound variable contexts in (31), following criterion (23c):

- (31) a. Feliks<sub>i</sub> njepytny, zo **wón<sub>i</sub>** hižo hodžinu po mesće honja  
 'Felix<sub>i</sub> didn't realize that he<sub>i</sub> had already been running through town for an hour'  
 b. ... a wón<sub>i</sub> njewe, zo je **wón<sub>i</sub>** Krabat.  
 '... and he<sub>i</sub> doesn't know, that he<sub>i</sub> is Krabat'

An example of an overt pronoun used with arbitrary reference, following criterion (23b), is given in (32).

- (32) pon su **woni** lekarja hólwali  
 'then they send for the doctor'

Since Upper Sorbian has rich agreement comparable to other West Slavic languages, its non-NS status should perhaps be attributed to some other aspect of its syntax. An inspection of the texts from which these items were taken reveals a striking preponderance of verb-final sentences.<sup>12</sup> Although typologically odd from the Slavic perspective, this word order is typical of subordinate clauses in German, which are also SOV. It is possible that Upper Sorbian developed its preference for final position of the finite verb under the influence of German, especially taking into account the fact that ALL Upper Sorbian speakers are bilingual. For German, SOV order is often derived by analyzing AgrP as right-headed, so that when V raises to Agr it will end up in clause final position, as in (33).



I therefore propose that the right-headedness of AgrP also accounts for this order in Upper Sorbian, the difference being that since Agr does not raise to C in Upper Sorbian, conjugated verbs are final in both main and embedded clauses. Notice in this light that German, despite its uniform realization of relatively rich agreement morphology, is also not a null subject language. I believe that in both languages this fact is somehow connected with the direction of branching of AgrP, although formalizing this correlation is beyond the scope of this paper.<sup>13</sup>

### NOTES

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<sup>1</sup> Upper Sorbian is a West Slavic language spoken by about 50,000 people in and around the city of Bautzen in former East Germany. The language is also called Upper Lusatian. For a linguistically sophisticated and readily accessible discussion of Sorbian the reader is referred to Stone (1993).

<sup>2</sup> In this paper I shall not be concerned with the obvious empirical problem of languages like Japanese or Chinese which seem to have null subjects but lack agreement entirely. According to Jaeggli & Safir (1989), null subjects occur in the context of either very rich agreement or no agreement at all. Speas (1994) attempts to provide an explanation for this previously unexplained fact about null subjects in terms of how general principles of economy constrain the projection of an AGR phrase.

<sup>3</sup> Russian (as representative of East Slavic) is different from South and West Slavic languages in that overt thematic pronominal subjects are used in unmarked discourse. It has often been argued (Müller 1989; Kosta 1990) that Russian is a Null-subject language like Czech or Serbo-Croatian. One probable reason for this is the wide range of examples with missing subjects which can be found in Colloquial Russian. However, it seems that the 'loss' of thematic subject pronouns in Russian is part of a larger phenomenon, namely the tendency toward ellipsis of recoverable lexical material. (For an analysis of Russian as differing from classic Null-subject languages cf. Franks 1990, Lindseth & Franks 1994, as well as section 3 of this

paper.)

<sup>4</sup> Holmberg & Nikanne (1994) discuss Finnish as an apparent counterexample for this generalization. Finnish allows null referential pronouns, but requires an overt expletive in certain impersonal constructions.

<sup>5</sup> Compare also Hyams' (1986) account, according to which (re)setting of the pro-drop parameter depends crucially on the child taking note of expletive subjects in a language. Overt expletives indicate that all subjects are obligatorily lexicalized.

<sup>6</sup> Comparable constructions seem to have existed in Old Sorbian manuscripts, as illustrated in (i). One such text is Swětlik's bible translation of 1704, examples of which are cited in Michałk (1972:92-93). Moreover, colloquial Finnish possibly allows for a similar construction, as mentioned by Holmberg & Nikanne (1994:fn.3), given here as (ii)

- (i) ...ha **wona** so sta jena **wulka cíchota**  
and/expl.<sub>fem</sub> /refl./came-about/great<sub>fem</sub>/silence<sub>fem</sub>
- (ii) **ne** ovat **nämä lapset** varmaan jo oppineet lukemaan.  
expl.<sub>plur</sub>/have/these/children<sub>plur</sub>/surely/already/  
learned/to-read

<sup>7</sup> Parts of this data were presented at the annual conference of the American Association of Teachers of Slavic and Eastern European Languages (AATSEEL) 1992 at New York (with Jonathan Ludwig). See also Schuster-Sewc (1974) for discussion. The same phenomenon can apparently be found in Lower Sorbian as well.

- (i) **wono** se pada 'it is raining'  
(ii) **wono** se ščerka, až... 'it is secretly being said, that...'

<sup>8</sup> Compare German [Cpweil \*es [Ipro getanzt wird ]] ('because there is dancing going on') with [aber [Cpes wurde [pro getanzt ]]]('but there was dancing going on'). An additional complication in comparing the distribution of expletives in German and Sorbian is the fact that in German only NON-ARGUMENTAL subjects (as in the impersonal construction above) are *pro*, while QUASI-ARGUMENTAL subjects, such as subjects of weather verbs, always have to be overt.

<sup>9</sup> The table below is an alternative description of possible and impossible language types. I take '+' to mean obligatorily overt, '±' optionally overt. 'T' stands for 'thematic subjects', 'E' for expletive subjects:

|           |                                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------|
| [+T, +E]  | English                                                                                                  |
| [+T, -E]  | Russian, German                                                                                          |
| [±T, -E]  | Italian                                                                                                  |
| *[±T, +E] | Identification without licensing is impossible                                                           |
| [±T, ±E]  | Ruled out by Avoid Pronoun principle <i>unless</i> language has emphatic expletives ; Colloquial Czech   |
| [+T, ±E]  | Ruled out by Avoid Pronoun Principle <i>unless</i> language has emphatic expletives; so far not attested |

<sup>10</sup> For a more complete discussion of Null subject diagnostics see also Lindseth & Franks 1994.

<sup>11</sup> According to Stone (1993:668-669) the use of overt subject pronouns is a general feature of Upper Sorbian dialects as opposed to the literary language.

<sup>12</sup> The details are somewhat more complicated. Synthetic finite verbs appear in final position. In analytical tenses the auxiliary (clitic) usually stands in second position, with the participle or infinitive at the end of the clause. However, when the auxiliary is negated it too appears in final position. See Stone (1993:652-956), Jenč (1959:3-47), and Michałk (1956-57:3-41) for more examples and discussion.

<sup>13</sup> On the other hand, it should be mentioned that these Upper Sorbian dialects do not disallow null subjects. Instead null and overt pronouns seem to occur basically in free variation. Perhaps Sorbian personal pronouns lost the emphatic meaning which is typical for Null-subject languages under the influence of German atonic pronouns. Under such an account it is possible that null subjects in Upper Sorbian are in fact licensed and identified, but the diagnostics under (23) fail due to the non-emphatic character of overt pronouns. As a result these dialects appear to be truly optional Null-subject in the sense that no functional considerations seem to determine the choice of overt vs. covert subject pronouns.

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## ANOTHER LOOK AT LITHUANIAN IMPERSONAL PASSIVES\*

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It has been claimed in the literature that Lithuanian differs from other languages in allowing impersonal passives of unaccusative, raising and passivized verbs. In this paper I propose another analysis for these constructions. Based on the fact that 'by-phrases' of standard passives are morphologically identical to NPs marked with possessive genitive Case, I propose that the head of participial TP in Lithuanian is a nominal element which is able to assign genitive Case to its Specifier. The alleged impersonal passives in Lithuanian are then analyzed as simple instances of raising a Caseless NP to the Specifier of the participial TP.

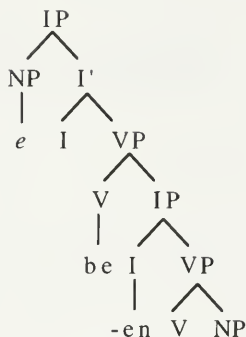
### 1. Introduction

Lithuanian has been receiving considerable attention in the literature (see Timberlake 1982, Nerbonne 1982, Keenan & Timberlake 1985, Postal 1986, Baker, Johnson & Roberts 1989, among others) because it apparently allows not only impersonal passives of unergative verbs, as in languages such as German, but also impersonal passives of unaccusative, raising and even passive verbs. Lithuanian thus seems to be an exception to the generally accepted generalization that passive morphology somehow withholds the  $\theta$ -role that would otherwise be assigned to the subject of an active sentence (see Chomsky 1981, Jaeggli 1986, Roberts 1987, and Baker, Johnson & Roberts 1989, among others).

Within the framework of Relational Grammar, such a generalization follows from the 1-Advancement Exclusiveness Law (1AEX Law), which requires that only one argument acquire subject status in the derivation of a given clause (see Perlmutter 1978, Perlmutter & Postal 1984). Within the Principles and Parameters Theory, Baker, Johnson & Roberts (1989) have proposed that this generalization follows from the fact that the D-structure representation of a passive clause has the general format as in (1) on the next page, where the passive morpheme *-en* is an argument base-generated under Infl.

As an argument generated in Infl, the passive morpheme should be assigned the external  $\theta$ -role in the sense of Williams 1981 and, therefore, cannot appear with verbs that do not assign such a  $\theta$ -role, such as unaccusative, raising, and passive verbs, as exemplified in (2a-c) respectively (Baker, Johnson & Roberts's (39)):

(1)



- (2) a. \*It is grown very fast (by children) in this orphanage.  
 b. \*It was seemed to have left (by John).  
 c. \*It was been broken (by the vase) by John.

In order to account for the Lithuanian constructions such as (3)-(5) below,<sup>1</sup> which are claimed to be analogous to those of (2), Baker, Johnson & Roberts (1989:232) propose that the Lithuanian passive morpheme is not an Infl head, but rather a noun that cliticizes to Infl. On such a proposal, 'the Lithuanian passive morpheme can appear in any NP position generated by the base', yielding possible derivations for (3)-(5).

- (3) Kur mūs gimta, kur augta?  
 where by-us bear (PASS.NT.SG.) where grow (PASS.NT.SG.)  
 'Where were we born, where did we grow up?'  
 (lit. 'where by us was getting born, where getting grown up?')  
 (Timberlake 1982)
- (4) Jo pasirodyta esant didvyrio.  
 him (GEN.) seem (PASS.NT.SG.) being hero  
 'By him it was seemed to be a hero'.  
 (Keenan & Timberlake 1985)
- (5) To lapelio būta vėjo nupūsto.  
 that leaf (GEN.) be (PASS.NT.SG.) wind (GEN.) blow (PASS.NT.SG.)  
 'By that leaf there was being blown down by the wind'.  
 (Timberlake 1982)

In this paper, I argue within the framework of the Principles and Parameters Theory that Lithuanian constructions such as (3)-(5) have been misanalyzed. Rather than being impersonal passives of unaccusative, raising and passive verbs, I propose that these constructions be treated analogously to the possessive *-ing* constructions in English illustrated in (6) below (see Abney 1987, Milsark 1988, and references therein). In particular, I propose that the head of the participial TP in Lithuanian is a nominal element that assigns genitive Case to its specifier in the same way possessive *-ing* in English does.

- (6) a. [ John's arriving late ] annoyed everyone.

- b. [ John's appearing to have behaved like a hero ] was mentioned in the meeting.  
 c. [ John's being arrested by the police ] was the gossip of the day.

The paper is organized as follows. In section 2 I present some properties of the participial T head in Lithuanian. In section 3 I lay out my proposal concerning participle constructions in Lithuanian, showing in section 4 how the so called impersonal passives can be analyzed under such a proposal. In section 5, I discuss the pattern of participial agreement in Lithuanian impersonal passives. Finally, I present some comparison between Lithuanian participles and English possessive *-ing* in section 6.

## 2. Characterizing Lithuanian participle morphemes

### 2.1 Lithuanian participle morphemes as heads of TP

As mentioned in section 1, Baker, Johnson & Roberts (1989) argue that the passive morpheme *-en* in English is generated in Infl (cf. (1)). This provides a simple account for the fact that a passive verb in English cannot take the past tense suffix *-ed*, as shown in (7) below. If the passive morpheme *-en* is generated in Infl, it is expected to be in complementary distribution with the other tense morphemes that are generated in Infl.

- (7) \*John seened/sawen by everyone.  
 'John was seen by everyone'.

By the same reasoning, were the Lithuanian passive morpheme generated in any noun position as proposed by Baker, Johnson & Roberts, we should expect constructions analogous to (7) to be well-formed in Lithuanian. Infl in a passive construction should be allowed to have tense morphemes, because the passive morpheme would not be generated under this node.

This expectation is not met, however. In Lithuanian, the past passive participle is formed by removing the infinitival ending *-ti* and adding *-tas* (nom., masc., sg.) or *-ta* (nom., fem., sg.). In turn, the present passive participle is formed by adding the endings *-mas* (nom., masc., sg.) or *-ma* (nom., fem., sg.) to the 3rd person present tense form of verb, which is composed of the stem and a vowel specifying conjugation (see Dambriūnas, Klimas, & Schmalstieg 1966). In both present and past participle constructions, the passive verb carries no tense morpheme other than the passive morpheme itself. Finite tense inflection in these constructions is carried by the copular verb *būti* ('to be'), which may be omitted in the present tense, as exemplified in (8) (see Dambriūnas, Klimas, & Schmalstieg 1966):

- (8) Ji (yra) giria-m-a.  
 she (NOM.) be (3 PRS.) praise-PPLE.-NOM.FEM.SG.  
 'She is being praised'.

The similarities in distribution between the passive participle morphemes in Lithuanian and the passive morpheme in English suggest that they are generated in the same position. I thus propose that the Lithuanian participle morphemes are also associated with a projection of Infl. I take the structure of Lithuanian participial clauses to be essentially the same as the one proposed by Baker, Johnson & Roberts in (1) for English passives, only updating it in terms of the 'Split Infl Hypothesis' (see Pollock 1989, Belletti 1990, Chomsky 1991).

I propose that the present participle *-m-* and the past participle *-t-* head a projection of TP.<sup>2</sup> Furthermore, I adopt Belletti's (1990) structure for Infl and assume that the TP headed by a participle affix is dominated by an agreement projection (AgrSP), postponing the discussion of the existence of an AgrOP projection in participle clauses until section 6.

This approach accounts for the fact that in 'double passives' such as (5), the two 'passive' morphemes are attached on two different verbs, rather than onto a single verb. Since each participle morpheme heads a projection of TP, participial forms with more than one participle morpheme are not possible, for the same reason that a participle morpheme does not cooccur with another tense morpheme.

## 2.2 Lithuanian participle morphemes as nominal Case-assigners

Recall that by taking the 'passive morpheme' in Lithuanian to be a noun, Baker, Johnson & Roberts (1989) intended to account for constructions in which the participle affix seems to receive a  $\theta$ -role other than the external one. As pointed out in section 2.1., however, their claim that the passive morpheme can be generated in any noun position makes wrong predictions with respect to the distribution of participle affixes and other tense morphemes (for other problems with such an approach, see Nunes 1994b).

Nevertheless, I keep to Baker, Johnson & Roberts's idea that the participle morphemes in Lithuanian are nominal elements for different reasons. I follow a suggestion by Jaeggli (1986:592, fn. 6), according to which an element must be N-like to carry Case and a  $\theta$ -role. Assuming that the participle affixes of standard passives in both English (see Baker, Johnson & Roberts 1989) and Lithuanian (see Nunes 1994b) are assigned the external  $\theta$ -role and marked with accusative Case, they should be nominal elements.

Two pieces of morphological evidence in Lithuanian support this claim. First, the Agr head that immediately dominates the participial TP exhibits overtly the same  $\phi$ -features (see Chomsky 1981) that show up in nominal phrases, namely, Case, gender and number, as illustrated by (9):

- (9) Krištolinis sietynas buvo mano pirk-t-as.  
 chandelier (NOM.MASC.SG.) was I (GEN.) buy-PPLE.-NOM.MASC.SG.  
 'The chandelier was bought by me'.  
 (Timberlake 1982)

The particular set of  $\phi$ -features associated with the participial Agr head, although suggestive, cannot be taken as irrefutable evidence that the participial T head is a [-V,+N] element, for these features may be amenable to another interpretation. The specific genitive form of the 'by-phrase'<sup>3</sup> of (9), on the other hand, provides unequivocal evidence.

As pointed out by Timberlake (1982:522, fn. 2), 1st person sg., 2nd person sg. and reflexive pronouns distinguish two genitive forms: one used to express possession, and the other used for complements of verbs or prepositions. *Mano*, for instance, is the 'possessive' genitive form of the 1st person sg. pronoun, whereas *manęs* is the 'verbal/prepositional' genitive form, as shown in (10) below. As we can see in (9), it is the possessive genitive that is used to express the agent of a passive, which means that there must be a nominal Case-marker in the participial clause. Under the present considerations, the participial T head is the best candidate as the source of the nominal genitive Case assigned to the 'by-phrase.'

- (10) a. Mano tėvas buvo gydytojas.  
 'My father was a doctor'.  
 b. Jis laukia manęs.  
 'He is waiting for me'.  
 (Dambriūnas, Klimas & Schmalstieg 1966)

### 3. Proposal

It seems to me that the fact that a 'by-phrase' in regular passives in Lithuanian surfaces with nominal genitive Case is the main misleading reason for taking constructions such as (3)-(5) to be impersonal passives. Baker, Johnson & Roberts (1989:235) propose that the English passive morpheme is a syntactic clitic that can form a chain with a 'by-phrase', thus resembling clitic-doubling constructions. Judging by the literal glosses given to the sentences in (3)-(5), it seems that Baker, Johnson & Roberts also take the Lithuanian passive morphemes and the 'by-phrases' (the genitive NPs) to be in a kind of clitic-doubling relation.

Something along these lines must certainly be true with respect to standard passives such as (9), since it is reasonable to assume that they behave like English passives in that their participle morpheme and 'by-phrase' receive the same  $\theta$ -role, forming a chain. Nevertheless, it is not obvious how instances of double passives such as (11) are amenable to a clitic-doubling approach:



- (11) T<sub>q</sub> lapeli<sub>q</sub> b<sub>ū</sub>-t-a  
 those leaves (GEN.MASC.PL.) be-PPLE.-NOM.NT.SG.  
 vējo nupūs-t-<sub>q</sub>.  
 wind-GEN.MASC.SG. blow-PPLE.-GEN.MASC.PL.  
 'Those leaves were (presumably) blown down by the wind'.  
 (adapted from Timberlake 1982)

The affix of the main verb of (11) presumably cannot participate in two different clitic-doubling chains with both genitive NPs, because this would violate the  $\theta$ -Criterion (see Chomsky 1981). Another problem would arise, on the other hand, if the affix of the copular verb *būti* ('to be') entered into a chain with either of the genitive NPs. Such a chain would presumably induce a  $\theta$ -Criterion violation as well, because it would involve one of the arguments of the main verb and the affix of the copula, which is not an argument (as a copula, *būti* is not a  $\theta$ -assigner).

If, by contrast, we assume that the Lithuanian participial T head associated with the participle morphemes is a nominal Case-assigner, which is independently required for regular passives such as (9), the only thing we have to say in order to account for the so called impersonal passives in Lithuanian is that the genitive NPs of these constructions are Case-marked by the participial T head. In other words, it is not necessary to extend a clitic doubling analysis to every pair composed of a participle morpheme and a genitive Case-marked NP. Under this view, the common property between 'personal' and 'impersonal' passives in Lithuanian is in terms of Case (in both types of construction the participial T head is a nominal Case-assigner), rather than in terms of  $\theta$ -Theory.

Notice also that the lack of one-to-one correspondence between participial morphology and passive constructions is not an idiosyncratic property of Lithuanian. In English, as in many other languages, such correlation does not hold either, as illustrated by the active sentence in (12), which employs participial morphology (for further discussion, see Roberts 1987, Nunes 1993, 1994c, among others):

- (12) John had seen Mary before the accident.

In the next section we will see how the proposal that the participial T head in Lithuanian assigns (nominal) genitive Case allows us to account for the apparently unusual impersonal passives of this language, while assuming an updated version of the structure proposed in (1) by Baker, Johnson & Roberts (1989).

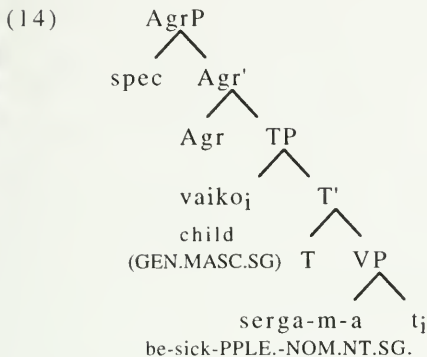
#### 4. 'Impersonal passives'

##### 4.1. Unaccusative, unergative and raising verbs

If the participial T head in Lithuanian is a nominal Case-marker, alleged instances of impersonal passives of unaccusative verbs such as (13) can be represented as simply as in (14):



- (13) *Vaiko* serga-m-a.  
 child (GEN.MASC.SG.) be-sick-PPLE.-NOM.NT.SG.  
 '(Evidently) the child is sick'.  
 (Timberlake 1982)



The NP that heads the chain with the internal  $\theta$ -role is generated in the object position of the verb, as in regular unaccusative constructions, and the participle affix is associated with a participial T head, as in standard passives. Differently from standard passives, however, the participial T head in (14) is not  $\theta$ -marked, since the unaccusative verb *sergti* ('to be sick') does not assign an external  $\theta$ -role. The Caseless NP in object position then moves to the Spec of the participial TP, where it receives (nominal) genitive Case.

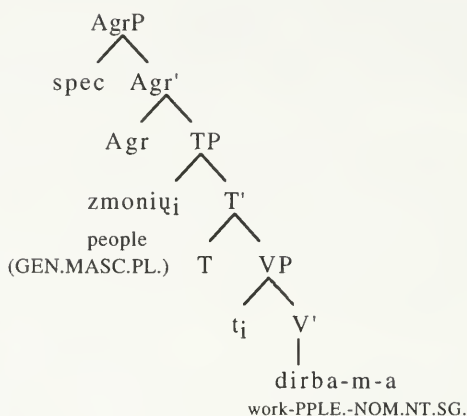
This analysis carries over straightforwardly to 'impersonal passives' of unergative and raising verbs such as (15) and (17) below. In both instances, a Caseless NP moves to the Spec of the participial TP, receiving genitive Case, as represented in (16) and (18) on the next page:

- (15) *Čia zmonių* dirba-m-a.  
 here people (GEN.MASC.PL.) work-PPLE.-NOM.NT.SG.  
 'Here people are working'.  
 (Matthews 1955)

#### 4.2 'Double passives'

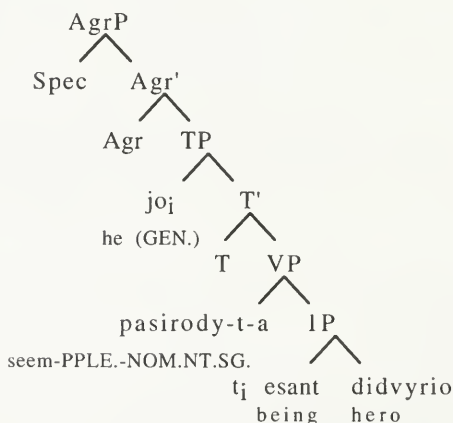
The apparently exotic double passive constructions in Lithuanian (impersonal passives of regular passives) such as (11), repeated below in (19) for convenience, receive a rather standard analysis under the approach pursued in this paper. These constructions are treated here as standard 'personal passives' like (9), the only difference being the finiteness of the TP dominating the copula, as the simplified representation in (20) shows.

(16)



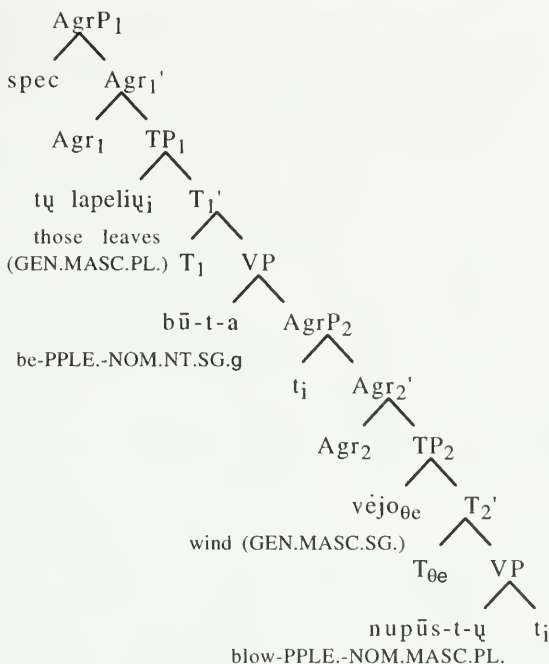
- (17) Jo pasirody-t-a esant didvyrio.  
 he (GEN.) seem-PPLE.-NOM.NT.SG. being hero (GEN.MASC.SG.)  
 'He (really) seemed to be a hero'.  
 (Keenan & Timberlake 1985)

(18)



- (19) Tų lapelių bū-t-a  
 those leaves (GEN.MASC.PL.) be-PPLE.-NOM.NT.SG.  
 vėjo nupūs-t-ų.  
 wind-GEN.MASC.SG. blow-PPLE.-GEN.MASC.PL.  
 'Those leaves were (presumably) blown down by the wind'.  
 (adapted from Timberlake 1982)

(20)



In (20), there is no element in the Spec of the VP headed by *nupūsty* ('blown down') to bear the external  $\theta$ -role. If the verb does not discharge such a  $\theta$ -role, the derivation violates the  $\theta$ -Criterion. The verb can however assign the external  $\theta$ -role to the lower participial T head, which, as a nominal element, is a possible  $\theta$ -role bearer (see section 2.2). The lower participial T head then forms a clitic-doubling chain with the genitive 'by-phrase' *vėjo* ('by the wind') in its Specifier (see section 3), represented in (20) by the index  $\theta_e$ . Once the participial T head is assigned a  $\theta$ -role, it must be Case-marked in order to comply with the Visibility Condition (see Chomsky 1986). The main verb then raises and assigns Case to T.

So far, this derivation does not differ from the derivation of standard passive constructions such as (9). The only difference between those constructions and the one in (20) is that, rather than being finite as in (9), the clause containing the copula verb in (20) is also participial. The Caseless object then raises to Spec of the upper participial TP and receives genitive Case (see Nuñez 1994b for a discussion of how such a movement satisfies the Shortest Movement Condition of Chomsky 1993).

### 5. Agreement relations

The analysis presented above provides a straightforward account of the paradigm of participial agreement in Lithuanian, which is summarized in (21) (for further discussion see Nuñez 1994a):

- (21) a. In standard passives, the participial form agrees with the subject (the underlying object) in gender, number and Case.  
 b. In 'impersonal passives', the participial verb surfaces in the nominative, neuter, singular form.  
 c. In 'double passives', there is agreement in gender number participial auxiliary, which exhibits [nom., nt., sg.] morphology.

On its way to the Spec of finite Infl, where it receives nominative Case, the object of standard passives passes through the Spec of AgrP that dominates the participial TP (see the movement of the object to Spec of AgrP<sub>2</sub> in (20)), triggering agreement with the participial form. On the other hand, the NPs that receive genitive Case in the Spec of the participial TP in 'impersonal passives' do not pass through the Spec of the participial AgrP (cf. (14), (16) and (18)). Thus, no agreement is triggered and the participial form surfaces with default agreement morphology ([nom., nt., sg.]).

Finally, in 'double passive' constructions, both types of agreement occur. The object passes through the Spec of the lower participial AgrP on its way to the main clause, triggering agreement with the main verb. Since the object receives genitive Case in the Spec of the upper participial TP, the main verb surfaces in the genitive form. On the other hand, since the object does not pass through the upper Spec of AgrP (cf. (20)), no agreement with the participial auxiliary is triggered and the copula surfaces with default features. This derives the curious fact that in 'double passives', the subject agrees with the main verb 'skipping' the auxiliary verb.

To the extent that this unusual pattern of agreement can be explained without any additional machinery that is not already required by an account of more familiar participle constructions, it provides empirical support for the analysis pursued here.

## 6. Similarities and Differences with Possessive *-ing* Constructions

If the above reasoning is correct, the so called impersonal passives in Lithuanian such as (13), (15), (17) and (19) are better analyzed as analogous to the possessive *-ing* constructions in English exemplified in (21) (see Abney 1987, Milsark 1988, and references therein):

- (21) a. [ John's arriving late ] annoyed everyone.  
 b. [ John's working in that place ] impressed everyone.  
 c. [ John's appearing to have behaved like a hero ] was mentioned in the meeting.  
 d. [ John's being arrested by the police ] was the gossip of the day.

The participle morphemes in Lithuanian and the possessive *-ing* in English may be taken to be associated with nominal functional heads that are able to assign genitive Case to their Specifiers. In En-

glish, the Case assigned by the possessive *-ing* is morphologically distinct from the Case manifested in 'by-phrases', as shown in (21d). Lithuanian participle constructions, on the other hand, do not distinguish a 'standard' genitive NP from a true 'by-phrase', because both phrases are Case-marked by the participial T head (see section 3).

Another difference between possessive *-ing* constructions in English and Lithuanian participle constructions refers to their ability to license accusative objects, as illustrated in (22) and (23):

(22) [ John's buying a house ] surprised everyone.

(23) \*Mano nupirk-t-a krištolinį sietyną.  
I (GEN.) buy-PPLE.-NOM.NT.SG. chandelier (ACC.MASC.SG.)  
'(Evidently) the chandelier was bought by me'.

If successful accusative Case assignment requires checking by an AgroP projection (see Chomsky & Lasnik 1993, Chomsky 1993), we can attribute the contrast between (22) and (23) to the existence of an AgroP projection in possessive *-ing* constructions but not in Lithuanian participle constructions. This seems to be related to the fact that there can be no projection between the participial T head and the VP if T can also be assigned the external  $\theta$ -role. Conversely, the existence of an AgroP projection between the VP and the functional head associated with possessive *-ing* prevents this affix from behaving like a passive morpheme in being assigned the external  $\theta$ -role, blocking a sentence such as (24) (for further discussion see Nuñez 1994b, 1994c):

(24) \*The house's buying by John impressed everyone.

## 7. Conclusion

According to the analysis developed above, the apparently deep differences between the participle constructions of Lithuanian and English, for instance, reduces to one morphological difference: the participial T head in Lithuanian is a Case assigner. Thus, Lithuanian participial T head is able to Case-mark not only an NP that it forms a chain with in regular passives (a 'by-phrase'), but any Caseless NP that passes through its Specifier.

This property is what derives apparently exotic impersonal passives of unaccusative, raising and passivized verbs in Lithuanian. To the extent that the term *passive* is descriptively used to refer to constructions in which a  $\theta$ -role is assigned to the participle affix, it is misleading to call these constructions impersonal passives, for their participle affixes are assigned no  $\theta$ -role at all.<sup>4</sup> Under the approach developed here, the common feature between 'personal' and 'impersonal' passives is in terms of Case, rather than  $\theta$ -Theory.

## NOTES

\* This is a shortened version of a paper I presented at the Fifth Conference of the Formal Linguistics Society of Mid-America, which took place May 20-22, at the University of Illinois at Urbana-Champaign. I am grateful to Norbert Hornstein, Ellen Thompson and Juan Uriagereka, for insightful comments and suggestions on an earlier version. Remaining problems are my own responsibility. I would also like to thank Raimune Dainora and Darius Chesonis for help with the Lithuanian data. Finally, I would like to thank the Fellowship Office of the University of Maryland for financial support.

<sup>1</sup> I maintained Baker, Johnson, & Roberts's glosses for (3)-(5). The glosses of the remaining Lithuanian sentences cited in this paper are based on the ones given by Matthews (1955) and Timberlake (1982), for the reasons discussed in section 3. I will also differ from Baker, Johnson, & Roberts in using PPLE. ('present or past participle') instead of PASS. ('passive') to translate participial forms, for reasons that will become clear. Finally, hyphens will be employed in participial forms in order to facilitate the identification of relevant morphemes.

<sup>2</sup> I follow Chomsky (1993:27-28) in taking lexical elements to be fully inflected at the point of their insertion into a phrasal marker. Descriptions such as 'the affix *x* projects into XP' or 'the affix *x* receives a  $\theta$ -role' in the course of the following discussion should thus be understood as abbreviations for 'the head associated with the affix *x* projects into XP' or 'the head associated with the affix *x* receives a  $\theta$ -role'.

<sup>3</sup> I use the term *by-phrase* to refer to the element that, together with the participle affix, realizes the external argument of a verbal predicate (see Jaeggli 1986, and Baker, Johnson, & Roberts 1989, among others).

<sup>4</sup> A similar conclusion is reached by Postal (1986) within the framework of Arc Pair Grammar.

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## THE SEMANTICS AND PRAGMATICS OF LEXICAL ASPECT FEATURES

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This paper analyzes lexical aspect as the privative features [+dynamic], [+durative] and [+telic], rather than as equipollent features. Aspectual interpretation may therefore be described as monotonic composition of verbs with other constituents: marked verb features may not be changed, whereas unmarked features may become marked by other constituents. This model also predicts the variety of interpretations observed with unmarked features. Six feature combinations are proposed, representing four Vendler classes (states, activities, accomplishments, achievements) and two other attested classes (semelfactives, and stage-level states). The non-occurring combinations are excluded by appealing to the inherent temporal structure suggested by the features.

### 1. Introduction

Many linguists and philosophers have observed that verbs represent situations (events or states) with different properties of lexical aspect, also known as *Aktionsart*. Some attribute the differences to equipollent semantic features (1),<sup>1</sup> dividing verbs into classes based on these features, often Vendler's four: state, activity, accomplishment, and achievement (Vendler 1957; Kenny 1963; Dowty 1979, *inter alia*). Others propose that aspect is structural, since adverbials and verb complements appear to change the aspectual class (Verkuyl 1972, 1993; Pustejovsky 1991). In this paper I argue that the observed range of compositional effects may be described monotonically without special compositional or structural rules, by analyzing the aspectual features as privative oppositions (2).

(1) **Previous literature: equipollent lexical aspect features**

| Aspectual Class | Telic | Dynamic | Durative | Examples           |
|-----------------|-------|---------|----------|--------------------|
| State           | -     | -       | +        | <i>know, have</i>  |
| Activity        | -     | +       | +        | <i>run, paint</i>  |
| Accomplishment  | +     | +       | +        | <i>destroy</i>     |
| Achievement     | +     | +       | -        | <i>notice, win</i> |

(2) **My analysis: privative lexical aspect features**

| Aspectual Class | Telic | Dynamic | Durative | Examples           |
|-----------------|-------|---------|----------|--------------------|
| State           |       |         | +        | <i>know, have</i>  |
| Activity        |       | +       | +        | <i>run, paint</i>  |
| Accomplishment  | +     | +       | +        | <i>destroy</i>     |
| Achievement     | +     | +       |          | <i>notice, win</i> |

In a privative analysis, marked features ([+telic], [+dynamic] and [+durative]) may not be changed by other sentential constituents, but their unmarked complements (atelic, stative and punctiliar) may become marked. Unlike previous accounts, my model predicts both a restricted range of compositional possibilities and a broader range of pragmatic implicatures associated with unmarked features. In the next section I discuss the standard analysis of the verb classes as a cluster of equipollent feature values. In §3 I use data from English to argue that the lexical aspect features are privative. I provide support from a variety of phenomena in other languages whose explanation seems to depend on lexical aspect features. In §4 I discuss the four additional feature combinations in (3), illustrating semelfactives and stage-level states and ruling out the unattested combinations based on the implicit temporal structure the features suggest.

### (3) Other privative feature combinations

| Aspectual Class    | Telic | Dynamic | Durative | Examples          |
|--------------------|-------|---------|----------|-------------------|
| Semelfactives      |       | +       |          | <i>cough, tap</i> |
| Stage-level states | +     |         | +        | <i>be sick</i>    |
| [unattested]       | +     |         |          |                   |
| [unattested]       |       |         |          |                   |

## 2. Verb classes

Models with more than four lexical aspect classes generally subdivide a Vendler class. L. Carlson (1981:40) and Bach (1986:6), for example, have two kinds of states and two kinds of achievements (cf. G. Carlson 1977; Smith 1991). Analyses with fewer distinctions collapse two Vendler classes, often accomplishments and achievements (Kenny 1963; Verkuyl 1972, 1993; Mourelatos 1981; Nakhimovsky 1988; Dowty 1991; Pustejovsky 1991, *inter alia*). I therefore base my discussion on Vendler's classes.

In all models of lexical aspect, verbs are assigned—or assumed to be assigned—to classes based on their behavior in a variety of syntactic and semantic frames. Although the frames are sometimes informally described as tests for class membership (Dowty 1979:51f, Dorr 1993:342f), they actually focus on individual features distinguishing the classes from each other. However, the tests are notoriously difficult to apply, since context and other sentence constituents often affect precisely the feature the tests are supposed to tease out. For example, *run* is generally described as an atelic activity (4), but sentences like (5), with a direct object, or like (6), with a goal prepositional phrase, represent telic accomplishments.

- |                                   |          |
|-----------------------------------|----------|
| (4) Lee <b>ran</b> .              | Activity |
| (5) Lee <b>ran a mile</b> .       | Accomp.  |
| (6) Lee <b>ran to the store</b> . | Accomp.  |

From this type of data, Verkuyl (1972, 1993), Pustejovsky (1991) and others have proposed explicit rules for describing when

the aspectual class of a sentence differs from that of the verb.<sup>2</sup> The need for explicit compositional rules stems primarily from the assumption that verbs fully specify equipollent features, and that both positive and negative values have equal semantic weight and define a homogeneous class (cf. Jakobson 1932; Forsyth 1970:7; Smith 1991:28). In an equipollent analysis [+telic] verbs denote situations with an inherent end, and [-telic] those without an end; [+dynamic] verbs denote events, and [-dynamic] states; [+durative] verbs denote situations that hold at an interval of time, and [-durative] punctiliar situations. With fully specified features, independent principles are required to explain how and why sentences like (5)-(6) become [+telic], given that *run* is [-telic].

Although the positive features define a homogeneous class with a consistent interpretation, the negative features do not. L. Carlson observes this asymmetrical variation: he marks verbs [+feature] if they pass relevant tests 'WITHOUT ANY COMMENT' and [-feature] 'otherwise' (1981:39). Thus [-feature] verbs, with the appropriate pragmatic comment, may, in fact, be interpreted as [+feature], whereas [+feature] verbs have a uniform interpretation. This asymmetrical behavior is the hallmark of a privative opposition, in which only homogeneous classes are marked (1). Unmarked classes have no positive characterization but are defined 'as not inherently possessing the meaning of the 'marked' member' and 'sometimes may even carry the meaning which is inherent in the 'marked' member' (Forsyth 1970:6). As a non-linguistic example, consider religious groups as privative oppositions: Christians, Muslims, Jews, and Buddhists are relatively homogeneous classes characterized by certain beliefs and behaviors; non-Christians, non-Muslims, etc. are not. Contrast religious groups with the equipollent opposition between male and female, where each class may be positively described.

In my privative analysis, the perception of equipollent lexical aspect relations may be attributed to the Gricean maxims of quantity and quality (Grice 1975). A hearer may infer [-feature] from the fact that the speaker did not use a verb asserting [+feature]; that is, he infers the speaker would have asserted [+feature] if she could have. Since the [-feature] interpretation is derived by pragmatic implicature, it is cancelable. Therefore, in the appropriate pragmatic context verbs unmarked for telicity, dynamicity or durativity may be used to implicate presence of the relevant feature.

### 3. Aspectual features

I now discuss the three features, arguing that each represents a privative opposition. For the telic opposition I show that [+telic] has a consistent, uncancelable semantic meaning, whereas verbs not marked telic may be interpreted as either telic or atelic depending on other lexical constituents and the pragmatic context. Precisely analogous arguments may be made for the dynamic and durative oppositions, however I limit myself to demonstrating that verbs with

the unmarked features (stative and punctiliar verbs, standardly treated as [-dynamic] and [-durative]) may have the meaning of the marked member. See Olsen (1994) for a full discussion.

### 3.1 Telicity as a privative opposition

Telic verbs are said to denote situations with an inherent end or goal (Garey 1957:106; Brinton 1988:27; Smith 1991:29). In a test that goes back to Aristotle's *Metaphysics* (1048b: Ross 1928), progressive forms of atelic verbs are said to entail the corresponding perfect form (7), whereas telic verbs do not (8)-(9).

- (7) Lee is running **entails** Lee has run.  
 (8) Lee is destroying his car **does not entail** Lee has destroyed it.  
 (9) Lee is winning **does not entail** Lee has won.

However, as noted above, sentences with atelic verbs may be made [+telic] by other constituents. With these constituents, the atelic entailment relationship fails (10)-(11).<sup>3</sup>

- (10) Lee is running a mile **does not entail** Lee has run a mile.  
 (11) Lee is running to the store **does not entail**  
 Lee has run to the store.

Accounts of telicity based on equipollent features or structural composition fail to predict that [+telic] may not be changed by other sentential constituents, whereas [-telic] may. Furthermore, neither approach accounts for the fact that, in the appropriate pragmatic context, atelic verbs may be used to implicate a telic situation, without addition of a telic constituent. For example, if both speaker and hearer mutually believe that Lee runs five miles every day, *Lee is running* may be used by the speaker to implicate that Lee is in the middle of one of these five-mile runs, and *Lee has run* that one is completed. In such a context, *Lee is running* does not entail *Lee has run*. The telic and the atelic interpretations of bare *run* are pragmatic implicatures, since they are cancelable without contradiction (12) (Grice 1975).

- (12) Lee is running around like a maniac, not his usual five miles.

*Running* is not an exceptional case: according to Dowty (1979:61), any activity verb may have a contextually-dependent end point. In contrast, [+telic] is semantic and not cancelable (13).<sup>4</sup> Although durative adverbials are supposed to make accomplishments atelic, they actually make them iteratively telic, whether the [+telic] feature is contributed by the verb (13a) or by another constituent: *to the store* in (13b).<sup>5</sup>

- (13) (a) Lee won for years.  
 (b) Lee ran to the store for years.

Thus verbs marked [+telic] are uniformly interpreted as such, independent of other constituents or pragmatic contexts, whereas



verbs unmarked for telicity do not have a homogeneous interpretation. Telicity is therefore best analyzed as a privative opposition, with only [+telic] marked. If [-telic] is not part of verb semantics, we should not find phenomena sensitive to atelicity. Work on unaccusative verbs supports this analysis. Although telicity and atelicity have been suggested as diagnostics for unaccusativity and unergativity, respectively (L. Levin 1986; Zaenen 1986; Van Valin 1990), closer examination reveals that only telicity is determinate: intransitive telic verbs are unaccusative, whereas atelic verbs may be either unergative or unaccusative (Levin & Rappaport Hovav 1994).

### 3.2 Dynamicity as a privative opposition

Dynamicity also shows privative asymmetry. The opposition between events and states is virtually ubiquitous in the literature, based on a constellation of properties, including the notions of change, agency, energy and duration (cf. Levin & Rappaport Hovav 1994). Dowty (1979:184) identifies dynamic situations with an ability to occur in *do* constructions (14).

- (14) **What Lee did** was run/destroy his car/notice a bug/?be Thai.  
Lee ran/destroyed his car/noticed a bug/?was Thai, and **so did I**.

Jackendoff (1983:68) puts events in frames entailing the notion 'happen' (15).

- (15) **What happened/occurred/took place was...**  
Lee ran/destroyed his car/won a race/noticed a bug/?was Thai.

Chung & Timberlake (1985:215-6) and (Brinton 1988:3,28,35) observe that verbs that have agents are all events—although not all events have agents (16).

- (16) The rock rolled down the hill.

They therefore suggest agency frames as tests: the imperative (17), *persuade* verb complements (18), and agentive adverbials (19).<sup>6,7</sup> Some also cite the progressive as an event test (20) (Dowty 1979).

- (17) Run home! Destroy the letter! ?Be Thai!  
(18) I persuaded Lee to run home/destroy the car/?be Thai.  
(19) Lee intentionally ran home/destroyed the car/?was Thai.  
(20) Lee was running/destroying the car/winning/?being Thai.

The diagnostics for this opposition are tellingly asymmetrical: they only identify contexts in which dynamic verbs are found. No stative frames are proposed.<sup>8</sup> However, even 'classic stative predicates like *know* and *love*' (Dowty 1979:179) may appear in these contexts with dynamic interpretations (21)-(26).<sup>9</sup>

(21) **What X did was...**

What Ted did was always **know** where Mary was.

What Jane did was **love** her husband.

What the garbage did was **stink**.

What Mary's face did was **glow** with excitement.

(22) **What happened was...**

What happened was Ted **knew** where Mary was.

What happened was Jane **loved** her husband.

What happened was the garbage **stank**.

What took place was Mary's face **glowed** with excitement.

What happened was there **was** a lot of that. (Ketza Levine, WBEZ)

(23) **Imperatives**

**Know** about the movie rating system. (*Chicago Tribune*)

**Love** your enemies. (RSV: Matthew 5:44)

Pepsi...reminds you to **be** young, have fun, drink Pepsi. (ad)

(24) **Complements of persuade verbs**

The recent assault **forced** Ted always to **know** where Mary was.

Terry **persuaded** Jane to **love** her husband.

...how can you **compel** the Gentiles to **live** like Jews? (RSV: Galatians 2:14)

(25) **Progressive**

Jim Johnson, in his fifties...a lot of people not **knowing** him from outside football. (Dick Enberg, NBC Sports, 1-30-94)

I'm just **loving** it. (attested by Bland 1988:60)

Digory was **disliking** his uncle more every minute. (Lewis, C.S. 1955. *The Magician's Nephew*. New York: Collier, 20)

If I do that...it's **being** in charge of the whole area. (E. Olsen, 2-2-94)

(26) **Agentive adverbials**

Lee **was deliberately** silent.

Joseph of Arimathea...**was** a disciple of Jesus, but **secretly**. (RSV: John 19:38)

Since states are unmarked for telicity as well as dynamicity, my analysis predicts that they may be used to implicate situations that are both dynamic and telic, that is, accomplishments. Several classes of verbs alternate regularly between states and accomplishments. *Fill* verbs with LOCATUM subjects (Levin 1993:71) have both interpretations (27a); AGENTIVE subjects make only accomplishment readings available (27b).

(27) **Fill verbs**: bind, block, carpet, fill, flood...

(a) Water flooded the house.

State/Accomp.

(b) I flooded the house with water.

Accomp.

Verbs that undergo Container Subject (28) and Raw Material Subject alternations (29) (Levin 1993:72) also have both interpretations.

- (28) **Container Subject alternating verbs:** contain, include, omit...  
 (a) The affidavit **includes** the revised language. State  
 (b) I **included** the revised language in the affidavit. Accomp.
- (29) **Raw Material Subject alternating verbs:** bake, carve, grow...  
 (a) That rich Illinois soil **grows** wonderful corn. State  
 (b) Farmers **grow** wonderful corn from that rich soil. Accomp.

My analysis of dynamicity as a privative opposition is further supported by the fact that dynamicity and not stativity serves as a semantic determinant in a variety of linguistic phenomena. Whereas the IMPERFECTIVES in Navajo (30) and Mandarin (31), are restricted to events (Smith 1991; cf. Dahl 1985:90), no language restricts either imperfective or perfective grammatical aspect to states (Dahl 1985; Olsen 1994).

- (30) hooghangóó **hish'nah** Activity  
 'I'm **crawling** along toward the house' (Smith 1991:400)
- (31) Zhangsan **zai xie yi-feng xin** Accomp.  
 Zhangsan / **ZAI** / **write** / one-classifier / letter  
 'Zhangsan **is writing** a letter' (Smith 1991:357)

Van Valin (1990) claims that all UNACCUSATIVE verbs have a state in their aspectual structure; they either are states, or they are accomplishments and achievements with a result state. Levin & Rappaport Hovav (1994) argue that this is not the case for the simple states. They show that the notion of stativity is continuous rather than discrete, and that even the most stative unaccusatives—verbs of emission such as *shine* and *glow* (cf. Levin 1993) 'show uniform behavior with respect to the Unaccusative Hypothesis,' but varying behavior on stative tests. Neither a continuum of stativity, nor inconclusive results on stative tests is unexpected if a stative interpretation depends on pragmatic implicature.

### 3.3 Durativity as a privative opposition

Durative situations—states, activities and accomplishments—are said to take an interval of time and achievements to denote punctiliar situations. Tests for durativity are used primarily to distinguish accomplishments from achievements; both Dowty (1986) and Smith (1991:31) identify problems with this distinction. Dowty concludes it is not semantic but due to how we 'normally understand' events (1986:42-43; cf. Mourelatos 1981), i.e. to pragmatics. However variation is only noted with verbs unmarked for durativity: accomplishments are always durative, but achievements are not always punctiliar. Punctiliarity is therefore an implicature associated with a verb unmarked for durativity, an implicature which may be canceled by durative temporal adverbials such as *during the same period* (32), *when*-clauses (33), and *for a long time* (34). For (32) the object *increase* also requires *notice* to span an interval.<sup>10</sup>

- (32) **During the same period**, immigration lawyers, family counselors and shelter operators **have noticed** a sharp increase in the number of battered and abused immigrants who feel caught in the situation. (wsj/wsj29)
- (33) John **was dying when** the doctor arrived. (Dowty 1986:43)
- (34) He's **been dropping** that shoe **for a long time**. (NPR on Gephardt's switch to anti-NAFTA)

In fact, from one perspective, the achievement *die* in (33) 'is normally a process...when people die of natural causes, it's a slow deterioration, not like putting out a light bulb' (Forensic pathologist, *Autopsy* TV program). In other words, it is not normally [-durative].

Further support for a privative analysis of durativity comes from restrictions on grammatical imperfectives (Olsen 1994). In Mandarin, for example, the grammatical imperfective markers *zai* and *zhe* occur only with durative verbs (35)-(36), and not with verbs unmarked for durativity (37)-(38). No language appears to restrict either imperfective or perfective grammatical aspect to punctiliar verbs.

- (35) Ta-men **zai da qiu** Activity  
3-p / **ZAI** / play / ball  
'They are **playing** ball' (Smith 1991:357)
- (36) **Qi-zhe** ma zhao ma Activity  
**ride-ZHE** / horse / seek horse  
'Look for a horse **while riding** a horse' (Smith 1991:361)
- (37) \*Ta **zai ying sai pao** Achieve.  
3s / **ZAI** / win / race / run  
'S/He is **winning** the race' (Smith 1991:357)
- (38) \*Ta **si-zhe** Achieve.  
3s / **die-ZHE**  
'S/He is **dying**' (Li & Thompson 1981:196)

I have argued that lexical aspect consists of three marked members of privative semantic oppositions, with uncancelable interpretations, and their unmarked counterparts, the interpretation of which depends on pragmatic context and other sentential constituents. Equipollent and structural accounts describe this data either by violating monotonicity, in allowing features to change (e.g. Smith 1991) or by introducing additional features and compositional rules (Pustejovsky 1991; Verkuyl 1993). The generalization that only atelicity, stativity and punctiliarity may change does not follow naturally from such models.

#### 4. Other feature combinations

Vendler's classes represent only four of eight possible combinations of the three features. Two of the remaining combinations are attested (39), repeated from (3).

(39) **Other privative feature combinations**

| Aspectual Class    | Telic | Dynamic | Durative | Examples          |
|--------------------|-------|---------|----------|-------------------|
| Semelfactives      |       | +       |          | <i>cough, tap</i> |
| Stage-level states | +     |         | +        | <i>be sick</i>    |
| [unattested]       | +     |         |          |                   |
| [unattested]       |       |         |          |                   |

**4.1 Semelfactives: [+dynamic]**

The combination in (39a) represents a class of verbs which Smith (1991:28) calls SEMELFACTIVES, from the Latin *semel* meaning 'once'. According to Smith (1991:30), verbs like *cough*, *knock*, *hiccup* and *tap* stereotypically denote single 'instantaneous atelic events'.<sup>11</sup> In my analysis semelfactives are marked [+dynamic] and unmarked for telicity and durativity. The interpretations of atelicity and punctiliarity associated with them follow from pragmatic contexts rather than semantic features. Other constituents, such as a direct object (40) or a verb particle (41), make semelfactive verbs telic. They may also be made durative, as in (40), where the object *message* conditions an iterative durative interpretation of *tap*.<sup>12</sup>

(40) The telegraph operator **tapped a message**.

(41) John **coughed out** a bit of bone.

**4.2 Stage-level states: [+telic, +durative]**

The feature combination in (39b) describes [+telic], generally stative, situations. G. Carlson (1977) proposes two kinds of states: individual-level and stage-level. INDIVIDUAL-LEVEL STATES are always true of an individual. STAGE-LEVEL STATES have an inherent end, that is, telicity. According to Carlson, *be sick* (42) is a stage-level [+telic] state which is expected to end, whereas intelligence (43) is not.

(42) Jake is sick.

(43) Jake is intelligent.

The relative temporariness of a state has also been proposed as a determinant for selection of Spanish auxiliaries (cf. discussion in Luján 1981:167). Like Vendler's states, stage-level states may be used to implicate either stative or dynamic situations. G. Carlson (1977) claims, in fact, that the stage-level states are more event-like than individual-level states: they 'are more akin to things that HAPPEN' (1977:448, emphasis in original).

**4.3 Unattested classes: [+telic]; [Ø]**

The remaining classes, (39c) and (39d), appear not to occur at all. The first, marked only [+telic], represents a verb with an inherent end, but no other consistent features. The closest candidates in English would be verbs such as those in (44) which denote the end of a situation (Newmeyer 1975:25; Brinton 1988:144).

- (44) break off, cease, cut out, desist (from), finish, give up/over, knock off, lay off, stop

However these verbs also denote the transition to an end; they are therefore [+dynamic]. Nouns have no such restriction; they may simply denote the end of a situation without a transition (45).

- (45) (the) destination, end, goal

Thus the inability to denote a simple end seems to be linked to the category VERB. Since verbs with no marked features also fail to occur, we might describe a class restriction as in (46).

- (46) A VERB must be minimally [+dynamic] or [+durative].

#### 4.4 The temporal structure of the features

The restriction in (46) may be tied to the temporal characteristics implicit in the lexical aspect features, as summarized in (47).

- (47) If a verb is [+durative], it denotes a **temporal interval**.  
 If a verb is [+dynamic], it denotes **change (over time)**.  
 If a verb is [+telic], it denotes **an end**.

The feature [+durative] asserts that an event takes an interval. The feature [+dynamic] presupposes such an interval, since one may not identify CHANGE at a point. The feature [+telic] asserts that the duration and change must reach an end. Thus situations develop along a temporal axis as in (48): they are first dynamic and durative and then reach the end denoted by telic.

- (48) [+dynamic]  
 [+durative] [+telic]  
 Time----->

The interval denoted by [+durative] and/or [+dynamic] may be called the event NUCLEUS and that denoted by [+telic] the CODA (cf. Freed 1979). By saying that a given feature is 'marked' on a verb or predicate, I assume that the verb denotes the piece of temporal structure associated with that feature. The aspectual classes may therefore be represented as in (49).

| (49) Class      | NUCLEUS                   | CODA     |
|-----------------|---------------------------|----------|
| State           | [+durative]               |          |
| Activity        | [+dynamic]<br>[+durative] |          |
| Accomplishment  | [+dynamic]<br>[+durative] | [+telic] |
| Achievement     | [+dynamic]                | [+telic] |
| Semelfactive    | [+dynamic]                |          |
| Temporary state | [+durative]               | [+telic] |

Unlike the six attested classes, the unattested classes in (50) do not specify a nucleus.



|      |                    |         |          |
|------|--------------------|---------|----------|
| (50) | Unattested classes | NUCLEUS | CODA     |
|      | ?                  |         | [+telic] |
|      | ?                  |         |          |

The generalization in (46) may therefore be restated as a NUCLEUS requirement (51).

(51) A VERB must denote a situation with a nucleus. [(46) restated]

This restriction echoes those pertaining to other timing units, such as the phonological syllable, for which a nucleus is required, but an onset or a coda is relatively optional (Goldsmith 1990:74; Prince & Smolensky 1993:87).

## 5. Conclusion

I have argued that the lexical aspect classes should be described as combinations of marked privative features, rather than fully specified equipollent features. Unlike previous accounts, my analysis allows aspectual composition to be monotonic without introducing stipulative rules. My privative model also predicts the range of pragmatic implicatures associated with unmarked features. In addition, I have shown that the features may be used to describe other classes proposed in the literature. I excluded unattested classes by appealing to the temporal structure implicit in the features. In recent work on lexical aspect, Pustejovsky (1991:48) argues that a level of event structure is necessary, since 'grammatical phenomena...make reference to the internal structure of events.' However, as I have shown, several of these grammatical phenomena, including unaccusativity and grammatical aspect, may be perspicuously described as dependent on marked privative features. The work reported here suggests that event structure might be derivable from these features and their implicit temporal organization. I pursue this hypothesis in my analysis of lexical and grammatical aspect in Olsen (1994).

## NOTES

<sup>1</sup> See charts in Brinton (1988:57) and Smith (1991:30). Brinton has two additional features (homogeneity and multiplicity) as well as an additional class (series). Smith has an additional class (semelfactive: see §4).

<sup>2</sup> In Verkuyl's model, *run* is [+ADD TO, -SQA], and *Lee, a mile*, and *to the store* are each [+SQA]. By the 'plus principle,' sentences with three positive features have 'terminative' sentential aspect; others are 'durative.' Sentence (4) has two: [+ADD TO] from *run* and [+SQA] from the subject; it is therefore durative. Sentences (5)-(6) are terminative, since they also have a [+SQA] complement. For Pustejovsky (1991) the aspectual interpretation of (5)-(6) results from an 'event-type shifting'—from activity to accomplishment/ achievement.

These shifts 'may occur because of explicit rules setting out the ways events can compose and be modified' (1991:64-5).

<sup>3</sup> Verkuyl (1972, 1994) has a detailed discussion of the types of constituents that add telicity ([+SQA] in his analysis). I assume that a constituent C adds a feature F, if without C the verb patterns like other verbs unmarked for F, and with C like verbs marked for F.

<sup>4</sup> Surprisingly, Aristotle claims that the Greek *βαδιζω* 'walk' lacks the atelic entailment pattern, based, I suggest, on pragmatic implicature, since the verb lacks a telic prefix. At that time one walked only to get somewhere, not for exercise. In the entailment passage most often cited (i), he claims:

- (i) ...it is not true that at the same time a thing is walking and has walked, or is building and has built, or is coming to be and has come to be, or is being moved and has been moved...But it is the same thing that at the same time has seen and is seeing, or is thinking and has thought. The latter sort of process, then I call an actuality [*ενεργειαν*], and the former a movement [*κινησιν*] (*Metaphysics* 1048b).

One translator of Aristotle captures the pragmatically implicated end in this passage as 'walking...is not having had a walk'.

<sup>5</sup> This may not be demonstrated by the entailment test, however, since the present progressive is independently unacceptable with durative adverbials (i).

- (i) (a) \*Lee is running to the store for years.  
(b) \*Lee is running a mile for years.

<sup>6</sup> Brinton (1988:32) cites additional agentive frames from King (1968:12-27) 'adjectives of praise and blame (*foolishly, presumptuous, thoughtless*), adjectives of the 'eager' group (*anxious, reluctant*), purpose expressions, causative 'have', 'forget to' expressions (*decide to, remember to, neglect to*), certain catenatives (*mean to, hasten to, up and fixing' to*), commands, permissive *may, shall I*, [and] 'tell to do something' expressions'.

<sup>7</sup> Agency is closely related to the notion of control, the ability to effect change. *Notice* and *win* are better on the agentive tests if it is clear in the context that the subject has control over the outcome (i-ii) (cf. Dowty 1979:184).

- (i) I persuaded Michael Jordan to win the slam-dunk contest.  
(ii) Paul noticed my new haircut intentionally (= made a point to look at).

<sup>8</sup> Dorr (1993:343) cites this as a problem with using the tests to classify verbs in a corpus: classes can only be uniquely identified if the frames give environments where the classes DO occur, rather than where they DO NOT. Dorr had to add two tests to the list in Dowty (1979) to identify *any* verb class.

<sup>9</sup> Levin & Rappaport Hovav (1994) observe that the *stink* and *glow* sentences (their examples) also have an inceptive interpretation.

<sup>10</sup> *Notice* in (37) is interpreted as durative even without a plural subject or a durative adverbial (i).

(i) An immigration lawyer has noticed a sharp increase.

<sup>11</sup> Bach (1986:6) describes a similar class of 'momentaneous happenings,' including *notice*, *recognize*, and *flash once*. He contrasts them with achievements (e.g. *die*, *reach the top*) which have durative preliminary stages.

<sup>12</sup> The iterative reading is not the only durative reading for semelfactives in the progressive: *cough* in (i) represents a single durative cough in progress.

(i) John and I were eating together. I had turned to look at the dessert tray, when I heard a **cough** followed by a choking sound. I guess the waiter saved him with a quick-thinking Heimlich maneuver. He said John **was coughing** when he grabbed him around the middle.

This is at least true in English, French and Chinese (Olsen 1994). The Slavic semelfactives appear to have a more uniform single punctiliar event reading (Rami Dhingra-Nair, p.c.).

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## COMPLEXITY LIMITATIONS ON PARSERS AND GRAMMARS

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In this paper I will discuss two types of A'-dependencies in Hungarian and their relevance for the Bounded Connectivity Hypothesis of Stabler 1994. The first type of construction, wh-chains, will provide straightforward evidence for the BCH, while the other, topicalization, seems to be at odds with Stabler's theory. I will argue, however, that this apparent counterexample can be accounted for by restricting the domain of application of the BCH to truly ambiguous structures. Multiple topics occupying the same position obey the Nested Dependency Constraint, which eliminates ambiguity. The memory burden posed by iterated occurrences of the same relationship is thus relieved and the BCH becomes unnecessary. This will be argued to provide further motivation for treating the BCH as a consequence of the limitations of human memory capacity.

### **1. Introduction: The Bounded Connectivity Hypothesis**

Most recent theories of memory have assumed the existence of (a limited number of) units that can be employed for a variety of different purposes. Given this view, it is surprising that there are certain grammatical constructions that are perfectly acceptable if they occur only once, but that cannot be iterated. Probably the most well-known of such constructions is center-embedding:

- (1) a. The house [(that) the malt lay in] was built by Jack.
- b. \*The house [(that) the malt [(that) the rat ate] lay in] was built by Jack.
- c. ??She loves [the house [(that) the malt [(that) the rat ate] lay in]].

Stabler 1994 reviews a number of operations that have a similar (low) upper bound on iterability, including verb raising in Dutch and German, causativization in Quechua, and wh-movement of NPs with the same morphological case in Hindi. In order to account for these phenomena, Stabler puts forward a fundamentally new theory of human memory. He proposes that instead of models of human processing mechanisms having available a homogeneous memory store, memory is better characterized as consisting of a small number of highly task-specific units that cannot be redeployed for a different purpose. These units or registers correspond to linguistic relations such as constituency or case-assignment. The result is that having more than two occurrences of the same relation within a given domain puts a heavy burden on memory making the structure marg-

inal or unacceptable. This hypothesis is formulated as the Bounded Connectivity Hypothesis (BCH):

- (2) There is a natural typology of linguistic relations such that the psychological complexity of a structure increases quickly when more than one relation of any given type connects a (partial) constituent  $\alpha$  (or any element of  $\alpha$ ) to any element external to  $\alpha$ .

According to the BCH, (1b) is out because, given usual assumptions about left-to-right incremental parsing, there is a stage in the parse which contains the three initial NPs but where none of the case-assigners have been encountered yet. At this stage there are three outstanding case-relations of the same type, whereas in (1a), which is acceptable, we find at most two outstanding case-relations at any point. The contrast between the marginal (1c) and the unacceptable (1b) shows that case assignment is indeed the crucial grammatical relation here: although (1c) contains a string that is superficially identical to (1b) (*the house [(that) the malt [(that) the rat ate] lay in]*), in (1c) the first NP, *the house*, has already received Accusative from the matrix verb, thus there are only two outstanding case relations (for further arguments see Stabler 1994).

Another example discussed by Stabler in support of the BCH is taken from Hindi. Hindi allows multiple wh-extractions landing in the same [Spec, CP]. As Stabler points out, however, this is only possible if the NPs heading the A'-chains are marked with distinct morphological case. In this paper I want to discuss two types of A'-relations in Hungarian, which are similar to the Hindi data. They both involve A'-movement to the same syntactic position, but only one of them seem to directly fall under the Bounded Connectivity Hypothesis. Wh-movement will be shown to behave like the Hindi examples discussed by Stabler, providing some rather strong evidence for the BCH. Topicalization, on the other hand, obeys a grammatical constraint, requiring that the dependencies between the topic NPs and their traces be nested. These constructions seem to be exempt from the restriction formulated in the BCH. The paper is organized as follows: the next section will give the necessary background on Hungarian syntax. In section 3, I will examine the properties of wh-movement which are relevant for the BCH and show that they support Stabler's theory. In section 4, I will turn to topicalization which seems to violate the BCH. I will argue, however, that this is due to the existence of an independent constraint which ensures the unambiguous interpretation of topicalized structures. It will be suggested that this constraint, that of nested dependencies, relieves the kind of memory burden that is otherwise present in iterated constructions, thus rendering the BCH's operation unnecessary. This is seen as providing further support for Stabler's view that the restriction captured in Bounded Connectivity Hypothesis arises as a consequence of the limited memory space available to the parser. Section 5 will offer a summary and some implications.

## 2. Some background in Hungarian

Stabler proposes that the limitations on human memory can be stated in terms of independently motivated linguistic relations, case, A'-chains and V-movement being some of the important ones. Hungarian, a non-Indo-European language, is interesting for this hypothesis since it has rich morphological case distinctions as well as a few different A'-relations. In the following I will be focusing on two of these, wh-movement and topicalization.

### 2.1 Wh-movement

In Hungarian, all wh-phrases must be in [Spec, CP] at S-structure. Movement can be to the local [Spec, CP] (4) or long-distance (5):<sup>1</sup>

- (3) Tibor hallotta Mari-tól, [hogy Pista összeveszett Kati-val].  
Tibor-Nom/heard/Mari-from/that/Pista-Nom/fought/Kati-with  
'Tibor heard from Mari that Pista had a fight with Kati.'
- (4) Tibor hallotta Mari-tól, [hogy kivel veszett össze Pista].<sup>2</sup>  
Tibor-Nom/heard/Mari-from/that/who-with/fought/Pista-Nom  
'Tibor heard from Mari that Pista had a fight with Kati.'
- (5) Ki-vel<sub>i</sub> hallotta Tibor Mari-tól, [hogy Pista összeveszett t<sub>i</sub>]?  
who-with/heard/Tibor/Mari-from/that/Pista-Nom/fought  
'With whom did Tibor hear from Mari that Pista had a fight?'

Since multiple wh-movement is possible, there may be more than one wh-phrase in a given [Spec,CP]. These wh-chains can originate in different clauses. The order of the wh-phrases in [Spec,CP] is relatively free and reflects their respective scope (cf. É. Kiss 1987):

- (6) wh<sub>i</sub> wh<sub>j</sub> [ t<sub>i</sub> [ t<sub>j</sub> ] ]  
wh<sub>i</sub> wh<sub>j</sub> [ t<sub>j</sub> [ t<sub>i</sub> ] ]
- (7) a. Ki-től<sub>i</sub> ki-vel<sub>j</sub> hallotta Tibor t<sub>i</sub>, [hogy Pista  
who-from/who-with/heard/Tibor-Nom/that/Pista-Nom  
összeveszett t<sub>j</sub>]?  
fought  
'From whom did Tibor hear that Pista had a fight  
with whom?'
- b. Ki-vel<sub>j</sub> ki-től<sub>i</sub> hallotta Tibor t<sub>i</sub>, [hogy Pista összeveszett t<sub>j</sub>]?  
who-with/who-from

### 2.2 Topicalization

Another type of A'-relation in Hungarian results from the movement of an NP to the front of the sentence with a corresponding change of interpretation whereby the initial NP is taken to be the topic the sentence (or the discourse) is about. This is to be distinguished from focusing, that is, giving special emphasis or a contrastive interpretation to a phrase. The latter will be mentioned briefly in 4.

Topicalization, like *wh*-movement, can be local or long-distance. More than one topic is possible and NPs originating in different clauses can be moved to the same topic position.

- (8) Kati-val Mari-tól Tibor hallotta, [hogy Pista összeveszett].  
 Kati-with/Mari-from/Tibor-Nom/heard/that/Pista-Nom/fought  
 'As for Mari, Tibor heard from her that as for Kati, Pista had a fight with her.'

I will assume, following É. Kiss 1987 and MarácZ 1989, that topicalization structures result from syntactic movement rather than base-generation. The topic NP binds a gap in the clause, never a resumptive pronoun. Further, I will follow most syntactic literature in assuming that topics are adjoined to CP whereas *wh*-movement terminates in [Spec,CP]. The exact position of these phrases and the syntactic analysis of their recursion is not crucial for the present discussion; for a variety of proposals, see Brody 1990, É. Kiss 1987, 1992, Horvath 1986, and MarácZ 1989, among others.

With these background notions in hand, we can now turn to the types of multiple movement constructions relevant for the BCH.

### 3. Data supporting the BCH: *wh*-movement

Given the possibility of multiple *wh*-movement, it is interesting to examine whether there are any restrictions on the *wh*-phrases occupying the same [Spec,CP]. In Hungarian, each argument of a given verb must bear a distinct case. It is thus necessary to look at long-distance movement and see if it can create the relevant structures. The underlined NPs in (9) are marked with the same morphological case. Local *wh*-movement is possible, as (10) shows, but long-distance movement of the embedded *wh*-phrase is blocked under either interpretation (11):

- (9) Tibor hallotta Mari-tól, [hogy Pista elvált  
 Tibor-Nom/heard/Mari-from/that/Pista-Nom/divorced/  
 Kati-tól].  
 Kati-from  
 'Tibor heard from Mari that Pista divorced Kati.'
- (10) Ki-től<sub>i</sub> [hallotta Tibor t<sub>i</sub>, [hogy ki-től<sub>j</sub> [vált el  
 who-from/heard/Tibor-Nom/that/who-from/divorced/  
 Pista t<sub>j</sub>]]?  
 Pista-Nom  
 'From whom did Tibor hear that Pista divorced whom?'
- (11) a. \*Ki-től<sub>i</sub> ki-től<sub>j</sub> hallotta Tibor t<sub>i</sub>, [hogy Pista  
 who-from/who-from/heard/Tibor-Nom/that/Pista-Nom/  
 elvált t<sub>j</sub>]?  
 divorced  
 'From whom did Tibor hear that Pista divorced whom?'
- b. \*Ki-től<sub>i</sub> ki-től<sub>j</sub> hallotta Tibor t<sub>i</sub>, [hogy Pista elvált t<sub>j</sub>]?  
 who-from/who-from

This is exactly what we expect to find given the BCH. The *wh*-phrases are connected to the rest of the structure by relations of the same kind, namely, *wh*-chains with identical case. Under Stabler's theory, this should result in an increase of complexity leading to parsing difficulties, in this case unacceptability.<sup>3,4</sup>

There is another *wh*-movement phenomenon providing even more striking support for the Bounded Connectivity Hypothesis. In Hungarian, the subject typically bears Nominative, which is preserved in local *wh*-movement:

- (12) *Jani mondta*, [hogy *Erika találkozott Juli-val*].  
 Jani-Nom/said/that/*Erika-Nom/met/Juli-with*  
 'Jani said that Erika met Juli.'
- (13) *Jani mondta*, [hogy *ki<sub>i</sub> t<sub>i</sub> találkozott Juli-val*].  
 Jani-Nom/said/that/*who-Nom/met/Juli-with*  
 'Jani said (told us) who met Juli.'

If the subject undergoes long-distance *wh*-extraction, however, the phrase must be marked Accusative:

- (14) a. \**Ki<sub>i</sub> mondta Jani*, [hogy *t<sub>i</sub> találkozott Juli-val*]?  
 who-Nom/said/*Jani-Nom/that/met/Juli-with*  
 intended meaning: 'Who did Jani say met Juli?'
- b. *Ki-t<sub>i</sub> mondott Jani*, hogy *t<sub>i</sub> találkozott Juli-val*?  
 who-Acc  
 'Who did Jani say that met Juli?'

As (15) and (16) illustrate, the Nominative → Accusative switch is obligatory even if there is another *wh*-phrase in the same [Spec,CP]. Again, there is no special restriction on the order of the *wh*-phrases:

- (15) a. \**Ki<sub>i</sub> ki-vel<sub>j</sub> mondott Jani*, [hogy *t<sub>i</sub> találkozott t<sub>j</sub>*]?  
 who-Nom/*who-with/said/Jani-Nom/that/met*  
 intended meaning: 'Who did Jani say met whom?'
- b. \**Ki-vel<sub>j</sub> ki<sub>i</sub> mondott Jani*, [hogy *t<sub>i</sub> találkozott t<sub>j</sub>*]?  
 who-with/*who-Nom*
- (16) a. *Ki-t<sub>i</sub> ki-vel<sub>j</sub> mondott Jani*, [hogy *t<sub>i</sub> találkozott t<sub>j</sub>*]?  
 who-Acc/*who-with*  
 'Who did Jani say met whom?'
- b. *Ki-vel<sub>j</sub> ki-t<sub>i</sub> mondott Jani*, [hogy *t<sub>i</sub> találkozott t<sub>j</sub>*]?  
 who-with/*who-Acc*

A syntactic account of the case shift is beyond the scope of this paper, for an early attempt, see É. Kiss 1987. What is remarkable from the point of the discussion, however, is that the Nominative → Accusative switch does not take place if the [Spec,CP] contains another *wh*-phrase marked Accusative. In this case Nominative is the only option:



- (17) Feri tudja, [hogy Laci megtalálta Ildi-t].  
Feri-Nom/knows/that/Laci-Nom/found/Ildi-Acc  
'Feri knows that Laci found Ildi.'
- (18) Ki-t<sub>i</sub> tudja Feri, [hogy t<sub>i</sub> megtalálta Ildi-t]? (subject extraction)  
who-Acc/knows/Feri-Nom/that/found/Ildi-Acc  
'Who does Feri know found Ildi?'
- (19) Ki-t<sub>j</sub> tudja Feri, [hogy Laci megtalált t<sub>j</sub>]? (object extraction)  
who-Acc/knows/Feri-Nom/that/Laci-Nom/found  
'Who does Feri know that Laci found?'
- (20) a. \*Ki-t<sub>i</sub> ki-t<sub>j</sub> tudja Feri, [hogy t<sub>i</sub> megtalált t<sub>j</sub>]?(subject+object ext.)  
who-Acc/who-Acc/knows/Feri-Nom/that/found  
intended meaning: 'Who does Feri know found whom?'  
b. \*Ki-t<sub>j</sub> ki-t<sub>i</sub> tudja Feri, [hogy t<sub>i</sub> megtalált t<sub>j</sub>]?(subject+object ext.)  
who-Acc/who-Acc
- (21) a. Ki<sub>i</sub> ki-t<sub>j</sub> tudja Feri, [hogy t<sub>i</sub> megtalált t<sub>j</sub>]?  
who-Nom/who-Acc/knows/Feri-Nom/that/found  
Who does Feri know found whom?'  
b. Ki-t<sub>j</sub> ki<sub>i</sub> tudja Feri, [hogy t<sub>i</sub> megtalált t<sub>j</sub>]?  
who-Acc/who-Nom

Thus an otherwise obligatory syntactic process is blocked precisely when it would create a configuration violating the BCH.

It is possible to have three wh-phrases in the same [Spec,CP], although some speakers find these structures difficult to parse.

- (22) Ki<sub>i</sub> ki-t<sub>j</sub> ki-vel<sub>k</sub> t<sub>i</sub> mondott, hogy találkozott t<sub>j</sub> t<sub>k</sub>?  
who-Nom/who-Acc/who-with/said/that/met  
'Who said that who met whom?'

Trying to apply wh-movement to all three arguments in (17) above, however, we find that one of the wh-phrases must remain in the embedded [Spec,CP]. The reason is the following. The matrix subject must bear Nominative, since it has been moved to the local [Spec,CP]. The embedded object must be marked Accusative. If this wh-phrase also occurs in the matrix [Spec,CP] that means that long-distance extraction of the embedded subject either with Nominative or Accusative case will result in multiple instances of the same case in the same position, violating the BCH. Thus either the embedded subject or the embedded object is confined to the lower [Spec,CP].

- (23) a. \*Ki<sub>i</sub> ki-t<sub>j</sub> ki-t<sub>k</sub> t<sub>i</sub> mondott, [hogy t<sub>j</sub> megtalált t<sub>k</sub>]?  
who-Nom/who-Acc/who-Acc/said/that/found  
intended meaning: 'Who knows that who found who?'  
b. \*Ki ki ki-t mondott, [hogy megtalált]?  
who-Nom/who-Nom/who-Acc
- (24) a. Ki<sub>i</sub> ki<sub>j</sub> t<sub>i</sub> mondott, [hogy ki talált meg t<sub>j</sub>]? (local mvt. of  
who-Nom/who-Acc/said/that/who-Nom/found embedded  
'Who said that who found who?' subject)



- b.  $K_i$   $kit_j$   $t_j$  mondott, [ $hogy$   $kit_k$   $talált$   $meg$   $t_j$   $t_k$ ]? (local mvt. of  
 who-Nom/who-Acc            who-Acc            embedded object)

To summarize: wh-movement in Hungarian shows the same property as in Hindi: wh-phrases with the same case are not allowed to occur in the same [Spec,CP]. Instead, the wh-phrase that would cause a violation of the BCH if moved long-distance, may only move to the local [Spec,CP]. Furthermore, the Nominative  $\rightarrow$  Accusative switch which is normally required by the grammar is blocked if it would create a structure violating the Bounded Connectivity Hypothesis. This is different from the applications of the BCH that we have seen so far, which merely render an otherwise grammatical construction unacceptable if it exceeds the bounds on connectivity. The Nominative  $\rightarrow$  Accusative switch has not been adequately described in the syntax. However, the data I have presented suggests that it is indeed a rule of grammar; sentences like (14a) and (15), where the rule is not obeyed, are ungrammatical. Technically speaking, this implies that (21) should also be regarded as ungrammatical, although it is clearly the only acceptable form. The question of the status of (20) and (21) as well as of the precise formulation of the Nominative  $\rightarrow$  Accusative switch cannot be resolved within the scope of this paper.<sup>5</sup>

#### 4. Data suggesting revision of the BCH: Topicalization

As mentioned in 2.2, multiple topicalization is also allowed in Hungarian. Contrary to what we found with wh-extraction, however, it is possible to have two topics bearing the same case:

- (25) Tibor hallotta Mari-tól, hogy Pista elvált  
 Tibor-Nom/heard/Mari-from/that/Pista-Nom/divorced/  
 Kati-tól. (same as (9))  
 Kati-from  
 'Tibor heard from Mari that Pista divorced Kati.'
- (26) Kati-tól<sub>i</sub> Mari-tól<sub>j</sub> Tibor hallotta  $t_j$ , [ $hogy$  Pista .  
 Kati-from/Mari-from/Tibor-Nom/heard/that/Pista-Nom/  
 elvált  $t_j$ ]  
 divorced  
 'As for Mari, Tibor heard from her that as for Kati, Pista  
 divorced her.'

This is in sharp contrast with the examples of wh-movement in (11). At first sight, it seems that topicalization violates the BCH. I will try to show, however, that this is only part of the story. Thus notice that the sentence in (26) could in principle have two interpretations, depending on the assignment of the topicalized NPs to the respective clauses (I am ignoring here a third option, namely, conjunction, which would not be fully grammatical without an overt conjunctive anyway). Interestingly, only the interpretation given in (26) above is permitted:

- (26') \*Kati-tól<sub>i</sub> Mari-tól<sub>j</sub> Tibor hallotta t<sub>i</sub>, [hogy Pista elvált t<sub>j</sub>].  
'As for Kati, Tibor heard from her that as for Mari,  
Pista divorced her.'

The only difference between the structures giving rise to the two interpretations is the relationship between the topic NPs and their traces. What we find is that the dependency between topics and their respective clauses must be nested, the intersecting configuration is excluded.

- (27) Topic<sub>i</sub> Topic<sub>j</sub> [ t<sub>j</sub> [ t<sub>i</sub> ] ]  
\*Topic<sub>i</sub> Topic<sub>j</sub> [ t<sub>i</sub> [ t<sub>j</sub> ] ]

Similar constraints on nested interpretations have been shown to hold in wh-extraction in English and some Scandinavian languages, cf. Fodor 1978, Engdahl 1982. It has been argued that the Nested Dependency Constraint is best characterized as a parsing strategy used to avoid ambiguity. This would suggest that its application is limited to structures like (26), where in principle two interpretations are possible. It turns out, however, that the nested interpretation is obligatory even when the NPs in topic position have distinct case markings which, given the argument structure of the verb, make only one structure possible:

- (28) Tibor hallotta Mari-tól, [hogy Pista összeveszett  
Tibor-Nom/heard/Mari-from/that/Pista-Nom/fought/  
Kati-val]. (same as (2))  
Kati-with  
'Tibor heard from Mari that Pista had a fight with Kati.'
- (29) a. Kati-val<sub>i</sub> Mari-tól<sub>j</sub> Tibor hallotta t<sub>j</sub>, [hogy Pista  
Kati-with/Mari-from/Tibor-Nom/heard/that/Pista-Nom/  
összeveszett t<sub>j</sub>].  
fought  
'As for Mari, Tibor heard from her that as for Kati, Pista had  
a fight with her'
- b. \*Mari-tól<sub>i</sub> Kati-val<sub>j</sub> Tibor hallotta t<sub>j</sub>, [hogy Pista  
Mari-with/Kati-from  
összeveszett t<sub>j</sub>].

Again, given the properties of topicalization, the only reason why (29b) is excluded is that the dependencies between the topic NPs and their respective traces is intersecting rather than nested. This array of facts suggests that what we are dealing with here is a grammatical constraint rather than a parsing strategy. I want to suggest that this observation can lead to an explanation for why the BCH is suspended in topicalization structures. According to Stabler, the BCH captures the generalization that the number of identical relations within a given domain must be strictly limited to reduce ambiguity. In a sense it is necessary because the parser has a small and rigid memory store available, which can easily be overloaded when trying to keep a number of identical relations separate. Given a constraint like nesting, this problem does not arise: the interpretation of the topical-

ized phrases with respect to the different clauses is independently fixed. Thus we can view the BCH as applying as last resort to relieve the burden placed on memory by identical relations. Topicalization never places such a burden on memory, thus it does not fall under the BCH.

It is interesting to note that even in the case of topicalization, there is a preference to keep the relations as distinct as possible. Thus (30) below has two possible interpretations. The one that is familiar from the discussion so far is interpreting the two preposed NPs as topics. It is also possible to take the second NP (*Mari-tól*) to be focused, that is, contrasted, occupying a position similar to that of wh-phrases ([Spec,CP]). As the translations show, the latter interpretation is more preferred.

(30) Kati-tól<sub>i</sub> Mari-tól<sub>j</sub> hallottam t<sub>j</sub>, [hogy Pista elvált t<sub>i</sub>].

Kati-from/Mari-from/heard-1sg/that/Pista-Nom/divorced

preferred: 'As for Kati, it is from Mari that I heard that

Pista divorced.'

= **Mari** in focus

unpreferred: 'As for Mari, I heard from her that as for Kati,

Pista divorced her.'

= **Mari** in topic

(31) has the same structure as (30), the difference being that the case-marking on the topicalized NPs makes the interpretation unambiguous, even without the Nested Dependency Constraint. Again, both the topic-topic and the topic-focus reading are possible. However, here we do not find a preference for the topic-focus reading, both are equally good:

(31) Kati-val<sub>i</sub> Mari-tól<sub>j</sub> hallottam t<sub>j</sub>, [hogy Pista összeveszett t<sub>i</sub>].

Kati-with/Mari-from/heard-1sg/that/Pista-Nom/fought

'As for Kati, it is from Mari that I heard that Pista had  
a fight with.'

= **Mari** in focus

or: 'As for Mari, I heard from her that as for Kati, Pista had

a fight with her.'

= **Mari** in topic

Thus it seems that there is a very strong tendency to interpret similar relations as being as distinct as possible. This is obviously related to previous findings indicating that the more different the objects or relations, the more easily they are remembered. If we see the BCH as making explicit the limit on identical relations, it becomes more clear under which circumstances we should expect it to be lifted.

## 5. Summary and implications

In this paper I discussed two types of A'-constructions that are relevant for Stabler's Bounded Connectivity Hypothesis. Multiple wh-movement provided rather striking evidence for the BCH; it showed that a grammatical constraint, namely, an obligatory switch from Nominative to Accusative in long-distance subject extraction, can be overridden just in case it would result in a configuration that violates the BCH. Topicalization, on the other hand, seemed to pose a problem for Stabler's theory, since multiple topic phrases with the same case-

marking are clearly allowed. It was argued, however, that the operation of the BCH is suspended in these cases because of the existence of a grammatical constraint requiring that topics participate in nested dependencies only. As a result, topicalization structures will never be ambiguous, thus the BCH, whose role is to reduce ambiguity, does not apply.

The discussion showed that in order to better characterize the application of the BCH, it is necessary to distinguish various kinds of A'-relations which show quite different behavior. For instance, we might expect to find differences based on the syntactic position occupied by the head of the chain, or possibly on the semantic correlates of syntactic movement. Scrambling may provide interesting data in this domain.

It was also proposed that the domain of the BCH might be restricted to structures that remain ambiguous after the application of other principles of the grammar or the parser. Further evidence was provided for the claim that the parser tries to assign maximally distinct interpretations. Thus even in an unambiguous sentence like (30) there is a preference for topic-focus interpretation over a topic-topic reading which would have both the case and the function of the NPs identical. When the case marking is different, no such preference exists.

The question arises: if the Nested Dependency Constraint is part of the grammar of Hungarian, why is its application limited to topicalization? In particular, why don't we find similar restrictions on wh-movement? I think the answer lies in the interpretation difference between wh-questions and topics. Topics are interpreted as presupposed, already existing in the universe of discourse. In scope terms they are generally taken to have widest scope in the sentence. This property is not affected at all by assigning them an obligatory nested interpretation. As was mentioned in 2.1, however, the scope of wh-phrases in Hungarian is determined by their surface order. If the Nested Dependency Constraint applied to wh-phrases, that would restrict the possible orders wh-phrases can occur in at the beginning of the clause. This would in turn eliminate certain scope relations, severely restricting the expressive power of the language. Thus it appears that strategies for disambiguation become grammaticized to the extent that they do not interfere with the flexibility of expression in the language. Excessive ambiguity is then limited by constraints on complexity like the BCH.

#### NOTES

<sup>1</sup> For reasons of perspicuity, case markers in Hungarian will be separated from the nouns with a hyphen and glossed as the corresponding English prepositions.

<sup>2</sup> Wh-movement (and focusing) triggers verb movement to the head of the CP whose Spec is occupied by the wh-phrase, hence the word order difference between (3) on the one hand and (4) and (5) on the other. Traces left by verb movement will be ignored in the examples. Instead, for full comparison, I will always provide the 'untransformed' sentences along with the ones showing movement.

<sup>3</sup> It is not surprising that two occurrences of the same relation yield marginal results in one case and complete unacceptability in the other. To the contrary, it is expected that different constructions will exhibit different patterns of breakdown.

<sup>4</sup> It has been observed that quite often ambiguity leading to severe parsing difficulties can be ameliorated by making the elements in question more dissimilar. For instance, multiple center-embedding structures become marginal if we vary the types of subject NPs using proper nouns as well as pronouns, animate and inanimate nouns. This does not seem to be the case here: neither animacy nor number differences of the wh-phrases can improve the sentences. D-linked vs. non-d-linked wh-phrases do not appear to be sufficiently distinct, either. I am grateful to Andrew Barss for raising this issue.

<sup>5</sup> I am indebted to Carson Schütze for bringing up this question.

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## SERBO-CROATIAN SECOND POSITION CLITIC PLACEMENT: SYNTAX IS NOT ENOUGH

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The analysis of Serbo-Croatian (SC) second position clitic placement has been the source of much controversy in generative linguistics. The most important point of disagreement among competing analyses has been the extent to which the various components of the grammar, particularly syntax and phonology, are implicated in determining the position of the clitics. In this paper I will show that the position of the clitic cluster in a clause cannot be completely determined by the syntax, although the syntax does have a crucial role to play. Rather, the position of the clitic cluster is subject to purely phonological constraints.

### 1. Introduction

#### 1.1. Theoretical overview

In this paper, I argue that the facts of Serbo-Croatian second position clitic placement are best analyzed in terms of phonological constraints that can not only filter out syntactically valid orderings but also trigger a re-ordering of morphemes that does not conform to the syntax. More specifically, I will argue for the necessity of Halpern's (1992) proposed operation of Prosodic Inversion (PI), which can re-order a clitic and a potential host word in order to satisfy the clitic's need for a host to its left. In SC, this will allow enclitics that are clause-initial at S-structure to surface encliticized to the first prosodic word of the clause. (The particular clitics I am discussing are assumed to be lexically specified as ENclitic, so they never have the option of attaching to the right.)

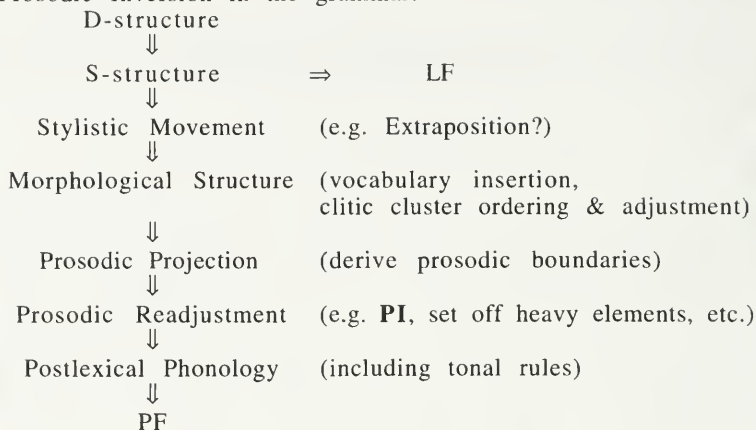
My assumptions about how PI fits into the overall structure of the grammar are shown diagrammatically in (1) on the next page.

#### 1.2 Descriptive background

In contrast to the generally free ordering of clausal constituents, SC has a set of enclitics whose position in a sentence is fixed: They must appear in 'second position'—see (2)–(5). Clitics are boldfaced.

- (2) \***Je** ga dao Mariji.  
AUX it given Mary  
(‘He has given it to Mary.’)

## (1) Prosodic Inversion in the grammar:



## (3) \*Ivan Marije je ga dao.

Ivan Mary AUX it given

(Ćavar &amp; Wilder 1993:9)

## (4) Fixed order of clitics in clitic cluster:

| li                          | AUX                                   | DAT               | ACC/GEN                            | se                                          | je         |
|-----------------------------|---------------------------------------|-------------------|------------------------------------|---------------------------------------------|------------|
| Q<br>(question<br>particle) | auxiliaries<br>(except<br><i>je</i> ) | dative<br>pronoun | accusative/<br>genitive<br>pronoun | REFL<br>(reflexive<br>pronoun/<br>particle) | 3sg<br>AUX |

(Browne 1974)

## (5) Clitics that may occupy slots 2–4 of (4)

|                        |     |     |         |       |       |     |     |     |
|------------------------|-----|-----|---------|-------|-------|-----|-----|-----|
| a. Auxiliaries         | 1sg | 2sg | 3sg     | 1pl   | 2pl   | 3pl |     |     |
| Future ('will'):       | ću  | ćeš | će      | ćemo  | ćete  | će  |     |     |
| Conditional ('would'): | bih | bi  | bi      | bismo | biste | bi  |     |     |
| Past/Copula ('AUX'):   | sam | si  | (je)    | smo   | ste   | su  |     |     |
| b. Pronouns            | 1sg | 2sg | 3sg-m/n | 3sg-f | refl  | 1pl | 2pl | 3pl |
| Dative:                | mi  | ti  | mu      | joj   | si    | nam | vam | im  |
| Genitive:              | me  | te  | ga      | je    | (se)  | nas | vas | ih  |
| Accusative:            | me  | te  | ga      | je/ju | (se)  | nas | vas | ih  |

Traditional descriptions distinguish two sub-cases of second position placement: following the first word of a clause ('1W') versus following the first constituent ('1C'). (6a) illustrates the former, with clitics apparently interrupting the subject NP; (6b) shows them following this constituent; (6c) shows that the first constituent can be anything, including an adjunct. (6d and e) and (7) show an initial adverbial, separated off by a pause (denoted by '|') from the rest of the clause. Thus, 'second position' must apparently be defined not with respect to the entire sentence, but with respect to some notion of elements 'internal' to the clause.

- (6) a. Taj **mi je** pesnik napisao knjigu.  
that me AUX poet written book  
'That poet wrote me a book.'
- b. Taj pesnik **mi je** napisao knjigu.
- c. Ove godine **mi je** taj pesnik napisao knjigu.  
this year  
'That poet wrote me a book this year.'
- d. Ove godine I taj **mi je** pesnik napisao knjigu.
- e. Ove godine I taj pesnik **mi je** napisao knjigu.  
(Browne 1974:41)
- (7) a. Noću **je** ovdje mirnije.  
at-night AUX here more-quiet  
'At night it is more quiet here.'
- b. \*Noću I **je** ovdje mirnije.
- c. Noću I ovdje **je** mirnije. (Radanović-Kocić 1988:106)

Examples (8), (9) and (10) further illustrate the 1W/1C alternation.

- (8) a. Moja mlađja sestra **će** doći u utorak.  
my younger sister will come on Tuesday  
'My younger sister will come on Tuesday.'
- b. Moja **će** mlađja sestra doći u utorak.
- (9) a. Sovjetske goste **je** primio i predsjednik  
Soviet guests AUX received also president /  
Republike Austrije Jonas.  
republic Austria Jonas  
'The President of the Republic of Austria, Mr. Jonas, also  
received the Soviet guests.'
- b. Sovjetske **je** goste primio i predsjednik Republike Austrije  
Jonas.
- (10) a. Prošle godine **su** otvorili ugostiteljsku školu.  
last year AUX open hotel-and-catering school  
'Last year they opened a hotel-and-catering school.'
- b. Prošle **su** godine otvorili ugostiteljsku školu.  
(Browne 1975:113-114)

Considering now the 1W option in more detail, it turns out that not just any word can precede clitics sentence-initially: Most prepositions cannot (11b), nor can the verbal negation marker (12b) nor certain conjunctions (13b).

- (11) a. Na sto **ga** ostavi.  
on table it leave  
'Leave it on the table.'
- b. \*Na **ga** sto ostavi. (Progovac 1993:4)
- (12) a. Ne vidim **ih**.  
not see them  
'I don't see them.'
- b. \*Ne **ih** vidim. (Browne 1975:112)

- (13) a. ...*i* *ne* *gledaju* *me*.  
 and not look me  
 '...and don't look at me.'  
 b. \*...*i* *me* *ne* *gledaju*. (Browne 1975:113)

The relevant generalization seems to be that the host element to the left of the clitics must be a prosodic word, rather than just any syntactic terminal. By prosodic word (PWd) is meant a phonologically independent word, i.e. not a clitic; the set of prosodic words is often characterized by the ability to bear accent, although this latter criterion is highly problematic. There is independent evidence that most prepositions in SC are proclitics, as is *ne*, and most likely *i* as well. Proclitic and enclitic cannot combine to form a prosodic word. Thus the explanation for the clitic as the fourth syntactic element in (13a), is that *i* and *ne* are both proclitic on *gledaju*, the first PWd in the clause, and *me* is in 1W position because it is enclitic on that PWd.

In section 2 I will summarize accounts of SC clitic placement that claim that only syntax is involved, and point out where I differ from them. In section 3 I describe the type of syntactico-phonological account I wish to argue for. I then describe four constructions that I claim require prosodic constraints and cannot be accounted for by syntax alone. Finally, section 8 presents conclusions.

## 2. Purely syntactic accounts

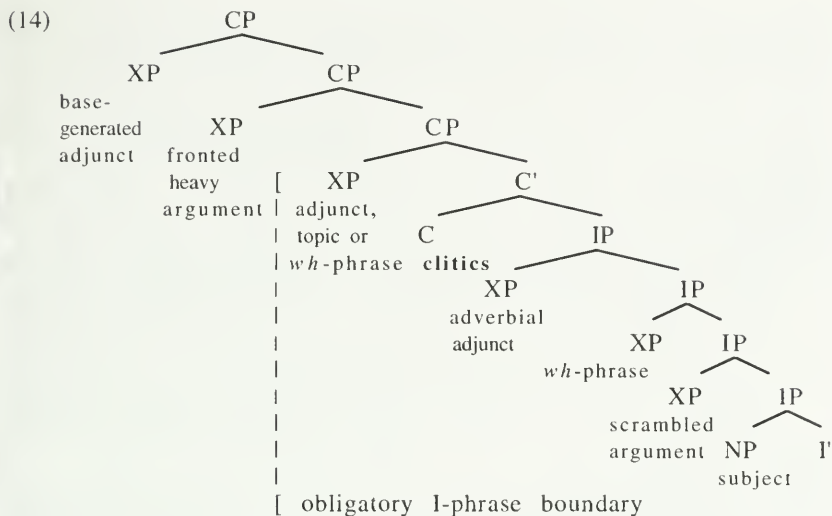
By a pure syntax account of SC clitic placement I mean an account under which the syntax is fully responsible for the linear position of clitics in the sentence string; i.e., clitics do not move in the phonology.

The most detailed pure syntax accounts I have seen are those of Progovac (1993, 1994; Franks & Progovac 1994) and Čavar and Wilder (1992, 1993; Wilder & Čavar 1993); see also Roberts 1994. I adopt essentially their syntactic assumptions. (14) on the next page shows the schematic structure for the top of SC clauses that I will assume for concreteness in the rest of this paper (order among adjoined elements may be free):

I assume clitics are always in Comp at S-structure (*pace* Bošković 1994), so that phrases that move to Spec-CP or heads that move to C<sup>0</sup> are potential hosts for the clitics.

The aforementioned authors' explanation for the 1W/IC alternations like (15) is based on noticing that in most of these cases, one can show independently that the first word is extractable and questionable independent of the presence of clitics, as in (16) and (17).

- (15) a. [Anina drugarica] **mu** nudi čokoladu.  
 Ana's girl-friend him offers chocolate  
 'Ana's friend is offering him chocolate.'  
 b. [Anina] **mu** drugarica nudi čokoladu.



- (16) Anina dolazi sestra.  
 Ana's comes sister  
 'Ana's sister is coming.'

- (17) Čija dolazi sestra?  
 whose comes sister  
 'Whose sister is coming?'

(Progovac 1993:3)

Thus, the claim is that whatever is responsible for the word order in (16) is also responsible for IW clitics intervening in the NP in (15b): Presumably, *Anina* has extracted from the subject NP and fronted. I accept this extraction account for the cases they discuss, but I argue that there are instances of IW placement that cannot be analyzed in this way. They claim that some element must always move to Spec-CP or to Comp in the syntax when clitics are present, but I claim it is possible for neither movement to happen, since I believe that clitics can lack a host at S-structure.

### 3. Syntactic/phonological accounts

By a mixed syntactic/phonological account of SC clitic placement I mean one under which both syntax and phonology play an active role in the eventual linear position of clitics.

Halpern (1992) proposes a mixed account (refined by Percus 1993) that forms the basis of my own. His fundamental claim is this: Phonology can move clitics if and only if their prosodic requirements are not satisfied, and it can move them only the minimal distance necessary to satisfy those requirements (cf. Sproat 1988, Marantz 1989, Sadock 1991, Percus 1993, and others).

Halpern's particular construal is that PI is a last-resort option for saving otherwise ill-formed structures; i.e., 'The surface order of two

lexical items reflects the order established by the syntax unless this would lead to an ill-formed surface (prosodic) representation' (p. 23). 'Its scope is limited to affecting adjacent elements, and its application makes reference only to prosodic constituency' (p. 2). These restrictions need not be stated on an explicit rule, but rather are general properties of the phonology. He provides the following formulation of clitic attachment, which I adopt verbatim ( $\omega$  represents a phonological word):

(18) Prosodic adjunction of clitics: For a DCL [directional clitic], X, which must attach to a  $\omega$  to its left (respectively right),  
 a. if there is a  $\omega$ , Y, comprised of material which is syntactically immediately to the left (right) of X, then adjoin X to the right (left) of Y.  
 b. else attach X to the right (left) edge of the  $\omega$  composed of syntactic material immediately to its right (left). (Halpern 1992:81)

(19) Sample applications of rule (18):

- |    | S-structure                | PF                   |                                                                                     |
|----|----------------------------|----------------------|-------------------------------------------------------------------------------------|
| a. | [Anina] $\omega$           | [drugarica] $\omega$ | <b>mu</b> $\Rightarrow$ [Anina] $\omega$ [[drugarica] $\omega$ <b>mu</b> ] $\omega$ |
|    | Ana's                      | girl-friend          | him                                                                                 |
| b. | <b>Mu</b> [Anina] $\omega$ | [drugarica] $\omega$ | $\Rightarrow$ [[Anina] $\omega$ <b>mu</b> ] $\omega$ [drugarica] $\omega$           |
|    | (Prosodic Inversion)       |                      |                                                                                     |

His explanation for cases like (6d and e) where clitics are later than absolute second position is as follows: 'A constituent which is stylistically fronted is separated from the rest of a clause by a (large) prosodic boundary—that is, the fronted constituent is in a separate intonational phrase' (p. 91), the left edge of CP in (14); 'A clitic must be contained in the same intonational phrase as its host' (p. 152–153). The latter is a constraint on the prosodic adjunction rule (18), blocking clause (a) of it in some cases, thus triggering clause (b).

An immediate consequence is that any clitic placement that is not derivable purely in syntactic terms must involve rightward movement over exactly one prosodic word in the phonology. I will now argue that Prosodic Inversion and the proposed constraints on cliticization are crucially required in a full analysis of SC clitic placements.

#### 4. First argument: complex modifiers

The form of the first argument is simple: The claim is that there are certain clitic placements that are not derivable by the syntax at all, because the string preceding the clitics cannot undergo syntactic movement, but these placements are derivable by phonological movement, since they involve clitics being exactly one PWD from the beginning of a clause.

The crucial constructions involve sentence-initial PPs that contain prenominal modifiers in the NP object of P, where the preposition is a proclitic, as in (20) and (21).



(20) U veliku **je** Jovan ušao sobu.  
 in big AUX Jovan entered room  
 'Jovan entered (the) big room.'

(21) U ovoj **je** sobi klavir.  
 in this AUX room piano  
 'In this room is the piano.'

(Percus 1993:2)

If PI is truly part of SC grammar, then we expect to find clitics following the first modifier, since it forms a single PWD together with the procliticized preposition, and this is indeed what we find. The question is whether there is an alternative, pure syntax account of this clitic placement.

Now it is certainly true that prepositional phrases in SC can be interrupted by other material, as in (22).

(22) U veliku Jovan ulazi sobu.  
 in big Jovan enters room  
 'Jovan enters (the) big room.'

(Percus 1993:2)

Thus, independently of the clitic facts we need a syntactic way to derive this sentence, i.e. to split *u veliku* from *sobu*. There are in principle two ways of doing this: either by fronting the non-constituent *u veliku* and stranding *sobu*, or by extracting *sobu*, leaving *u veliku*. The latter gains empirical support from the fact that head nouns can be independently shown to extract from their NPs:

(23) Studentkinje dodjoše sve njegove.  
 students came all his  
 'All of his students came.'

(Mišeska Tomić 1993:52)

(24) Izuzetno veliku **je** Jovan učinio uslugu Petru.  
 extremely big AUX Jovan did favour to.Peter

(Željko Bošković: p. c.)

Thus, if all we had were sentences like (20) and (21), there would be at least one palatable syntactic approach to derive the clitic placement. However, NPs can have multiple modifiers preceding the head noun, and when they do, we find a contrast between clitics and other material regarding where the PP can be split. Specifically, clitics can always appear after the first modifier ((20), (21), (25), (26)), that is, after the first PWD, but nonclitics can only appear after the last modifier, that is, immediately preceding the head noun ((20) and (27a) versus (27b and c)).

(25) U ovu **je** veliku sobu Jovan ušao.  
 in this AUX big room Jovan entered  
 'Jovan entered this big room.'

- (26) a. U velikoj **je** sobi klavir.  
 in big AUX room piano  
 'In the big room is the piano.'  
 b. U ovoj **je** velikoj sobi klavir.  
 in this

- (27) a. ??U ovu veliku Jovan ulazi sobu.  
           in this big Jovan enters room  
 b. \*U ovu Jovan ulazi veliku sobu.  
 c. ???U ovu Jovan veliku ulazi sobu.  
           (Željko Bošković: p.c.; Ljiljana Progovac: p.c.)

Under a theory that includes PI, this is exactly what we expect: PI can move clitics to their position following the first PWd when they would otherwise lack a host sentence-initially, but any other interruption of a PP must be syntactically derived, and the only way the syntax can split a PP is by extracting the head noun. Thus, the prosodic movement account is strongly supported.

In contrast, I claim there is no reasonable analysis of these facts under a pure syntax approach. Given that clitics contrast with non-clitics in their placement options, a pure syntax approach must posit two different kinds of syntactic movement for the two cases and explain why they correlate with different kinds of intervening material. In particular, it is necessary to block nonclitics after an extraction that moves a P+modifier sequence to the left. Getting this contrast requires an arbitrary stipulation under any pure syntax account of the PP paradigm, because of the basic descriptive fact that clitics go where nothing else can: To accomplish this in syntax requires a type of movement for which there can in principle be no independent motivation.

Note that one could not even say that it is the first subconstituent of the NP that can move, taking the preposition along by some sort of prosodic 'pied piping.' It is really only the first word that can split off: An Adjective Phrase containing an adjective and a modifier cannot host clitics when more modifiers follow it (28b); again (28a) involves noun extraction:

- (28) a. U izuzetno veliku **je** Jovan ušao sobu.  
           in extremely big AUX Jovan entered room  
 b. \*U izuzetno veliku **je** Jovan ušao praznu sobu.  
           in extremely big AUX Jovan entered empty room  
           (Željko Bošković: p. c.)

This makes the process look even less syntactic: Why should a modified adjective have different extraction properties than an unmodified one?

Another such paradigm involves a modified adjective phrase by itself: (29a vs. b) shows that only clitics can intervene between the adverb and the adjective, which is expected if *vrlo* cannot extract. If it is replaced with a *wh*-word that CAN extract (29c and d), other material can more easily intervene.

- (29) a. Vrlo **je** visoka Bojanova sestra.  
           very AUX tall Bojan's sister  
           'Bojan's sister is very tall.'

- b. ???Vrlo **je** Bojanova sestra visoka.  
 c. ??Koliko **je** Bojanova sestra visoka?  
 how.much  
 d. ??Koliko tvrdis da **je** Bojanova sestra visoka?  
 how.much claim that AUX Bojan's sister tall  
 'How tall do you claim that Bojan's sister is?' (Bošković: p. c.)

### 5. Second argument: predicate phrases

Predicative constructions have been claimed to disallow 1C placement and require 1W placement:

- (30) a. Jako **mi je** dosadna njegova posljednja knjiga.  
 very me AUX boring his last book  
 'His last book is very boring (to me).'  
 b. \*Jako dosadna **mi je** njegova posljednja knjiga.  
 (Browne 1975:118)

Why should multi-word copular predicate phrases not be able to be followed by clitics? Under my theory, we have to say that the adjective phrase in (30) cannot front ahead of the clitics in the syntax; in particular, it cannot front to Spec-CP. If the Adjective Phrase always follows the clitics syntactically, the ungrammaticality of (30b) would be explained, because the clitics would have to move in the phonology, and I have claimed that they never move more than one PWD in the phonology. Fronting the predicate phrase to Spec-CP might be blocked because it has to incorporate into the copula at LF, or because the predicate is typically new information, and thus incompatible with Topic position, which houses given information. A pure syntax account would be hard-pressed to explain why PART of a copular predicate can front but the whole predicate cannot.

### 6. Third argument: 'fortresses'

It has been known at least since the work of Browne (1974, 1975) that some 1W placements are not as good as others. Specifically, there is a class of NPs that seem to resist 1W clitic placement within them when clause-initial; we need to explain this. I annotate such sentences with '%\*', and use Halpern's name 'fortresses' (they resist invasion by clitics).

The set of fortress NPs can be catalogued as follows: multi-word proper names (31), conjoined NPs (32), post-head genitives (33), and post-head PPs (34). In all cases, the variant with the clitic following the entire initial NP is fine.

- (31) %\*Lav **je** Tolstoj veliki ruski pisac.  
 Leo AUX Tolstoy great Russian writer  
 'Leo Tolstoy is a great Russian writer.'  
 (32) %\*Sestra **će** i njen muž doci u utorak.  
 sister will and her husband come in Tuesday  
 'My sister and her husband will come on Tuesday.'

- (33) %\*Prijetelji **su** moje sestre upravo stigli.  
 friends have my-GEN sister-GEN just arrived  
 'My sister's friends have just arrived.'  
 (Halpern 1992:94-95)
- (34) %\*Studenti **su** iz Beograda upravo zaspali.  
 students AUX from Beograd just fallen.asleep  
 'Students from Beograd have just fallen asleep.'  
 (Bošković: p. c.)

Progovac (1993) suggests a pure syntax account of these constructions. Under such an account, clitics can only appear within an NP if the part that precedes them is syntactically extractable. Thus, she claims this fails to be the case in (31)–(34): At least according to her intuitions, none of these elements independently allows extraction. The data for one of the fortress types is given in (35).

- (35) a. [Roditelji uspešnih studenata] **su se** razišli.  
 parents successful-GEN students-GEN AUX REFL dispersed  
 'The parents of the successful students dispersed.'  
 b. %\*Roditelji **su se** uspešnih studenata razišli.  
 c. ?\*Roditelji **su se** razišli uspešnih studenata.  
 d. \*Ko **su se** uspešnih studenata razišli?  
 who  
 (Progovac 1993:5-6)

For speakers for whom some of (31)–(34) are fine, the corresponding extractions are also fine.

Syntactic inextractability is insufficient under a mixed syntax-phonology approach like my own, however, since PI should be able to put clitics in these places even if no syntactic separation is possible. Therefore, Halpern attempts to account for the degraded nature of these sentences prosodically. I propose a modification of his idea that PI is constrained not to cross a phonological-phrase boundary. To get the relevant contrasts, I posit that the left edge of the N head of an NP initiates a phonological phrase. In the fortress examples, a clitic that originates in Comp, to the left of these NPs at S-structure, would then be outside the relevant phonological-phrase after prosodic mapping, and PI would require it to cross that phrase edge if it were to invert with and cliticize to the noun. In contrast, a good case of first word placement has the phonological-phrase boundary later, so PI can apply without crossing it.

To the extent that we can find a natural prosodic constraint on PI, this supports the mixed approach to clitic placement if an alternative syntactic constraint would be unappealing or unstatable. One intriguing fact that supports this reasoning is the following, noted by Percus (1993): Postnominal PP fortresses become better when the PP portion is made heavier—compare (36) with (34) above.

- (36) *Studenti su iz prelepog grada na moru upravo*  
 students AUX from beautiful town on sea just  
*zaspali.*  
 fallen.asleep  
 'The students from the beautiful town by the sea have  
 already fallen asleep.' (Bošković: p. c.)

Percus claims that the length of the PP forces a phrasal stress to be placed on *studenti* that is not required in (34), perhaps a sign that *studenti* is phrased separately from the PP in (35) but not in (34), an idea that is corroborated by the fact that (34) improves if a pause is inserted after *studenti*. Maybe the first noun likes to phrase with following material, but cannot do so if that material is set off due to heaviness. This in turn could be because phonological phrases prefer to be binary branching (Dresher 1994). Whatever the explanation, the fact that the crucial contrasts involve presumably identical syntactic structures that differ only in heaviness or pause strongly supports the idea that the constraint must be a prosodically-based one.

#### 7. Fourth argument: embedded clauses

My final argument against a purely syntactic approach to clitic placement comes from an asymmetry between matrix and complement clauses with respect to possible clitic placements, exemplified in (37):

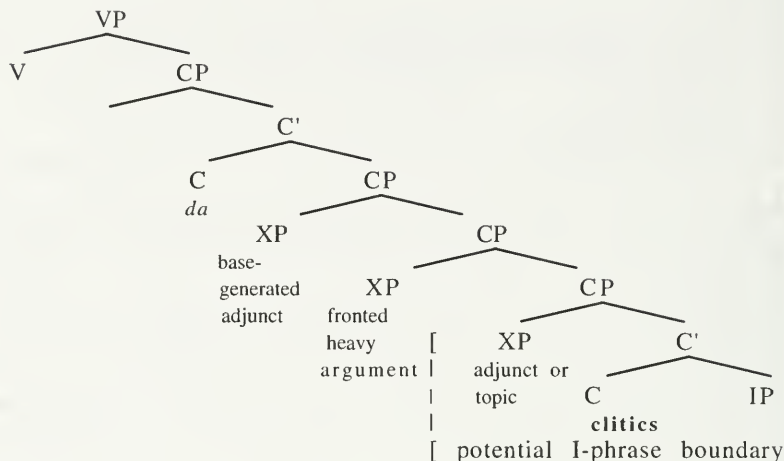
- (37) a. *U ovoj sobi je Markova žena sretna.*  
 in this room AUX Marko's wife happy  
 'In this room Marko's wife is happy.'  
 b. \**Ja mislim da u ovoj sobi je Markova žena sretna.*  
 I think that in this room AUX Marko's wife happy  
 'I think that in this room Marko's wife is happy.'  
 (Percus 1993:16-17)

It is not simply that embedded topicalization is impossible: (38) shows valid clitic placements involving the same constituent order:

- (38) a. *Ja mislim da je u ovoj sobi Markova žena sretna.*  
 I think that AUX in this room Marko's wife happy  
 b. *Ja mislim da u ovoj sobi | Markova je žena sretna.*  
 c. ?*Ja mislim da u ovoj sobi | Markova žena je sretna.*  
 (Percus 1993:7)

Once again, it is hard to imagine how syntax alone could make the relevant contrast, since (38b and c) show that more than one prosodic word can front ahead of the clitic position. In contrast, I believe that phonology potentially can, though the details are speculative. Again purely for concreteness, assume the structure of complement clauses involves CP-recursion, as in (39). (Cf. Authier 1992.)

(39)



Then the clitic and pause placements in (38) are explained: In (38a), nothing has been fronted between higher and lower Comps, so clitics can attach to *da*. In (38b and c), the PP has adjoined to the lower CP, to be followed by an intonation-phrase boundary as shown in (39), and a constituent in the lowest Spec-CP hosts the clitics. As for the contrast in (37), note that the (b) sentence IS generable by the syntax, with the embedded clause looking identical to the (a) sentence. I claim that the difference is one of phonological phrasing: In (37b), the PP forms an intonation phrase with the matrix verb and the complementizer, and the clitics cannot attach outside their I-phrase, as Halpern suggests:

(40) \*[Ja mislim da u ovoj sobi]<sub>I</sub> [je Markova žena sretna]<sub>I</sub>

whereas in (37a) the initial PP need not form an I-phrase on its own. The phrasing in (40) might be forced because cross-linguistically, verbs prefer to phrase with their complements whenever possible, a requirement that here conflicts with the principle that each clause wants to be in a separate I-phrase. Note that the same pattern does NOT hold in adjunct clauses, though there might be other reasons for this:

- (41) a. Raduj se [jer **ti je** došao brat.]  
rejoice / REFL / because / you / AUX / come / brother  
'Rejoice because your brother has come.'  
b. Raduj se [jer brat **ti je** došao.] (Radanović-Kocić 1988:101)
- (42) a. Mi smo ustali ali Petrova žena **je** već  
we / AUX / tired / but / Peter's / wife / AUX / already /  
otišla.  
left  
b. Mi smo ustali ali Petrova **je** žena već otišla.  
c. Mi smo ustali ali **je** Petrova žena već otišla.

(Percus 1993:21)



## 8. Conclusions

In conclusion, Halpern's (1992) framework for the treatment of clitic placement receives considerable support. I have shown that his proposals can be extended to cover a substantially wider range of facts in SC than he or others have discussed. The notion that clitics can be reordered with respect to an adjacent word in the way proposed by Halpern is key to understanding constraints on clitic placement. We have seen considerable evidence that this is a phonological process that has its own constraints. Serbo-Croatian second position clitic placement evidently involves sometimes opaque interactions among several modules of the grammar. In this paper I have striven to clarify the role that the phonology plays in this system.

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## A TYPOLOGICAL STUDY OF NP EXTRACTION FROM QP

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In this paper I will examine the so-called partitive constructions from two language groups, namely Romance and some Asian languages. The two groups share similar properties in partitive constructions in terms of the Definiteness Effect but differ dramatically regarding the landing site of NP: Only the Chinese-type allows NP to move into a Case position. It will be shown that the classifier, obligatorily required in a Chinese-type of QP, incorporates into Q and absorbs Case, which accounts for the landing site difference. The analysis also offers a possible account for the past participle agreement facts among Romance languages.

### 1. Partitive constructions

The partitive construction I am concerned with in this paper refers specifically to those constructions where an NP is extracted from a QP thus leaving a stranded quantifier, which receives a 'partitive' interpretation. These cases are common in Romance such as French, Italian, Catalán, etc. East Asian Languages including Chinese, Japanese, and Korean do not have the Romance partitive clitic *en/ne*, but instead have numeral-classifier stranding phenomena that show similar syntactic properties.

French partitive constructions usually consists of a clitic *en*, appearing in Infl and a stranded quantifier (numeral, *beaucoup* 'many', and the like). Similar to the Italian *ne* cliticization discussed in Rizzi 1982, *en* represents only NPs generated from the object position and never from the subject position. The transitivity of the verb, however, does not seem to matter. Consider the examples in (1) and (2).

- (1) a. J'ai lu un des livres de Zola.  
'I.have read one of the books by Zola.'  
b. J'en ai lu un.  
'I.of-them have read one.'
- (2) a. Trois hommes sont arrivés.  
three men are arrived  
b. Il est arrivé trois hommes.  
there is arrived three men  
c. Il en est arrivé trois.  
there of-them is arrived three

(1) contains a transitive verb *lire* 'read' and (2) an unaccusative verb *arriver* 'arrive'. Both object NPs can cliticize as *en*, leaving the

numeral quantifier *trois* 'three' stranded. (2b) and (2c) resembles the English *there* construction, with the internal argument of the unaccusative verb staying in situ and the subject position filled with the lexical expletive *il*. This provides an interesting issue with regards to Case Theory because an unaccusative verb cannot assign Case to its internal argument while in (2b) and (2c) the internal argument appears to escape the NP Filter, or Case checking in a more recent term.

Like unaccusative verbs, impersonal passives can also leave the internal argument in situ as in (3b) or have a stranded numeral quantifier in the object position when *en* cliticizes as in (3c).

- (3) a. Trois filles ont été tuées.  
       three girls (are) been killed  
    b. Il a été tué trois filles.  
       there has been killed three girls  
    c. Il en a été tué trois.  
       there of-them has.been killed three

Sportiche 1991 points out that other impersonal constructions exhibit the same properties: the internal argument stays behind the verb even though the verb does not have a Case to assign.

- (4) a. Il s'est construit trois maisons.  
       there *se* is built three houses  
    b. Il a conduit des femmes.  
       there has driven women

Chinese does not have the equivalent of the French *en* (to be more precise, Chinese lacks the entire system of clitics) but the following sentences deliver the same partitive interpretation as does *en*.

- (5) a. Lai le san ge keren.  
       come-asp three CL guest  
       'There came three guests.'  
    b. Keren lai le san ge.  
       guest come-asp three CL

(5a) involves an unaccusative verb *lai* 'come', the internal argument can stay in situ like its French counterpart. (5b) is the result of NP extraction out of QP, the NP *keren* 'guests' moves to the subject position and leaves the numeral-classifier sequence stranded. This again resembles the *en* cliticization with regards to the stranded quantifier. A more careful comparison between (5b) and the French example (2c) reveals one striking difference: In Chinese, the landing site of the extracted NP moves to the subject position, presumably receiving Case there. Moving the extracted noun to the subject, or any Case position, in French would give very bad results, as attempted in (6):

- (6) a. \*(Des) hommes sont arrivés trois.  
       men are arrived three

- b. \*(Des) hommes ont été tués trois.  
 men have been killed three
- c. \*(Des) maisons se (en) ont été construites.  
 houses se (of-them) have been built

Contrary to French, Chinese seems to systematically allow an extracted NP to land in a Case position and leave behind a numeral-classifier, as demonstrated by the BA and BEI structures given in (7) and (8).

- (7) a. Wo mai diao le san zhang Lisi de youpiao.  
 I sell-out-asp three CL Lisi's stamps  
 'I sold three of Lisi's stamps.'
- b. Lisi de youpiao bei wo mai diao le san zhang.  
 Lisi's stamp BEI I sell-out-asp three CL  
 'Three of Lisi's stamps were sold by me.'
- (8) a. Wo mai diao le san zhang Lisi de youpiao.  
 I sell-off-asp three CL Lisi's stamp  
 'I sold three of Lisi's stamps.'
- b. Wo ba Lisi de youpiao mai diao le san zhang.  
 I BA Lisi's stamp sell-off-asp three CL  
 'I sold three of Lisi's stamps.'

The null hypothesis for BEI structure is that the process is exactly like that of English passive. Therefore, it is reasonable to assume that the extracted NP moves to the subject position in (7b). Chinese linguists have very different ideas about BA. But there is one unanimous consensus, which is that the NP appearing with BA is Case marked by BA. We can safely assume that the extracted NP moves into a Case position in (8b).

One reason to put Chinese examples given above on the same line with the French partitive constructions, besides the partitive interpretation, is that DE is observed in both languages. The DE, in the partitive context, describes the phenomenon that when the numeral quantifier is contained in a DP, the extraction of NP is not permitted. All four impersonal constructions we discussed earlier become ungrammatical when the quantifier is preceded by a determiner.

- (9) a. \*Il en est arrivé les trois. (des hommes)  
 there of-them is arrived the three.
- b. \*Il en a été tué les trois. (des hommes)  
 there of-them has been killed the three.
- c. \*Il s'en est construit les trois. (des maison)  
 there se of-them is built the three.
- d. \*Il en a conduit les trois. (des femmes)  
 there of-them has driven the three

The impossibility of *en* cliticization, (i.e. extraction out of DP) is supposedly related to some change that takes place in the complement position. (10) shows that the internal argument cannot stay in

situ any more, when it is definite. Chinese partitive constructions also exhibit DE, as shown in (11).

- (10) a. \*Il est arrivé l'homme.  
           there is arrived the men  
 b. \*Il a été tué les trois hommes.  
           there has been killed the three men  
 c. \*Il s'est construit les maisons.  
           there se is built the houses  
 d. \*Il a conduit les femmes.  
           there has driven the women
- (11) a. \*Lai le na san ge keren.  
           come-asp those three CL guest  
           'There came those three guests.'  
 b. \*Liside youpiao bei wo mai diao le na san zhang.  
           Lisi's stamp BEL I sell-out-asp those three CL  
           'Those three of Lisi's stamps were sold by me.'  
 c. \*Wo ba Liside youpiao mai diao le na san zhang.  
           I BA Lisi's stamp sell-off-asp those three CL  
           'I sold those three of Lisi's stamps.'

To summarize, Chinese and French both have partitive construction with the form of an extracted element (clitic in French, NP in Chinese) and a stranded numeral quantifier. Both languages exhibit DE in partitive construction. However, one crucial difference must be observed: the landing site of the extracted element must be a Caseless position in French but a Case position in Chinese. The contrast in landing site between Chinese and French, I would like to point out, can be extended to that between East Asian languages and Romance languages. For example, the Japanese paradigm in (12) clearly shows DE:

- (12) a. (Sono) san-nin-no gakusei-ga kita.  
           (those) three-CL-gen student-Nom come-past  
           'Three students came.'  
 b. Gakusei-ga san-nin ki-ta.  
           student-Nom three-CL come-past.  
 c. \*Gakusei-ga sono san-nin ki-ta.  
           student-Nom those three-CL come-past.  
           'Those three students came.'

## 2. Syntactic properties of classifiers

In this section I examine the syntactic and morphological properties of classifiers in Chinese and Japanese and concludes that they are in many ways comparable to Romance clitics, including its ability to absorb Case. It is based on this comparison and the partitive Case developed in Belletti 1988 and Lasnik 1992 that I propose an classifier incorporation analysis to account for the landing site difference between Romance and East Asian Languages. Kayne 1987 and



Sportiche 1991 points out that Romance clitics have the following properties: (Sportiche 1991:51)

- (13) a. a clitic is one word long  
 b. a clitic never bears stress  
 c. a clitic cannot be coordinated  
 d. Nothing can intervene between a clitic and its host (except other clitics).  
 e. No syntactic process (movement, deletion... ) can affect the host without affecting the clitic as well.

Following Sportiche 1991, I assume that clitics are heads adjoined to their hosts. Almost identical properties are found in Chinese classifiers:

- (14) a. a classifier is one word long, cannot be modified at a syntactic level  
 b. a classifier cannot be used  
 c. a classifier cannot be coordinated  
 d. Nothing intervenes between a classifier and its host (except a limited number of adjectives that form a disyllabic compound with it)  
 e. No syntactic process (movement, deletion... ) can affect the host without affecting the classifier as well.

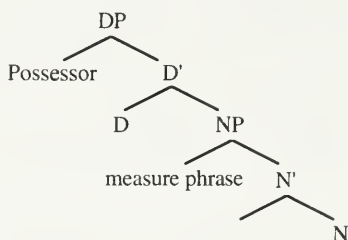
Examples that demonstrate the points in (14) are given below in (15).

- (15) a. \*san hen da de ben shu  
           three very big-DE CL book  
           'three big volumes of books'  
 b. \*san ben he tao shu  
           'three volumes and sets of books'  
 c. A- Ni mai le san ben haishi \*(san) tao shu?  
           'Did you buy three volumes or sets of books?'  
       B-\*(san) ben.  
           'volume'  
 d. \*zhe wode ben shu / \*san wode ben shu / etc.  
           'this my book / three my books / etc.'  
 e. \*ben shu wo mai le san.  
           'books I bought three' (topicalization)

(15a) shows that classifiers cannot be modified by adjectives. They cannot be coordinated either, as shown in (15b). (15c) describes the fact that they cannot be used contrastively, even stressed. The ungrammatical (15d) shows that the subject *wo* 'I' cannot appear between a determiner or a numeral and a classifier. Were it the case that a classifier is only a phonological enclitic and never moves in the syntax, we would expect that (15d) to be acceptable with the classifier cliticized onto *wode* 'my' at PF. But that is not possible. Finally, (15e) shows that movements such as topicalization cannot separate the classifier from its host, the numeral.

That immediately raises the question of its location. Abney 1987 proposes the following structure for English noun phrases, also known as the DP hypothesis.

(16)

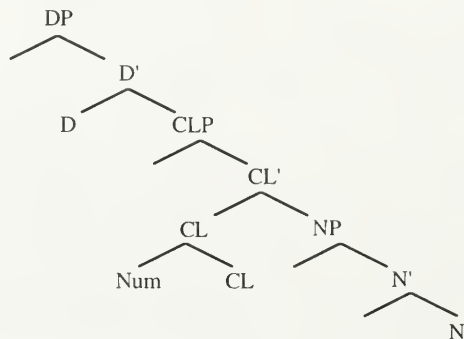


The structure of (16) will render the correct word order for Chinese noun phrases. Considering the 'agreement' between the head noun and the classifier, it is not implausible to extend Abney's proposal to Chinese, which will naturally capture the 'agreement' between a classifier and a noun through the spec-head relation in such a structure. A closer look into the Chinese noun phrases, however, will reveal a potential problem for adopting (16) into Chinese, which is the fact that the specifier position of a head noun must be available for another NP, as shown below in (17),

- (17) a. san-ben Zhangsan-de shu  
 three-CL Zhangsan-poss book  
 b. Zhangsan-de san-ben shu  
 Zhangsan-poss three-CL book  
 'three books of Zhangsan (Agent or Possessor)'

The structure of (16) will prevent the cooccurrence of a classifier and a genitive NP such as the one in (17a). To solve this problem, Tang 1990 suggests the structure in (18), with a CLP projected above NP containing two base-generated heads, namely, Num and CL.

(18)



The double-headed structure captures the empirical facts that show the numeral and the classifier syntactically behave as one unit, although in terms of X-bar Theory it is not the typical structure. I will contend in the following section that (18) is not only theoretically undesirable but also empirically inadequate. Classifiers are sometimes loosely called measure words because they seem to appear in the same position inside a noun phrase, as shown in (19):

- (19) a. san ben shu  
           three-CL book                   'three books'  
       b. san-ge ren  
           three-CL man                   'three men'  
       c. san-bei kafei  
           three-cup coffee               'three cups of coffee'  
       d. san-bang tang  
           three-pound sugar             'three pounds of sugar'

A semantic difference between classifiers and measure words is the fact that true classifiers such as *ben* and *ge* in (19a,b) do not denote any 'measure' in terms of shape, size, weight, etc. as do *bei* and *bang* in (19c,d). Historically classifiers and measure words were both once independent nouns, which fact makes distinguishing the difference between the two groups even more difficult. One can claim that on semantic grounds *ben* and *ge* are precisely measures for books and men in Chinese and that the gloss of each phrase in (19a, b) can be rendered as 'three units/counts of books' and 'three units/counts of men.' The syntactic difference between the two in Chinese noun phrases demonstrated in (20), however, suggests that it cannot be the case.

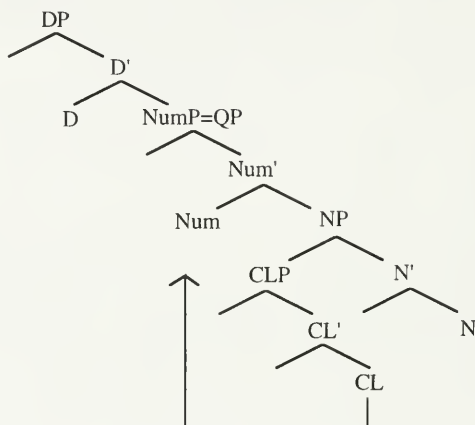
- (20) a. \*san ben de shu  
           three-CL book                   'three books'  
       b. \*san-ge de ren  
           three-CL man                   'three men'  
       c. san-bei de kafei  
           three-cup coffee               'three cups of coffee'  
       d. san-bang de tang  
           three-pound sugar             'three pounds of sugar'

As shown in (20c,d), the genitive Case marker *de* in (20) can be freely inserted between the measure word and the noun, whereas such an insertion between a classifier and a measure word results in ungrammaticality, as shown in (20a,b). Another difference comes from the compatibility of the word *ban* 'half' with measure words but not classifiers:

- (21) a. \*san ben ban (de) shu  
           three-CL half book  
           'three and a half books'  
       b. san-bei ban (de) kafei  
           three-cup half coffee  
           'three and a half cups of coffee'

Considering the possibility of genitive Case marking on the measure words (what Abney's structure would allow) and the observations that numeral-classifier behaves as one unit (what Tang's structure would capture), I propose a modified version of Abney's structure for Chinese noun phrases, shown in (22):

(22)

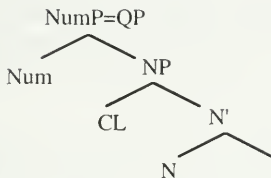


In structure (22), the CLP is base-generated under spec of NP, a position where genitive Case can be assigned. This solves Tang's problem in (18). I will argue that true classifiers behave differently from measure words only in that they are bound morphemes and must incorporate into Num, whereas measure words can incorporate as true classifiers but does not need to. Evidence from Chinese phonology further supports the incorporation analysis. The Chinese tone sandhi rule changes a low (L) tone to a rising (LH) tone when it is followed by another low tone. This rule is sensitive to the morphological or syntactic structure as shown in (23):

- (23) a. wo xiang ni                    'I miss you'  
           L   L   L  
       -> L LH L
- b. ni    zou hao    you go good 'it is good for you to leave'  
           L   L   L            (reading 'please walk carefully' irrelevant)  
       -> LH LH L

The underlying tone representation of (23a,b) is three consecutive low tones, but the output is different. (23a) has the structure of [ X [ Y Z ] ]. Since the application of the tone sandhi rule applies cyclically from inner bracket outwards, the rule applies vacuously at the second cycle and gives the output of [ L [ LH L ] ]. (23b) has the structure of [ [ X Y ] Z ], which renders [ LH L ] L ] at the first cycle and [ LH LH ] L ] as the final output. I have adopted (22) as the structure of Chinese noun phrase, now simplified below in (24).

(24)

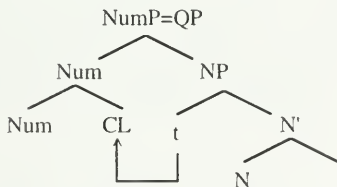


The structure of (24) is identical to that of (23a) in the sense that it is right-branching; therefore, by analogy, a string of three consecutive low tones in such a noun phrase should render a possible output of [ L [ LH L ] ]. The examples in (25) show that this prediction is not borne out.

- (25) a. wu ba san                    'five-CL umbrella'  
           L L L  
       -> LH LH L            (\*L LH L)
- b. wu zhong jiu            'five-kind dog'  
           L L L  
       -> LH LH L            (\*L LH L)

The correct output patterns with the left-branching structure in (23b). But this is expected if we assume that the classifier incorporates into numeral and changes the structure from right-branching to left-branching. The movement is shown in (26).

(26)



Note that the movement approach in (26) also provides an account for the difference between true classifiers and measure words in terms of *de* insertion discussed in (20). Chinese true classifiers must undergo incorporation and therefore are unable to assign a nominal Case, genitive *de* in this case, to the NP. On the other hand, measure words, being free morpheme, may choose to stay in situ and trigger *de* insertion, or optionally it may incorporate into the numeral. This analysis accounts for the asymmetry of *de* insertion of classifiers and measure words in Chinese. By adopting Abney's analysis in (16), I now face the problem that turned Tang away from Abney to propose (18), namely the possibility to insert a possessor phrase between the classifier and the head noun, as shown in (17). I will assume that NP also have potential NP shell structure, analogous to Larson's proposal for double object verbs. Assuming that, the noun phrases in (17) can be represented by two different structures in (27):

- (27) a. Zhangsan de san-ben shu 'Zhangsan's three-CL books'  
 [DP possessor [QP numeral-classifier<sub>i</sub> [NP t<sub>i</sub> [ N]]]]  
 b. san-ben Zhangsan de shu 'three-CL Zhangsan's books'  
 [QP numeral-classifier<sub>i</sub> [NP t<sub>i</sub> [NP possessor [ N]]]]

### 3. Partitive case under incorporation

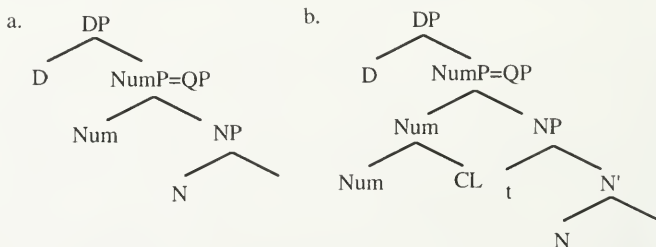
We see that the analogy between a Romance clitic and a Chinese/Japanese classifier is complete. Inevitably we encounter the problem related to the Case Theory. It is argued in Jaeggli 1986, Baker, Johnson, & Roberts 1989 among others that Case absorption takes place under incorporation. Sung 1992 argues that regular Case assignment can be done in the incorporation structure, besides the generally assumed spec-head agreement relation and government relation. In the previous two chapters, we have discussed how clitics or implicit agent  $X^0$ s acquire Case under incorporation. Here I want to pursue the idea that classifiers acquire Case under incorporation.

Historically, all classifiers (i.e. bound and free classifiers) were once nouns. And in modern Chinese, they still exhibit (heavily reduced) nominal features such as forming a compound measure word by being modified by adjectives.

- (28) a. yi da-ben shu  
 one big-CL book  
 b. yi xiao-zhang zhi  
 one small-CL paper

It is therefore plausible to assume, analogous to Romance clitics, that the incorporating classifiers qualify for being a Case bearer in the similar fashion of an implicit Agent in passives and middles as well as the impersonal clitic *se/si* in various Romance impersonal structures. Consider the following the structures:

(29)



(29a) represents the structure of a Romance noun phrase; (29b) that of Chinese. Following the claim I discussed earlier in the clitic construction and causative construction, I assume that the Case, inherent or structural, must transmit through DP to NP. This is straightforward in Romance. NP gets Case via NumP which is not nominal. The Chinese noun phrase shown in (29b) is different. The Case transmitted down from DP must go through NumP which now contains a classi-

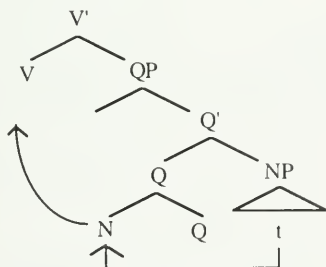


fier, a potential Case bearer. I propose that the Case can be absorbed there by the classifier and does not percolate down to NP. This analysis provides a plausible account for the landing site difference between Romance and East Asian languages. First let me summarize the assumptions that I made so far:

- (30) a. QP receives partitive Case under government/sisterhood by existential, unaccusative, passive verbs, etc.  
 b. Classifiers must and measure words may incorporate into Q.  
 c. Incorporated classifiers, like Romance clitic *se/si*, can bear Case.

(30a) is basically what Belletti's and Lasnik' partitive Case assignment. DE is explained under the stipulation that partitive Case is incompatible with definite NPs. (30b) and (30c) are aimed to explain why NPs in East Asian languages can be extracted from a QP and land in a Case position. As shown in (29b), when the classifier absorbs the Case, NP is left Caseless and therefore raises to a Case position. The optionality of Case absorption by classifiers can be explained by the fact that the classifier does not have an independent  $\theta$ -role so Case is not required by the Visibility Condition. This in turn explains the optionality of NP raising. Now consider the following structure:

(31)



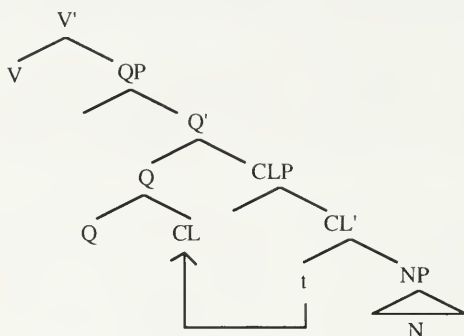
In structure (31), the head noun of NP undergoes incorporation in its clitic form. It first incorporates into Q, receiving Partitive Case under incorporation, and then cliticizes onto Infl. This is, I assume, exactly what happens in *Il en a été tué trois t*. A serious problem arises when we consider the possibility of bare NP movement. Again in (31), if *hommes* undergoes NP movement, it first moves into spec of QP. Since Partitive Case is strictly structural, it is not assigned through spec-head relation. The Caseless NP *hommes* then moves on to any Case position available, in this case Nominative Case position in the spec of IP. The movement appears to be all legitimate, the output, however, is completely ungrammatical:

- (32) \*Hommes ont été tués trois t.  
 men have been killed three

This is striking because as we mentioned earlier this derivation is very productive in languages with an intermediate level of classifier

phrase between QP and NP. Consider the following structure from East Asian languages:

(33)



From our earlier discussion, we have concluded that classifiers incorporate into Q like clitics and that they are case bearing nominal heads. The Caseless NP will have to obtain Case by moving through specs to a Case position. And this is what happens in Chinese unaccusative, BA, and BEI structures:

- (34) a. Keren lai le san ge t.  
 guest come-asp three CL  
 'There came three guests.'
- b. Wo ba Lisi de youpiao mai diao le san zhang t.  
 I BA Lisi's stamp sell-off-asp three CL  
 'I sold three of Lisi's stamps.'
- c. Lisi de youpiao bei wo mai diao le san zhang t.  
 Lisi's stamp BEI I sell-out-asp three CL  
 'Three of Lisi's stamps were sold by me.'

I have argued that restricting partitive Case assignment to head-complement relation can derive DE. The landing site difference, on the other hand, is accounted for by the assumption that classifiers absorb partitive Case. In the following section, I will show how some desirable consequences are derived from the proposed analysis.

#### 4. Consequence: participle agreement in romance partitives

One consequence coming from the partitive Case analysis developed here is the different patterns of past participle agreement in partitive constructions represented by two Romance languages: French and Italian.

- (35) a. Marie en a fait(\*es) trois. (des compositions)  
 Marie-of-them has made three
- b. Maria ne ha viste tre.  
 Maria-of-them has seen three

As shown in (35a), French partitive clitic *en* cannot trigger agreement while the Italian equivalent (35b) does trigger agreement. In Sung 1992, I have argued that clitic movement is strictly head-movement and that we need not confine ourselves to the assumption that only spec-head relation can trigger agreement. I proposed an A-type versus A'-type of Incorporation, stated below in (36), to account for the French and Italian participle agreement facts:

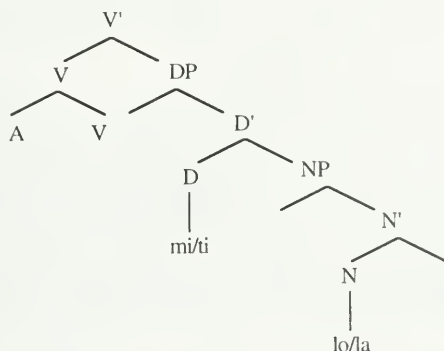
- (36) A-incorporation triggers agreement, where A-incorporation is defined as follows: In  $[X^0 [H][X]]$ , H is in an A-position iff X assigns Case to H.

One prediction of the A/A' incorporation analysis is that when a clitic can only receive Case under A-incorporation, for instance, when it does not hold a head-complement relation with the Case assigning verb, agreement is obligatory. I argued that the dichotomy between the agreement facts of first/second person clitics and third person clitics found in Italian is such a case.

- (37) a. Maria, l'ho incontrata/\*incontrato.  
'Maria, her I have met.'  
b. Tu (fem.), ti ho incontrato/incontrata.  
'You, you I have met.'

Koopman (UCLA lectures, 1992) points out that a dichotomy of a stricter sort also exists in certain groups of African languages. She suggests that first and second person pronouns may be attached at a higher level in the structure. If Koopman's suggestion is correct, then the dichotomy in (37) is predicted. Consider the structure in (38):

(38)

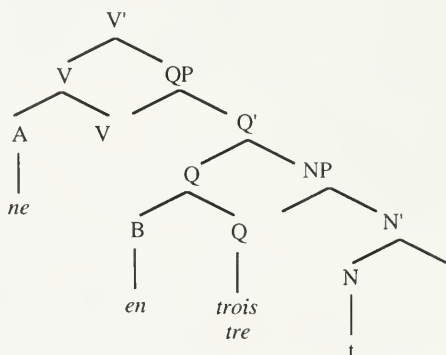


First and second person clitics *mi/ti* are base-generated under DP, maintaining head-complement structure with the verb. It can either receive Case in situ under head-complement relation or receive Case under A-incorporation. The latter instance will trigger head-head agreement and the former instance does not trigger agreement because when the clitic later moves up the adjoining position is an A' position. This explains why the agreement is optional. Third person

clitics *lo/la* are base-generated under NP. They do not get Case in situ since it holds no head-complement relation with the verb. Head to head movement applies and first moves the third person clitic to D. Since the clitic is not the head of the structure [<sub>D</sub> [N] [D]], it cannot get Case there. The clitic moves further up to the verb, receive Case from it under A-incorporation, and trigger agreement. Since third person clitics can only receive Case under incorporation, agreement is obligatory.

In favor of this line of thinking is the fact that the Definiteness Effect can be easily captured structurally. Consider (39), a structure different from (38) only in that the object is an indefinite QP.

(39)



When the verb in (39) does not have accusative Case to assign, QP can still get structural partitive Case under head-complement relation. If the object is definite, there must be an intervening DP above QP to block the Case assignment. That is DE.

Now let us consider the partitive clitic *en* in the French sentence (35a) *Marie en a fait* (\*agreement) *trois* 'Marie has done three of them'.  $N^0$  must move to Infl via head-to-head movement and first move to position B in (39), which according to our analysis can receive partitive Case from Q under head-head relation.  $N^0$  then is realized as a partitive clitic *en*. Agreement between *en* and the numeral quantifier is supposed to be triggered for it's an A-incorporation. I contend that it is indeed the case but since numeral quantifiers cannot inflect in French there is no overt morphology to confirm my view.

The Italian sentence in (35b) *Maria ne ha viste tre* 'Maria of-them has seen-agreement three' poses a serious problem to our analysis. It appears that the Italian  $N^0$  must move into Q first, without getting Case, and moves on into V and receives Case in position A in (39). It triggers agreement on V and is realized phonetically as *ne* before it finally moves into Infl. The problem for this derivation is that there is no principled way to block  $N^0$  from getting Case inside Q. Positing stipulations to prevent Italian  $N^0$  from receiving partitive

Case in position B is certainly awkward. To maintain our assumption that partitive Case is assigned to Q, we have to assume that the Italian  $N^0$ , just like its French counterpart, also receives partitive Case from position B in (39), and not position A. I attribute the agreement difference between (35a) and (35b) to not come from a parametric difference in partitive Case assignment but instead to come from the same source that creates the contrast between the French example in (40a) and the Italian example in (40b).

- (40) a. *Trois filles ont été(\*es) tuées.*  
 'Three girls have been killed.'  
 b. *Maria è stata/\*stato accusata.* (Burzio 1986:54-55)  
 'Maria has been accused.'

As shown in (40a), French does not have multiple agreement on participles, but Italian requires agreement on both past participles of the auxiliary *stato* 'been' and the verb *accusato* 'accused'. This idiosyncratic property of Italian may have caused the agreement on the participle in partitive construction. The paradigm in (35) then can be represented in (41):

- (41) a. *Marie en a fait(\*es) trois*(agreement, covert) t.  
 Marie of-them has made three  
 b. *Maria ne ha viste tre*(agreement, covert) t.  
 Maria of-them has seen three

With regards to participle agreement, (41) neatly parallels (40). The parametric difference between French and Italian in terms of multiple agreement is a separate (and interesting) issue. For our purposes, I consider the partitive Case analysis developed here capable of accounting for the impossibility of agreement in the French partitive construction.

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**THE SYNTAX AND SEMANTICS  
OF TEMPORAL ADJUNCT CLAUSES\***

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Assuming a Reichenbachian approach to tense, I propose a regular mapping between the syntactic and semantic representation of tense, whereby the Event point is associated with the head of VP, the Reference point with the head of Aspect Phrase, and the Speech point with the head of Tense Phrase. I then argue that temporal adjunct clauses interpreted as simultaneous with the matrix event ('while', 'as' clauses) are associated syntactically with VP, since the Event points of the adjunct and matrix clause are linked, while nonsimultaneous adjunct clauses ('before', 'after' clauses), are associated with AspP, since their Event points are not linked.

**1. Introduction**

The aim of this paper is to offer an analysis of the syntax of tense which maintains a principled mapping between the semantic and the syntactic representation of tense, and to show that this analysis makes possible an explanatory account of the distribution of temporal adjunct clauses. In section 2, I summarize the Reichenbachian approach to the semantics of tense that I adopt here. In section 3, I propose that the basic semantic units of tense, the Event, Reference, and Speech points, are represented by syntactic heads in a one-to-one fashion. I thus follow much recent work on the syntax of tense which claims that the temporal information of a clause is represented not only in TP, (Tense Phrase), but in other phrases of the clause as well. I argue that the other phrases that carry tense information of the clause are VP and AspP (Aspect Phrase).

In section 4, I show that this analysis paves the way for a straightforward account of the distribution of temporal adjunct clauses. I argue that depending on where 'when' clausal adjuncts are attached in the clause, they receive a different temporal interpretation, since they are associated with different parts of the tense structure of the main clause. 'When' clauses which have their Event points interpreted as simultaneous with the matrix Event point are associated to VP, in a local relation with the matrix Event point in the head of VP; nonsimultaneous 'when' clauses, on the other hand, are associated to AspP, not being related to the matrix Event point. Syntactic evidence in favor of this analysis from VP constituency tests and the interaction of negation with 'when' clauses is discussed.

I argue in section 5 that temporal connectives such as 'while' and 'before' which force either a simultaneous or a nonsimultaneous reading of the temporal adjunct are unambiguously either associated to VP (simultaneous) or AspP (nonsimultaneous). Evidence for this analysis comes from the distribution of temporal PP adverbs, as well as from c-command asymmetries between the direct object and these adjuncts with respect to quantifier binding, negative polarity item licensing, and binding condition C effects. I conclude this section with a discussion of antecedent-contained deletion constructions with temporal adjunct clauses, which support the claims developed in this paper.

## 2. Framework

I assume a Reichenbachian approach to the semantic representation of tense, where tenses are composed of three 'time points': the Event point, the Speech point, and the Reference point (Reichenbach 1947). This system is illustrated in (1), where the Event point is the time of Mary's leaving, the Reference point is the time by which Mary leaves (in this sentence, 2:00), and the Speech point is the time at which the sentence is uttered.

(1) At 2:00, Mary had left.

Following Hornstein's 1990 neo-Reichenbachian approach to tense, tenses are composed by linearly ordering these three time points. The structures of the basic tenses of English are as in (2). If two points are separated by a line, the leftmost point is interpreted as temporally preceding the other point, and if two points are separated by a comma, they are interpreted as contemporaneous:

|             |                 |
|-------------|-----------------|
| (2) S, R, E | present         |
| E, R _ S    | past            |
| S _ R, E    | future          |
| E _ S, R    | present perfect |
| E _ R _ S   | past perfect    |
| S _ E _ R   | future perfect  |

To illustrate this system, notice that in the tense structure of the simple past tense in (2), the Event time occurs temporally before the Speech time. This is the correct temporal interpretation for a past tense sentence, as shown in (3), where the event of buying takes place before the Speech time, when the sentence is uttered.

(3) Mary bought a car.

## 3. A syntax for tense

Assuming that the semantic primitives of tense are temporal points, the issue for syntax is if these points are represented structurally, and, if they are, how they are represented. I follow recent researchers who have claimed that temporal points are the syntactic, as well as the semantic, primitives of tense (Hornstein 1977, 1981, 1990; Zagona 1988, 1990; Giorgi & Pianesi 1991; Stowell 1993). In

particular, I propose the Tense Structure Mapping Condition:

- (4) Tense Structure Mapping Condition: Time points are associated with syntactic heads in a one-to-one fashion

Given that there are three temporal points, the Tense Structure Mapping Condition entails that the tense information of the clause is represented by three syntactic heads. I propose that the time points of Tense are associated with syntactic heads in the following way: the Event point is associated with the head of VP, the Speech point with the head of TP, and the Reference point with the head of AspP, located between TP and VP.

#### 4. Tense structure of temporal adjunct clauses

Assuming that the tense information of the clause is spread out in different parts of the clause as discussed above, I examine in this section the syntax of temporal adjunct clauses, which are associated with the tense structure of the main clause. I show that the distribution of temporal adjuncts gives evidence for the present proposal about the syntax of tense.<sup>1</sup>

I assume Hornstein's 1990 formulation of the derivation of tense structures, according to which temporal points can be linked to each other, resulting in the points being interpreted as contemporaneous. In the derivation of the tense structure of temporal adjunct clauses, temporal points of the adjunct are linked to temporal points of the matrix clause, yielding temporal dependency.

Consider the sentence in (5).

- (5) Mary left after Phyllis arrived.

The matrix event of leaving is temporally located relative to the adjunct event of arriving. In order to locate an event time with respect to another event time, it is necessary to hold everything else constant in the tense structure. This is accomplished by linking the Reference and Speech points.<sup>2</sup> An example of this type of linking is shown in (6), with the tense structure representation in (7).

- (6) John left the room when Mary came in.

- (7)  $E_1, R_1 - S_1$   
       |     |  
 $E_2, R_2 - S_2$

##### 4.1 Temporal ambiguity of 'when' clauses

The interpretation of a 'when' clause is temporally ambiguous. This is illustrated by (8), which can have a simultaneous reading, with the leaving occurring at the same time as the coming in, or a nonsimultaneous reading, where the leaving and coming in take place at different times.

- (8) John left the room when Mary came in.

I propose that on the simultaneous reading of a 'when' clause, the two Event points of the tense structure are linked, in addition to the Reference and Speech points, as illustrated in (9). The tense structure that results on the nonsimultaneous reading is as in (10), the one proposed by Hornstein for temporal adjuncts in general. Here, the Event points are not linked, and hence, are not contemporaneous.

- (9)  $E_1, R_1 - S_1$   
       |    |    |           **Simultaneous**  
        $E_2, R_2 - S_2$
- (10)  $E_1, R_1 - S_1$   
       |    |           **Nonsimultaneous**  
        $E_2, R_2 - S_2$

This semantic analysis of temporal adjunct clauses, combined with the syntax of tense that I have proposed above, offers an interesting account of the syntax of temporal adjunct clauses. Given the claim that the Event point is located in the head of VP, and the Reference and Speech points are located higher up in inflectional heads, a natural structural account for the ambiguity of temporal adjunct clauses emerges. I propose that temporal adjunct clauses can be adjoined either to VP or to AspP; when the clause is adjoined to VP, the simultaneous reading results, and when it is adjoined to AspP, the nonsimultaneous reading results.<sup>3</sup>

#### 4.2 Constituency tests

In this section, I present structural evidence for the hypothesis that temporal adjunct clauses on the simultaneous reading are adjoined to VP, while temporal adjunct clauses on the nonsimultaneous reading are adjoined to AspP. Constituency test data show that when the VP is isolated by Pseudoclefting (11) and VP fronting (12), the only reading available for the adjunct is the simultaneous reading, where Mary's coming in is contemporaneous with John's leaving.

- (11) What John did was leave the room when Mary came in.
- (12) John claimed that he left the room when Mary came in, and left the room when Mary came in he did.

This data is predicted on the approach developed here, since in these constructions, the adjunct is necessarily associated with VP, resulting in the simultaneous reading.<sup>4</sup>

#### 4.3 Negation and 'when' clauses

Additional evidence for this structural ambiguity comes from data involving the scope of sentential negation. Sentential negation seems to take scope over adjuncts on a simultaneous reading, and not over adjuncts on a nonsimultaneous reading. This follows on the account developed here, since on the simultaneous reading the adjunct

is VP-adjoined, and hence within the scope of negation, and on the nonsimultaneous reading, the adjunct is AspP-adjoined, and hence outside the scope of negation.

On the simultaneous reading of (13), where the leaving takes place at the same time as the coming in, negation has scope over the adjunct; the sentence means 'It is not when John comes in that Mary leaves the room'. The reading with negation not taking scope over the adjunct is not possible, where the sentence would mean 'It is when John comes in that Mary does not leave the room'.

(13) Mary didn't leave the room when John came in.

However, the judgments reverse on the nonsimultaneous reading of (13), where 'It is (either) before or after John's coming in that the leaving takes place'. Focusing on the reading where Mary's leaving occurs before John's coming in, the only available reading is where the adverb is outside the scope of negation; 'It is before John's coming in that Mary does not leave the room', and the reading with the adjunct within the scope of negation is not available, where 'It is not before John's coming in that Mary leaves the room'.

## 5. Other temporal connectives

Thus far, the analysis of temporal adjuncts presented here has focused on the distribution of 'when' clauses, which I have claimed are ambiguous between being adjoined to VP or to AspP, accounting for the simultaneous and nonsimultaneous readings, respectively. However, it is clear that other temporal connectives behave differently with respect to the readings that they permit. For example, 'while' and 'as' require simultaneity of the events of the matrix and adjunct clause; in (14), the events of singing and dancing occur necessarily at the same time. I claim therefore that adjuncts with these connectives are unambiguously associated to VP.

(14) Mary sang while John danced.

'Before' and 'after' clauses do not permit the two Event times to be contemporaneous; in (15), the walking and the leaving are necessarily noncontemporaneous. Following the same reasoning as above, these clauses are therefore unambiguously adjoined to AspP.

(15) Bob walked the dog after Mary left.

### 5.1 Temporal clauses and PP adverbs

Evidence for the tense structure proposed here for simultaneous versus nonsimultaneous temporal adjunct clauses comes from the distribution of temporal PP adverbs. Following Hornstein 1990, I assume that temporal adverbs modify the temporal points of tense structure. For example, in the sentence in (16), the adverb 'at 2:00' modifies the Reference point of the sentence; it specifies the time by which the leaving takes place.

(16) At 2:00, John had eaten his lunch.



Recall that nonsimultaneous adjunct clauses have their Reference and Speech points linked to the matrix clause, while simultaneous adjunct clauses have their Event point linked as well. Given this, we predict that adverbial modification of the Event point of a simultaneous adjunct necessarily entails modification of the Event point of the matrix clause. This is in fact borne out, as shown by (17), with the tense structure in (18), where 'at 9:00' modifies the Event point of the adjunct clause, and also necessarily modifies the Event point of the matrix clause — both the walking and the leaving take place at 9:00.

(17) John left the room while Mary was walking home at 9:00.

(18)  $E_1, R_1 - S_1$   
 | | |  
 $E_2, R_2 - S_2$   
 |  
 at 9:00

However, as illustrated by (19), with the tense structure in (20), adverbial modification of the Event point of a nonsimultaneous adjunct clause does not entail modification of the Event point of the matrix clause; on the reading where the event of coming in takes place at 3:00, the event of leaving does not.

(19) John left the room after Mary came in at 3:00.

(20)  $E_1, R_1 - S_1$   
 | |  
 $E_2, R_2 - S_2$   
 |  
 at 3:00

The distribution of adverbial PP modifiers with temporal adjunct clauses thus gives evidence for the analysis offered here.

## 5.2 Direct object/adjunct asymmetries

Further evidence in support of the present proposal for the syntax of different types of temporal adjunct clauses comes from structural asymmetries between direct object and adjunct. It has been noted in the literature that certain adverb phrases seem to be c-commanded by their direct object. (Anderson, 1979; Contreras, 1984; Larson, 1988; Stroik, 1990). This data is illustrated in (21), where the direct object seems to c-command into the adverb phrase.

In (21a), the direct object quantifier phrase 'every crewman' seems to bind the pronoun 'his' in the adjunct, while in (21b), the negative polarity item 'at all' within the adjunct is licensed by the direct object 'no work'. The ungrammaticality of (21c) is explained as a binding condition C violation if the direct object pronoun c-commands the coreferential name within the adjunct.





- c. Binding condition C effects
  - i. \*Mary saw him<sub>i</sub> while John<sub>i</sub> was presenting his paper.
  - ii. Mary saw him<sub>i</sub> after John<sub>i</sub> presented his paper.

To conclude, evidence from quantifier binding, negative polarity item licensing and binding condition C effects show that the position of simultaneous temporal adjunct clauses is within the c-command domain of direct objects at LF, while the site of nonsimultaneous temporal adjunct clauses is outside the c-command domain of the direct object. This data therefore supports the structural analysis of the syntax of simultaneous and nonsimultaneous temporal adjuncts pursued here.

### 5.3 Temporal adjuncts and antecedent-contained deletion

Simultaneous and nonsimultaneous temporal adjunct clauses differ in an interesting way with respect to the VP deletion structures known as antecedent-contained deletion (ACD). In this section, I show that the account developed here of the distinction between the two types of temporal adjuncts explains this contrast.

Sentences with VP deletion such as (24) below are standardly analyzed as being interpreted by the first VP being copied into the position of the gapped VP.

(24) John [<sub>VP</sub> kissed Bill's mother] and Sally did [<sub>VP</sub> e ] too.

ACD sentences such as (25) are problematic for this approach, since in these constructions the VP that is supposed to be copied into the gapped position itself contains the gap. If the VP is copied into the gap, it will still contain a gap, which will need to be filled by the VP, and so on. This is the so-called 'infinite regress problem' of ACD structures.

(25) John [<sub>VP</sub> kissed everyone that Sally did [<sub>VP</sub> e ] ]

May 1985 points out that if quantified NPs move to adjoin to IP at LF, then the regress can be avoided.<sup>5</sup> In (25), the direct object 'everyone that Sally did [<sub>VP</sub> e ]' moves to IP, and is hence outside the VP that the null VP is anaphorically related to. Copying can then take place with no regress problem.

As noted by Hornstein 1994, ACD structures are licensed not only with arguments of the verb, but with adjuncts as well. Interestingly, ACD structures are permitted with nonsimultaneous adjunct clauses, but they are not permitted with simultaneous adjunct clauses, as illustrated in (26) (following Larson's 1987 analysis of structures such as in (26) as ACD constructions).

- (26) a. John left before/after Mary.
- b. \*John left as/while Mary.

The account developed here predicts this difference in behavior between the two types of temporal adjuncts. Since nonsimultaneous adjuncts are outside of VP, the anaphoric VP can be copied into the

gap without an infinite regress. However, simultaneous adjuncts are within VP, and hence copying this VP into the gap will create an infinite regress.<sup>6</sup>

## 6. Conclusion

To conclude, I have argued that there is a direct mapping between the semantic and the syntactic representation of tense, such that temporal points are associated in a one-to-one fashion with syntactic heads. The temporal information of the clause is located in VP and AspP, as well as in TP. I then showed that this approach to the syntax of tense makes possible a well-motivated analysis of the structure of temporal adjunct clauses. I claimed that temporal adjunct clauses associate either to VP or to AspP, and that when they are attached to VP, the Event point of the adjunct links to the Event point of the matrix clause, yielding a simultaneous reading, whereas when they are adjoined to AspP, the Event points do not link, and therefore a nonsimultaneous reading results. Evidence from constituency tests, scope of sentential negation, the distribution of temporal PP modifiers, structural asymmetries with the direct object, and antecedent contained deletion structures support the proposal pursued here for the structure of temporal adjunct clauses.

## NOTES

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<sup>1</sup> For related discussion of the distribution of temporal PP adverbs, see Thompson 1994.

<sup>2</sup> See Hornstein 1990 for empirical arguments for the linking of the Reference and Speech points in temporal adjunct clause structures.

<sup>3</sup> Other recent analyses which exploit different adjunction sites for temporal adjuncts are Koizumi 1991, Miyamoto 1993, and Johnston 1994.

<sup>4</sup> This analysis supports the view that the 'linking' process in the derivation of tense structures is obligatory; when the adjunct is associated to VP, linking of the Event points must take place, it is not optional (see Hornstein 1990 for further discussion of this point).

<sup>5</sup> See also Hornstein 1994 for an analysis where the movement out of VP is motivated by Case theory, and not quantifier raising.

<sup>6</sup> This analysis entails that the position of VP-associated simultaneous adjuncts is within VP, and not VP-adjoined (see Larson 1988, Stroik 1990). This is so since if these adjuncts were adjoined to

VP, they should license ACD structures, since the inner VP could be copied to the gap contained in the clause adjoined to VP, without resulting in an infinite regress.

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## RESULTATIVES AND MOTION VERBS IN JAPANESE

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Talmy 1985 claims that many languages do not allow the co-occurrence of a manner of motion verb and a goal phrase, and Japanese has been claimed to be one such language. Among the three postpositions that express goal, however, one of them, *made* 'as far as', can appear with a manner of motion verb. This paper demonstrates various syntactic and semantic differences between the postpositions, and claims that *made* forms a resultative secondary predicate when it co-occurs with a manner of motion verb. I will further demonstrate that when such a co-occurrence obtains, the verb also displays unaccusative properties.

### 1. Introduction

Since Perlmutter's 1978 work, research on the identification and representation of unaccusative verbs has been undertaken cross-linguistically. Unaccusative verbs are identified by various diagnostic tests, many of which recognize the subject of an unaccusative verb as having the same syntactic behavior as the object of a transitive verb. On the basis of the parallelism between the subject of an unaccusative verb and the object of a transitive verb, the sole argument of an unaccusative verb has been syntactically represented as the direct object at d-structure, which is moved to the subject position at s-structure in order to receive Case (cf. Burzio 1981). By contrast, the sole argument of an unergative verb remains as an external argument throughout a derivation. The d-structure representations of these verb types are schematized as in (1).

- (1) a. transitive: [S NP [VP V NP]]  
b. unaccusative: [S \_\_\_ [VP V NP]]  
c. unergative: [S NP [VP V]]

In spite of ample cross-linguistic evidence for the presence of unaccusativity, the question as to what makes a verb unaccusative casts a conceptual challenge in the research on unaccusativity in general. To this end, the examination of lexical semantic properties of verbs has been very helpful to isolate the semantic characteristics of unaccusativity. In this paper I will discuss cases where unergative manner of motion verbs change their classification to unaccusative in Japanese, and show that a stronger specification of change of location is required for the class shift.



## 2. Goal phrases and extended meaning

Locative inversion has been claimed to serve as a diagnostic test for unaccusativity in English (cf. L. Levin 1985, Bresnan & Kanerva 1989). This is why unergative manner of motion verbs such as *run* and *swim* cannot appear in this construction. However, when unergative manner of motion verbs co-occur with a goal phrase, locative inversion is exhibited with these verbs. Consider the contrast in (2-3).

- (2) a. The children ran in the room.  
 b. \*In the room ran the children.
- (3) a. The children ran into the room.  
 b. Into the room ran the children.

In (2) the locative inversion is not allowed, which indicates that the verb is unergative, while the grammatical inversion sentence in (3) suggests that *run* should be classified as unaccusative when it co-occurs with a goal phrase such as *into the room*. On the basis of this observation, Levin & Rappaport 1989 claim that the generalization in (4) contributes to the determination of unaccusativity.

- (4) Verbs whose meaning includes a specification of inherent direction are found in the unaccusative syntactic configuration.  
 (Levin & Rappaport 1989)

Let us now see whether a similar situation obtains in Japanese. Talmy 1985 observes that many languages do not allow manner of motion verbs co-occurring with a goal phrase. Romance languages are examples of this, and as Yoneyama 1986 and L. Levin et al. 1988 independently observe, Japanese is included in this group. For example, the postpositions *ni* 'to' and *e* 'to', which can form a goal phrase in Japanese, cannot appear with a manner of motion verb like *aruku* 'walk' and *hasiru* 'run', as (5) illustrates.

- (5) a. ?/\*Taroo-ga kooen-ni/e aruita.  
 Taro-Nom park-to/to walked  
 'Taro walked to the park.'
- b. ?/\*Taroo-ga kooen-ni/e hasitta.  
 Taro-Nom park-to/to ran  
 'Taro ran to the park.'

As Yoneyama 1986 and Tsujimura 1990a independently show, however, there is yet another postposition that can head a goal phrase, namely, *made* 'as far as'. Interestingly enough, unergative manner of motion verbs can co-occur with *made*, as is illustrated in (6-7).

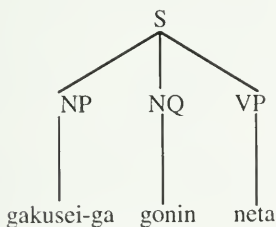
- (6) Hanako-ga eki-made aruita.  
 Hanako-Nom station-as far as walked  
 'Hanako walked to the station.'
- (7) Yooko-ga gakkoo-made hasitta.  
 Yoko-Nom school-as far as ran  
 'Yoko ran to the school.'



Furthermore, I have shown in Tsujimura 1990a that manner of motion verbs such as in (6-7) that co-occur with the *made*-phrase appear in the unaccusative configuration. Miyagawa 1989 demonstrates that a noun and its numeral quantifier must be in a mutual c-command relationship. This constraint can be observed in the contrast between (8) and (9), each of which is accompanied by the hierarchical structure.

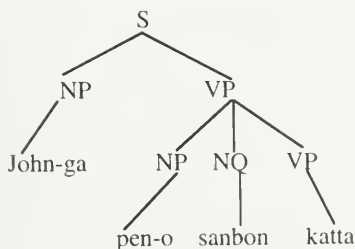
- (8) a. Gakusei-ga gonin neta.  
 student-Nom five people slept  
 'Five students slept.'

a'.



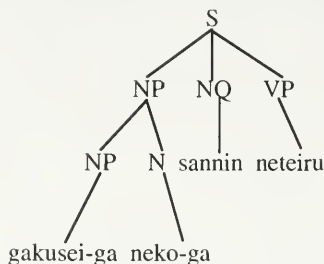
- b. John-ga pen-o sanbon katta.  
 John-Nom pen-Acc three bought  
 'John bought three pens.'

b'.



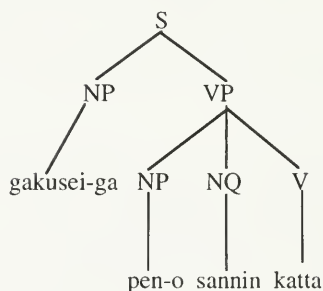
- (9) a. \*Gakusei-no neko-ga sannin neteiru.  
 student-Gen cat-Nom three people sleeping  
 'Three students' cats are sleeping.'

a'.



- b. \*Gakusei-ga pen-o sannin katta.  
 student-Nom pen-Acc three people bought  
 'Three students bought pens.'

b'.



In (8) the numeral quantifier and the noun of which the numeral quantifier is predicated are in a mutual c-command relation: in (8a) the numeral quantifier is predicated of the subject while the numeral quantifier is predicated of the object in (8b), and the mutual c-command holds between the numeral quantifier and the subject in (8a') and between the numeral quantifier and the object in (8b'). Such a mutual c-command relation is not observed in (9) between the specifier of the subject (i.e., *gakusei* 'student') and the numeral quantifier (i.e., *sannin* 'three people') in (9a') and between the subject (i.e., *gakusei*) and the numeral quantifier (i.e., *sannin*) in (9b'). Rather, what the structural configuration suggests is that the numeral quantifier in (9a') would be predicated of the head noun of the subject NP, i.e., *neko* 'cat', and that the numeral quantifier in (9b') would be interpreted with the object *pen* 'pen'. Thus, the intended reading fails to be obtained.

Given the constraint on numeral quantifier, the sentence in (10) is predicted to be ungrammatical.

- (10) Doa-ga [<sub>VP</sub> kono kagi-de hutatu aita].  
 door-Nom this key-with two opened  
 'Two doors opened with this key.'

The subject *doa* 'door' c-commands the numeral quantifier expression, *hutatu*, but the numeral quantifier does not c-command the subject because it is within the VP. Contrary to the prediction, the sentence is grammatical. Miyagawa explains this discrepancy as follows: the verb *aku* 'open' is unaccusative, and the subject *doa* is in the object position at d-structure. For Case theoretic reasons (Burzio 1981), the underlying object must move to the subject position. Since the trace of the surface subject stays within VP, maintaining a mutual c-command relation with the numeral quantifier, the sentence is grammatical. Hence, numeral quantifier is a reliable diagnostic test for unaccusativity in Japanese.

Now consider the following examples.

- (11) Gakusei-ga [<sub>VP</sub> awatete eki-made sannin aruita].  
 student-Nom hurriedly station-as-far-as three people walked  
 'Three students hurriedly walked to the station.'
- (12) Gakusei-ga [<sub>VP</sub> awatete gakkoo-made sannin hasitta].  
 student-Nom hurriedly school-as far as three people ran  
 'Three students hurriedly ran to the school.'

Given Miyagawa's 1989 claim that numeral quantifiers and their antecedents must be in a mutual c-command relation, the fact that the VP-internal numeral quantifiers receive proper interpretations with the VP-external subjects suggests that the subject is originated from the d-structure direct object position, confirming the unaccusative analysis of the manner of motion verbs in these examples. Notice that this is exactly the same pattern as we saw in English examples of (2-3).

The presence of the examples as in (11-12) led me to believe in my earlier work (Tsujimura 1990a) that the generalization in (4) should also apply to Japanese. However, we still face the persistent question of why a particular selection of postpositions, namely, *made* rather than *ni* or *e*, should matter for the verbal classification shift if the three postpositions under discussion are indeed the same type, that is, postpositions heading a goal phrase. Furthermore, another question arises as to why *made* behaves differently from *ni* and *e* in its conflation pattern, given the observation that manner of motion and direction of motion are not allowed to be conflated, as we saw in (5). These questions are especially intriguing since all these three postpositions can co-occur with inherently directed motion verbs such as *iku* 'go' and *kuru* 'come', as is illustrated in (13).

- (13) Taroo-ga kooen-ni/e made itta.  
 Taro-Nom park-to/to as far as went  
 'Taro went to the park.'

### 3. *Made* phrases as resultative predicates

Tenny 1987 states that unaccusatives are often associated with the notion of delimitedness, and that the internal argument serves as measuring out, and hence delimiting, the event. Levin & Rappaport Hovav (in press) further discuss that inherently directed motion verbs such as *go* and *come* are achievements, whereby change of location is lexically encoded, serving as a delimiter. On the other hand, unergative motion verbs are usually activity verbs without any specification of the endpoint of the action denoted by the verb. In Tenny's terms, then, unaccusative motion verbs are lexically delimited whereas unergative motion verbs are not. However, the addition of a goal phrase to a manner of motion verb has the effect of delimiting the event by specifying the attained goal. As Pustejovsky 1988 & 1991 explains, a goal phrase serves as a function from process to transition. He illustrates the effect of a goal phrase in (14-15), which should be contrasted with the representation of achievements in (15).

(14) Mary ran.

|                                      |                                                                                                                                 |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| ES (event structure):                | $  \begin{array}{c}  T(\text{ransition}) \\  / \text{-----} \backslash \\  e_1 \dots e_n \\  \backslash \quad /  \end{array}  $ |
| LCS' (Lexical Conceptual Structure): | [run(m)]                                                                                                                        |
| LCS:                                 | [run(m)]                                                                                                                        |

(15) Mary ran to the store.

|       |                                                                                                 |
|-------|-------------------------------------------------------------------------------------------------|
| ES:   | $  \begin{array}{c}  T \\  / \quad \backslash \\  P(\text{rocess}) \quad <P, T>  \end{array}  $ |
|       | $  \begin{array}{c}    \qquad   \\  \text{Mary ran to the store}  \end{array}  $                |
| LCS': | [run(m)] [at(m, the-store)]                                                                     |
| LCS:  | cause (act(m), become(at(m, the-store))) BY run)                                                |

(16) Mary died.

|       |                                                                                                        |
|-------|--------------------------------------------------------------------------------------------------------|
| ES:   | $  \begin{array}{c}  T \\  / \quad \backslash \\  P \quad S(\text{tate}) \\    \quad    \end{array}  $ |
| LCS': | [~ dead(m)] [dead(m)]                                                                                  |
| LCS:  | become([dead(m)])                                                                                      |

Process manner of motions like (14) do not have a lexically encoded delimiter. A goal phrase, as in (15), allows the event denoted by the verb to be delimited since it provides an endpoint of the action, indicating the change of location. Being achievement verbs, inherently directed motion verbs like *go* and *come* have the representation similar to (16), whereby a change of location from not being at some

optionally specified place X to being at X is represented as a lexical property of the verb.

Let us now turn to the Japanese data. Given the discussion on the internal analysis of unaccusative and unergative manner of motion verbs so far, the addition of a goal phrase will form an event structure similar to an inherently directed motion verb. As we have discussed above, however, Japanese is one of the languages that disallow the co-occurrence of a manner of motion verb with a goal phrase. This is because in Japanese the conflation of manner of motion and direction of motion is excluded. So, the option of a goal phrase as a delimiter of the action is not available to a manner of motion verb. Then, what is the status of the *made* phrase in (11-12) that enables the manner of motion verb to appear in the unaccusative syntactic configuration?

I propose that given the fact that the resultative construction is available in Japanese, as I have shown elsewhere (cf. Tsujimura 1990b,c), the *made* phrase is a resultative secondary predicate that adds the specification of the attained location. As a resultative phrase, it means that some individual (or object) reaches the location as a result of the action denoted by the verb. Under this resultative analysis of *made* phrases, three phenomena that are pertinent to manner of motion verbs are accounted for.

First, if *made* were analyzed as heading a goal phrase just like *ni* and *e*, then we would expect that the co-occurrence with a manner of motion verb would be impossible under the observation that manner and direction of motion cannot be conflated in Japanese. In fact, *made* can be used as heading a goal phrase when it appears with an inherently directed motion verb, as is illustrated in (13). However, *made* on the one hand and *ni* and *e* on the other are different in that the former has an additional function as a resultative secondary predicate that, in the presence of a manner of motion verb, expresses a change of location as a result of the motion denoted by the verb. The other postpositions, *ni* and *e*, do not have such a dual function. Rather, they only have the function as a modifier.

Second, the resultative analysis accounts for the parallel event structure between an inherently directed motion verb and a manner of motion verb with a *made* phrase. It is well known that a resultative secondary predicate is a device to delimit an action denoted by the verb that would otherwise be undelimited. For instance, contrast the English pairs in (17-18).

- (17) a. John pounded the metal.  
       b. John pounded the metal **flat**.  
 (18) a. Mary wiped the table.  
       b. Mary wiped the table **clean**.

Notice that the (a) sentences are undelimited without the endpoint of the action denoted by the verb. In the (b) sentences, by contrast, the addition of the resultative attribute adds the endpoint of the action

and makes the action delimited. So, a resultative secondary predicate is a full-fledged device that supplies a delimiter. In terms of the effect on event structure, then, a resultative attribute contributes to the change in event structure from the type in (14) to the type in (15), and this change makes the event structure of a manner of motion verb with a *made* phrase look more like the event structure of an inherently directed motion verb.

Third, the unaccusative status of the manner of motion verb observed in (11-12) is straightforwardly explained. Simpson 1983 and Levin & Rappaport Hovav (in press) extensively discuss the condition that resultatives are predicated of the direct object. I have demonstrated in my previous work (Tsuji-mura 1990b,c) that this direct object condition also holds in Japanese. Under such a condition, then, the *made* resultatives in (11-12) must find NP's of which they are predicated. It should be remembered that the numeral quantifier test shows that the surface subjects in those sentences are indeed the d-structure objects. Hence, the resultative *made* phrases are predicated of those underlying objects, satisfying the direct object condition.

The claim that *made* can head a resultative predicate whereas *ni* and *e* cannot may be supported by a fine-grained analysis of the semantic properties of *made*. While *made*, *ni* and *e* may all be subsumed under the rubric of 'goal'-inducing postpositions, there is a very subtle and yet significant semantic difference among them that is supportive of the proposed distinction. According to Jorden 1987, *ni* indicates that the motion denoted by the verb moves to or into or onto a location while *made* implies the motion moves to and including a location but not beyond. Thus, the most salient semantic difference between *ni* (and *e*) on the one hand, and *made* on the other is that *made* marks the endpoint of the motion more clearly than *ni* and *e*. The postpositions *ni* and *e* do denote a loosely-defined 'goal', but their semantic content does not seem to set the endpoint explicitly enough to qualify to be a resultative secondary predicate.

Furthermore, the etymological difference between *made* and *e* may provide another piece of supporting evidence for the resultative analysis of *made* phrases proposed here. Martin 1987, for example, traces the origin of *made* as the old honorific intransitive verb *maud(e)*- 'come, go'. He further claims the origin of *e* to be the noun *he* 'vicinity'. Martin's analysis strongly suggests the predicative nature of *made*: that is, *made* can be traced back to an honorific verb, a full-fledged predicate. What is more striking is that the source verb, *maud(e)*-, is a verb of inherently directed motion. In modern Japanese, inherently directed motion verbs such as *iku* 'go' and *kuru* 'come' are unaccusative. Therefore, this etymological analysis, if correct, can account not only for the predicative nature of *made* phrases but also for its relation to unaccusativity. Furthermore, Martin's explanation of the origin of the postposition *e* seems to elaborate on the fine-grained semantic distinction between *made* and *e* that has been



discussed earlier. Recall that we claimed *ni* and *e* do not express the endpoint of the action named by the verb fully enough to qualify to be a resultative predicate, and having a noun source whose meaning implies 'vicinity' (at least for *e*) in fact seems to substantiate our claim.

For this matter, it should be noted that although in modern Japanese the conflation of manner of motion and direction of motion is not allowed, as we have seen in (5), the conflation under discussion can be possible if a manner of motion verb is used as a complex predicate with an inherently directed motion verb. This is shown in (19).

- (19) a. Taroo-ga kooen-e/ni hasitte-itta.  
Taro-Nom park-to/to run-went  
'Taro ran to the park.'
- b. Hanako-ga gakkoo-e/ni aruite-itta.  
Hanako-Nom school-to/to walk-went  
'Hanako walked to school.'
- c. Masao-ga oki-e/ni oyoide-itta.  
Masao-Nom shore-to/to swim-went  
'Masao swam to the shore.'

Under Martin's etymological analysis of *made*, where it originates from an inherently directed motion verb, a *made* phrase appearing with a manner of motion verb such as *aruku* 'walk' is virtually the equivalent to what we have in (19). Thus, if *made* is indeed considered diachronically as a 'replacement' for an inherently directed motion verb, the apparently 'exceptional' behavior of *made* with manner of motion verbs comes as no surprise, given that the conflation of manner and direction is disallowed as a lexicalization pattern in Japanese: instead, it patterns exactly with (19). At the same time, the etymological source of *e* provides an explanation that with *e* phrases the conflation of manner and direction can only be made possible by the complex predicate formation of the type we have observed in (19).

This analysis of the co-occurrence of *made* phrases with manner of motion verbs in Japanese as a manifestation of a resultative predicate is reminiscent of Levin & Rappaport Hovav's (in press) discussion of English manner of motion verbs accompanied by resultative phrases that express change of location. As Simpson 1983 demonstrates, unergative verbs cannot take resultatives because these verbs do not have direct objects. Levin & Rappaport Hovav, however, discuss a situation where agentive manner of motion verbs like *swim* occur with resultative phrases that contain a particular group of adjectives such as *free* and *apart* in (20-21).

- (20) She danced/swam **free** of her captors.  
(Levin & Rappaport Hovav (in press):(16a))
- (21) They slowly swam **apart**.  
(Levin & Rappaport Hovav (in press):(16b))

Given the classification of the verbs as unergative as well as the restriction that resultative phrases are predicated of the direct object, the grammaticality of the sentences in (20-21) appears to be an unexpected result. Levin & Rappaport Hovav, however, use these examples to argue that manner of motion verbs have a dual classification, one as unergative and the other as unaccusative. As unaccusative, the verbs in (20-21) can take resultative phrases which are predicated of the surface subject. The resultatives in (20-21) are used to specify the change of location of the surface subject as a result of the motion denoted by the verb. The difference between English and Japanese, then, is that in English the unaccusative use of a manner of motion verb is manifested by either the addition of a goal phrase or the addition of a resultative predicate while, in Japanese, only the latter option is available, although in both languages the use of resultative secondary predicates is lexically restricted. In the case of English, furthermore, it is interesting that both options cannot be taken simultaneously. For example, a manner of motion verb cannot appear with a goal phrase and a resultative attribute at the same time. Consider (22-23).

- (22) a. \*She danced free of her captors to a nearby village.  
 b. \*She danced to a nearby village free of her captors.
- (23) a. \*They slowly swam apart to a small island.  
 b. \*They slowly swam to a small island apart.

The ungrammaticality in (22-23) can be attributed to the restriction on the number of delimiters, as is discussed in Tenny 1987: that is, there may be no more than one delimiter per eventuality.

A potential problem, however, arises in cases like (24-25) where an inherently directed motion verb co-occurs with a goal phrase.

- (24) Taro-ga (kooen-ni/e/made) itta.  
 Taro-Nom (park-to/to/as far as) went  
 'Taro went (to the park).'
- (25) Hanako-ga (watasi-no uti-ni/e/made) kita.  
 Hanako-Nom (I-Gen / house-to/to/as far as) came  
 'Hanako came (to my house).'

We have just discussed that an inherently directed motion verb has its delimiter lexically encoded in its event structure. Furthermore, recall that as Tenny claims, only one delimiter is allowed per eventuality. As I have proposed in this paper, if *made* is a resultative secondary predicate whose primary function is to provide a delimiter for the action denoted by the verb, we would not expect a *made* phrase to appear with an inherently directed motion verb. This is because the event structure of the sentences like (24-25) with *made* would result in two delimiters, and as we have discussed earlier, such a situation should be avoided in natural languages since an event can only possibly be delimited once. Furthermore, another

question arises as to what the status of the *ni* and *e* phrases in (24-25) is: should they also be analyzed as resultative predicates?

I would like to claim that goal/directional phrases headed by *ni/e/made* appearing with inherently directed motion verbs are all modifiers whose role is to further designate the nature of the attained goal, namely the location, that is lexically encoded as part of the directed motion verbs' lexical representation. As modifiers, *ni*, *e*, and *made* co-occurring with an inherently directed motion verb do not play a role as a delimiter, and the event structure is kept intact. This amounts to saying that a *made* phrase potentially has two functions: one as a modifier when it appears with an inherently directed motion verb, and the other as a resultative secondary predicate when it co-occurs with a motion verb. By contrast, *ni* and *e* serve only as a modifier. The role of *made* as a resultative secondary predicate is accompanied by the effect of compositionally deriving an accomplishment type of event structure from an activity type. Furthermore, *made* as a resultative is a full-fledged delimiter, while *made* as a modifier simply modifies the delimiter that is lexically encoded without providing further delimitedness.

#### 4. Summary

To sum up, I have discussed two properties inherent to the postposition *made*, especially when it co-occurs with various types of motion verbs. When it co-occurs with a manner of motion verb, *made* is a resultative secondary predicate; and when accompanied by an inherently directed motion verb, it serves as a modifier over the lexically encoded direction. I have also discussed the roles that *ni* and *e* play: they lack the function as a resultative secondary predicate, and their role is restricted as a modifier. I have demonstrated that the phenomena observed with a manner of motion verb accompanied by a resultative *made* phrase are in essence consistent with the generalization stated in (4) at the outset, although a stronger specification of the endpoint of the action is required for the classification change, and *made* provides such a specification.

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## FACTIVE COMPLEMENTS AND WH-EXTRACTION\*

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Factive complements in Modern Greek are introduced by a specific complementizer and constitute strong islands to wh-extraction. It is argued that factive complements are not real complements of the subcategorizing verb but stand in a paratactic relation to an empty nominal complement of the main predicate in an appositive relation. The crosslinguistic asymmetries observed with respect to extraction are attributed to the ability of languages such as English to form certain types of A'-chains.

### 1. Introduction

The purpose of this paper is to examine the properties of factive complements and provide an account for their interaction with wh-movement. It is well documented in the literature that the clausal complements of factive predicates in English behave differently from those of non-factive predicates with respect to wh-movement. Whereas extraction is possible in non-factive complements, a subject/adjunct vs. object asymmetry is attested with respect to extraction out of factive complements, as exemplified in (1) to (6).

- (1) Why do you believe [ that John left \_\_\_ ] ?
- (2) \*Why do you regret [ that John left \_\_\_ ] ?
- (3) Who do you believe [ \_\_\_ met Bill ] ?
- (4) \*Who do you regret [ \_\_\_ met Bill ] ?
- (5) Who do you believe [ that John met \_\_\_ ] ?
- (6) Who do you regret [ that John met \_\_\_ ] ?

This asymmetry has been attributed by Kiparsky & Kiparsky (1971) to the semantic distinction between the two types of complements, that is, to the fact that the latter are presupposed by the speaker. Various syntactic analyses have been proposed in the literature to account for this asymmetry crucially relying on the special status of CPs selected by factive predicates (Kiparsky & Kiparsky 1971, Cinque 1990, Melvold 1991, Hegarty 1991, 1992). Within the framework of Chomsky 1986, most of the preceding analyses link this type of asymmetry to the ECP; traces of subjects and adjuncts must be antecedent-governed by intermediate traces, whereas traces of objects are properly governed by the selecting verb.

The syntactic pattern described by the above accounts is not quite exhaustive. Factive complements in Modern Greek block any kind of extraction (Roussou 1992, 1993, Varlokosta 1993, 1994), as

illustrated in (7) to (9).

- (7) \*Pote lipase pou agorases to vivlio ?  
 when regret-2sg that bought-2sg the book  
 'When do you regret that you bought the book?'
- (8) \*Pjos lipase pou sinandise to Yani ?  
 who-nom regret-2sg that met-3sg John-acc  
 'Who do you regret met John?'
- (9) \*Pjon lipase pou sinandise o Yanis ?  
 who-acc regret-2sg that met-3sg John-nom  
 'Who do you regret that John met?'

Non-factive complements, on the other hand, are not islands, behaving essentially identically to their English counterparts, as we see in (10) to (12).

- (10) Pote nomizis oti agorase to vivlio ?  
 when think-2sg that bought-3sg the book  
 'When do you think that he bought the book?'
- (11) Pjos nomizis oti sinandise to Yani ?  
 who-nom think-2sg that met-3sg John-acc  
 'Who do you think met John?'
- (12) Pjon nomizis oti sinandise o Yanis ?  
 who-acc think-2sg that met-3sg John-nom  
 'Who do you think that John met?'

Therefore, the extraction data from Modern Greek constitute a problem for any existing analysis that considers factive complements as weak islands. The purpose of this paper is to provide an analysis of factivity that takes into consideration the variation attested crosslinguistically.

The paper has 3 sections. In section 2, I discuss the semantic properties of factive and non-factive complements in Modern Greek and I argue that the former are Discourse Familiar, following a similar intuition on English by Hegarty 1992. In section 3, I propose a syntactic account of factivity, extending Davidson's 1969 and Torrego & Uriagereka's 1993 analyses of indicative dependents. In particular, I argue that factive complements are not real complements of the matrix verb but they stand in a paratactic relation with the main clause, associated with an empty nominal complement of the matrix verb in an appositive relation. I provide an explanation for the pattern observed in English essentially linking the crosslinguistic variation attested to the ability of English to form certain A'-chains. In section 4, I sketch some preliminary speculations on an analysis of parataxis within the Minimalist Approach (Chomsky 1994).

## 2. The Modern Greek data: The complementizer *pou*

Modern Greek employs two distinct complementizers corresponding to the English that: *oti* and *pou*. *Oti* mainly introduces sentential



complements of epistemic verbs such as *nomizo* 'think', as we see in (13).<sup>1</sup>

- (13) *Nomizo*      *oti/\*pou*      *o Yanis*      *efige*  
 think-1sg    that            John-nom    left  
 'I think that John left'

*Pou*, on the other hand, is used in a more extensive number of contexts including sentential complements of factive, perception, and psych verbs, as illustrated in (14) to (16).<sup>2</sup>

- (14) *Thimame*      *pou*      *ton icha*      *sinandisi*      *sto Parisi*  
 remember-1sg    that      him had      met-1sg      in Paris  
 'I remember that I had met him in Paris'
- (15) *Lipithika*      *pou*      *efige*      *o Yanis*  
 regretted-1sg    that      left-3sg    John-nom  
 'I regretted that John left'
- (16) *Ton*      *idha*      *pou*      *efevge*  
 him      saw-1sg    that      was leaving-3sg  
 'I saw him leaving'

These predicates display different selectional properties. Thus, factive verbs such as *lipame* 'regret', select only *pou* and are incompatible with *oti*.<sup>3</sup> On the other hand, factive verbs such as *thimame* 'remember', certain psych verbs such as *fovame* 'I am afraid', and perception verbs select both *pou* and *oti*.<sup>4</sup>

- (17) *Lipithika*      *pou/\*oti*      *efige*      *o Yanis*  
 regretted-1sg    that            left-3sg    John-nom  
 'I regretted that John left'
- (18) a. *Thimame*      *pou*      *ton icha*      *sinandisi*      *sto Parisi*  
 remember-1sg    that      him had      met-1sg      in Paris  
 'I remember that I had met him in Paris'
- b. *Thimame*      *oti*      *ton icha*      *sinandisi*      *sto Parisi*  
 remember-1sg    that      him had      met-1sg      in Paris  
 'I remember that I had met him in Paris'
- (19) a. *Ton*      *idha*      *pou*      *efige*  
 him      saw-1sg    that      left-3sg  
 'I saw him leaving'
- b. *Idha*      *oti*      *efige*  
 saw-1sg    that      left-3sg  
 'I saw that he left'

However, it has been pointed out by Christidis 1981 that there is a difference in interpretation between (18a) and (18b).<sup>5</sup> As (20a) and (20b) show respectively, the truth of the embedded complement cannot be questioned when it is introduced by *pou*, while it can be questioned when it is headed by *oti*.<sup>6</sup>

- (20) a. !Thimame pou ton icha sinandisi sto Parisi  
 remember-1sg that him had met-1sg in Paris  
 an ke mpori na kano lathos  
 however / may / prt / make / mistake  
 'I remember that I had met him in Paris, however, I  
 may be wrong'
- b. Thimame oti ton icha sinandisi sto Parisi  
 remember-1sg / that / him / had met-1sg / in Paris  
 an ke mpori na kano lathos  
 however may prt make mistake  
 'I remember that I had met him in Paris, however, I  
 may be wrong'

According to Christidis 1981, this distinction seems to entail that, at least in Modern Greek, the notion of factivity cannot be related to the presence of a so-called factive verb as argued by Kiparsky & Kiparsky 1971. If it did, one would expect to find no differences in interpretation between (20a) and (20b) with respect to the value of their embedded complements since they are both introduced by a so-called factive verb. However, only (20a) seems to be pragmatically odd. Therefore, Christidis 1981 argues that factivity in Modern Greek is rather tied up to the choice of a particular complementizer: it arises only with *pou*-complements (see also Roussou 1992, 1993).

If the complementizer *pou* was the signal of presuppositionality in Modern Greek, then one should expect the following pattern. One of the standard criteria used by Kiparsky & Kiparsky 1971 to determine presuppositionality is the scope of negation, as illustrated in (21) and (22).

- (21) I don't think that John left  
 (22) I don't regret that John left

In the complements of non-factive predicates the matrix negation can take scope over the embedded clause and change its truth value. Therefore, (21) implies that 'John didn't leave'. In contrast, complements of factive verbs are not subject to these scope effects. Therefore, in (22) the presupposition 'John left' remains constant under negation. If factivity in Modern Greek is signaled by the complementizer *pou*, we should expect that *pou*-complements should not be subject to any scope effects of this sort unlike *oti*-complements which should. This prediction is borne out, as illustrated below:

- (23) Den nomizo oti o Yanis efige  
 not think-1sg that John-nom left-3sg  
 'I don't think that John left' → 'I think that John didn't leave'
- (24) Den lipame pou o Yanis efige  
 not regret-1sg that John-nom left-3sg  
 'I don't regret that John left' → \*'I regret that John didn't  
 leave'

Therefore, (23) implies that 'John didn't leave' but (24) doesn't. The prediction is that the same should hold in the cases of ambiguous predicates such as *thimame* 'remember'. Since these predicates select for both a non-factive *oti*-complement and a factive *pou*-complement, negation should take scope over the former but not over the latter. However, this is not the case:

(25) O Yanis        den thimate                    oti ta  
 John            not remember-3sg    that them  
 piname                    mazi    kathe    bradi  
 were drinking-1pl together every night  
 'John doesn't remember that we were drinking together  
 every night'    → \*John remembers that we were not  
 drinking together every night

(26) O Yanis        den thimate                    pou ta  
 John            not remember-3sg    that them  
 piname                    mazi    kathe    bradi  
 were drinking-1pl together every night  
 'John doesn't remember that we were drinking together  
 every night'    → \*John remembers that we were not  
 drinking together every night

The presupposition 'we were drinking together every night' remains constant since neither (25) nor (26) imply that 'we were not drinking together every night'. So the difference between the two complementizers cannot rest on the notion of factivity, as stated in Kiparsky & Kiparsky 1971. Something else must be at stake.

I would like to suggest, following Hegarty's 1992 analysis of factive complements in English, that *oti* in (25) is used to introduce some new information in the discourse, as opposed to the use of *pou* in (26) which entails that the content of the complement clause is somehow established in the discourse, either as a known fact, or as an occurrent or background issue. Let us, then, say that the content of *pou*-clauses is Discourse Familiar, that is, this complementizer is used in order to introduce propositions whose content is preestablished in the discourse, whereas *oti* is used to introduce a new topic in the discourse.

### 3. A syntactic analysis of factivity: Parataxis

#### 3.1. An analysis of *pou*-clauses in Modern Greek

In order to provide an explanation for the strong islandhood observed in *pou*-clauses in Modern Greek, I will extend Torrego & Uriagereka's 1993 analysis of indicative dependents to factive complements. Based upon syntactic evidence from wh-extraction, tense dependencies, complementizer selection and constituency, Torrego & Uriagereka argue that only subjunctive clauses are real complements.<sup>7</sup> Indicative embedded clauses, on the other hand, are taken to stand in a paratactic relation with the main clause, associated with a null complement of the main verb in an appositive relation. This is

illustrated in (27) and (28) respectively.

(27) Platon quiere que Aristoteles lea a Socrates  
 Plato wants that Aristotle read Socrates  
 ... [<sub>v'</sub> V [<sub>CP</sub> ... ]]

(28) Platon dice pro que Aristoteles lee a Socrates  
 Plato says that Aristotle reads Socrates  
 ... [<sub>v'</sub> V [<sub>DP</sub> DP [<sub>CP</sub> ... ]]

(27) is the standard structure for complementation. (28), on the other hand is more complex: the complement of *dice* in (28) is a null element meaning essentially something like 'the following', which the CP element is predicatively associated to.

Sharing a similar intuition, I would like to propose that *pou*-clauses are not real complements of the matrix verb but stand in a paratactic relation to an empty nominal complement of the subcategorizing predicate.<sup>8</sup> More specifically, the proposal is as follows: factive, perception, and psych predicates do not take a standard CP complement but they subcategorize for a DP, a nominal complement with a propositional import in the semantics:

(29) O Yanis pistevi oti i Maria efige  
 John believes that Mary left  
 ... [<sub>v'</sub> V [<sub>CP</sub> ... ]]

(30) O Yanis lipate pou efige i Maria  
 John regrets pro that left Mary  
 ... [<sub>v'</sub> V [<sub>DP</sub> DP [<sub>CP</sub> ... ]]

Traditional grammarians used the notions of parataxis and hypotaxis to refer to two different options for clausal dependency. Hypotaxis, is what we call true subordination, which is a subcase of government. In contrast, parataxis, is viewed as a weaker relation, whereby both the matrix and the dependent clause have somehow the status of main clauses.

If *pou*-clauses are indeed paratactic constructions, then one would predict that extraction from such a domain should in principle be barred. The prediction is born out, as illustrated in (31) to (33).

(31) \*Pote<sub>i</sub> lipase [<sub>DP</sub> DP [<sub>CP</sub> t'<sub>i</sub> pou [<sub>IP</sub> agorases to vivlio t<sub>i</sub> ]]  
 when regret-2sg that bought-2sg the book  
 'When do you regret that you bought the book?'

(32) \*Pjos<sub>i</sub> lipase [<sub>DP</sub> DP [<sub>CP</sub> t'<sub>i</sub> pou [<sub>IP</sub> t<sub>i</sub> sinandise to Yani ]]  
 who regret-2sg that met-3sg John-acc  
 'Who do you regret met John?'

(33) \*Ti<sub>i</sub> lipase [<sub>DP</sub> DP [<sub>CP</sub> t'<sub>i</sub> pou [<sub>IP</sub> agorases t<sub>i</sub> ]]  
 what regret-2sg that bought-2sg  
 'What do you regret that John met?'

In (31) to (33) one barrier is crossed: CP is not L-marked in Chomsky's 1986 sense since it is not the complement of DP and hence

becomes a barrier. DP is not a barrier since it is L-marked, being the complement of the main predicate, and it cannot inherit barrierhood from CP because it does not dominate CP; CP is adjoined to DP since they stand in a paratactic relation, hence, CP is not dominated by all segments of DP. As a result, one barrier is crossed in (31) to (33), namely, CP. Let us see what does this predict as far as extraction in these examples in a Barriers type of analysis. With respect to adjunct and subject extraction in (31) and (32) respectively, we predict an Empty Category Principle (ECP) violation. The intermediate traces in the spec CP of (31) and (32) must satisfy the antecedent government requirement of the ECP since they are not  $\theta$ -governed. However, they fail to be antecedent governed because there is one barrier, namely CP, intervening between them and the wh-element in the matrix spec CP. As far as object extraction in (33), the lower object trace is properly governed because it is  $\theta$ -governed by the verb. Therefore the intermediate trace can delete at LF since it doesn't contribute to the semantics. Antecedent government is therefore satisfied. But (33) constitutes a weak Subjacency violation because one barrier is crossed. Hence, the paratactic relation in which *pou*-clauses stand with respect to the matrix clause explains their strong islandhood.

### 3.2. English factives

If the above analysis of *pou*-clauses is on the right track, it raises a question concerning the pattern of extraction observed in English. According to the judgments of English native speakers there seems to be a difference between the extraction pattern in (34) and the one in (35):

(34) What do you think that John saw ?

(35) What do you regret/remember that John saw ?

Hence, the answer to the first question (34) can be 'a car' or 'some car' and the NP doesn't have to be specific. In contrast, the answer to (35) has to be specific and so an answer like 'some car or other' which is acceptable in (34) is not acceptable in (35). It seems therefore that the two questions are different in nature. In the latter there is some presupposition that 'John saw something' and the question is 'what is it from all the things that John saw that you regret/remember that he saw'. Essentially, the interpretation of the wh-phrase in (35) is that of a D-linked wh-phrase.

I would like to propose that the wh-element that appears in the matrix CP in (35) is not the result of actual movement. What looks as extraction in English is not extraction at all but some sort of strategy along the lines of parasitic gap chain composition which allows certain long distance relations which look a lot like movement but in fact are quite distinct.

Essentially, the strategy I am suggesting would be very similar in spirit to the one in medial questions in German (see McDaniel,

1989) or in Parasitic gap constructions and Tough movement, in the sense that they all involve operators.<sup>9</sup>

In particular, the proposal will be as follows: in (36), there is a null operator base-generated in position of the S-Structure gap which moves up to the SPEC of the embedded CP where a barrier appears. What looks like a moved wh-operator is in fact a scope marker of the sort found in medial questions in German:

- (36) Who do you regret pro that John met  
 ... [<sub>v</sub> V [<sub>DP</sub> DP [<sub>CP</sub> op [<sub>IP</sub> ... t ... ]]]

Null operators have no index in D-Structure and they seek an antecedent to establish their range via indexation. This indexation proceeds under conditions of I-Subjacency (that is across at most one barrier), thus creating an extended A'-chain, as shown in (37).<sup>10</sup>

- EXTENDED A'-CHAIN
- (37) Wh-scope marker<sub>i</sub> ... op<sub>j</sub> ... t<sub>i</sub>
- MOVEMENT

The extraction pattern of English follows now in a pretty straightforward manner. Adjuncts in general, at least most of them, are not treated as nominal elements. Null operators, on the other hand, are taken to be nominals. Thus adjuncts do not license parasitic gaps. Therefore, in a paratactic construction like the one proposed here for factive complements we cannot invoke operators for adjuncts, therefore, the relevant chain cannot be constructed.

It should be obvious that there is a parameter at stake here. If a language allows extended A'-chains, this strategy overrides, hence the pattern of extraction is different. Two predictions are made. First, Modern Greek should not allow A'-chains of the sort discussed above or at least it should not allow all sorts of them. Indeed, Modern Greek does not allow tough-movement constructions, as shown in (38).

- (38) \*O Yanis ine diskolos na efcharistisis  
 John-nom is hard prt please-2sg  
 'John is hard to please'

Furthermore, parasitic gaps are very marginal in Modern Greek, as illustrated in (39).

- (39) \*Pjo vivlio xarises protou na dhiavasis ?  
 which book gave-2sg away before prt read-2sg  
 'Which book did you give away before reading ?'

However, when a resumptive pronoun is used in the position of the gap in (39) the structure becomes quite acceptable, as shown in (40).



- (40) Pjo vivlio xarises protou na to dhiavasis ?  
 which book gave-2sg away before prt it read-2sg  
 'Which book did you give away before reading ?'

It seems therefore that a resumptive pronoun strategy rescues these structures since movement is no longer involved in (40).

One more fact of interest. Extraction of which-phrases or partitive phrases out of factive complements seems to be quite acceptable in Modern Greek:

- (41) Pjo vivlio lipase pou den exis  
 which book regret-2sg that not have-2sg  
 sti vivliothiki sou ?  
 in the library yours  
 'Which book do you regret that you don't have in your library?'
- (42) Pjo apo ta vivlia tou Chomsky lipase  
 which from the books Chomsky-gen regret-2sg  
 pou den exis sti vivliothiki sou  
 that not have-2sg to the library yours  
 'Which of Chomsky's books do you regret that you don't have in your library?'

These phrases are D-linked wh-phrases. Therefore, an explanation for this pattern can be provided following Cinque 1990 and assuming that D-linked wh-phrases involve base generated A'-chains with a small pro instead of a variable.

Second, since the phenomenon I am discussing here is an S-Structure phenomenon, English factive complements should behave as islands for LF type of phenomena. Indeed, there seems to be quite convincing evidence for this, taken from scope of Negation and licensing of NPIs. The contrast in the examples (43) to (46) is quite sharp.

- (43) Noone said that you read anything  
 (44) \*Noone regrets that you read anything  
 (45) Noone said that anybody was evil  
 (46) \*Noone regrets that your picture of anybody was evil

#### 4. A Minimalist approach to parataxis

An analysis of parataxis within the Barriers framework provides an explanation for the extraction pattern observed in *pou*-clauses. The problem with this type of account is that it does not provide an intuitive way to analyze the notion of parataxis. Nothing in what has been said so far provides a way to represent the biclausal nature of *pou*-clauses. I would like to suggest that there is a very insightful way to do this within Chomsky's 1994 Minimalist Approach.

According to the minimalist approach, the language faculty is embedded in an Articulatory/Perceptual matrix (AP) and an Intentional/Conceptual matrix (IC). The interface of AP with the language faculty is PF and the interface with IC is LF. PF and LF are the levels of linguistic representation. The basic model obeys this equation:  $C(A) = (PF, LF)$ , where  $A$  is an array of lexical items and  $C$  is a computational system which is essentially invariant across languages. A derivation  $d$  is a set of phrase markers generated from elements taken from the array  $A$ . We say that  $d$  converges at LF or PF only if it produces an object that meets the outside conditions of these levels. Otherwise,  $d$  crashes. Given the array  $A$  and the computational system  $C$ ,  $K$  is some phrase marker built from  $A$  by  $C$ , in a series of steps  $K_0 \dots K_n$  by way of binary operations of merger and singularity operations of movement.

An operation of spell out takes the set  $S$  of phrase markers  $S = \{K_0, \dots, K_n\}$  and ships it to the PF component. It is reasonable to suppose that if  $S$  is not a single phrase marker, the derivation crashes at PF, since PF rules cannot apply to a set of phrase markers and no legitimate representation is generated. If it is a single phrase marker, PF rules may apply to yield a representation  $p$  which is either legitimate (and the derivation converges) or non-legitimate (and the derivation crashes). After the spell out, the computational system continues in the LF branch, yielding a relevant representation  $l$  which may either converge or crash at LF. It is suggested by Juan Uriagereka 1994 that this single rootedness of trees be considered as an LF property ultimately related to compositionality just as the linearity property of trees is a PF matter.<sup>11</sup>

If we loosen up these assumptions a bit, we may have an insightful way of representing syntactic parataxis. Let us suppose that phrase markers may reach spell out without merging. More specifically, let us suppose that paratactic constructions are constructions that do not merge at LF. What reaches LF in this case is in fact two separate phrase markers which are not parts of the same tree. If parataxis is translated as non merging at LF, the independent status of paratactic constructions follows rather naturally. Essentially, what we have then is not a single object at the level of LF but two different objects which are then shipped to the IC matrix for semantic interpretation.<sup>12</sup> The identification condition between the empty nominal complement of the subcategorizing verb and the paratactic clause is a condition that presumably holds at the interpretative levels.

If paratactic constructions are two entirely different objects at LF, the extraction facts follow in a pretty straightforward manner. Extraction involves basically the formation of a chain, under current assumptions. A chain formation is impossible across two different phrase markers, since this is a property of a single phrase marker. Hence the strong islandhood of paratactic constructions follows. Whether or not chain formation is a condition on derivations or a condition on representations, we obtain the same result. If it is the

former, then the fact that merging doesn't take place before spell out explains the impossibility of chain formation this way. If it is the latter, that is, if it is a condition holding at the level of LF, then the fact that paratactic constructions reach LF as two separate phrase markers guarantees the same result.

Despite the advantages of this proposal in terms of representing in the syntax the independent status of paratactic constructions, it has a number of consequences concerning the computational system and the operations involved which I haven't explored here. I will leave these issues open at this point, however, I hope to be able to address them in future work.

## 5. Concluding remarks

In this paper I argued that the strong islandhood of factive complements in Modern Greek can be explained if we assume that factive complements are not real complements of the subcategorizing verb but stand in a paratactic relation to an empty nominal complement of the matrix predicate, following essentially the spirit of Kiparsky & Kiparsky's approach on factive complements and extending Torrego & Uriagereka's analysis of indicative dependents. I attributed the crosslinguistic asymmetries with respect to extraction to the ability of languages such as English to form certain types of A'-chains which evidently are impossible in Modern Greek.

## NOTES

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<sup>1</sup> This category includes also verbs such as *pistevo* 'believe', *nomizo* 'think', *ipopsiazome* 'suspect', *diadido* 'spread rumors', *ipostirizo* 'claim', *anakalipto* 'discover', *ipotheto* 'suppose', *mantevo* 'guess', *diapistono* 'realize'. Verbs in this category select exclusively *oti* and are incompatible with *pou*.

<sup>2</sup> *Pou* is also used to introduce relative clauses, cleft constructions, and matrix exclamatives. I do not discuss these cases here.

<sup>3</sup> This category includes predicates that indicate a psychological state, such as *xerome* 'I am pleased', *stenoxorieme* 'I am upset', *anakoufizome* 'I am relieved', *apogoitevome* 'I am disappointed', *anisixo* 'I am worried', *nevriazo* 'I get upset', *ntrepome* 'I am

ashamed', *metaniono* 'I regret', *mou aresi* 'It pleases me', *ime perifavos* 'I am proud of'.

<sup>4</sup> Factive verbs of this category include *ksexno* 'forget', *ksero* 'know', *katalabeno* 'realize', *prosexo* 'notice'.

<sup>5</sup> Similarly, a difference in interpretation is arising with respect to perception predicates. I will not discuss these cases here, however, see Varlokosta (1994).

<sup>6</sup> '!' is used to indicate a pragmatically odd reading.

<sup>7</sup> I should point out that the notion of subjunctive that Torrego & Uriagereka 1993 invoke is more abstract than the usual. By subjunctive they mean embedded clauses that allow extraction. In English, for example, it is not obvious that there are any subjunctive clauses (in the sense that there are in the Romance languages). However, standard embedded clauses in English are taken to be subjunctives in the sense that they allow extraction and other similar properties.

<sup>8</sup> I have shown elsewhere (Varlokosta 1993, 1994) that an analysis of *pou*-clauses as operator constructions, along the lines of Melvold 1991 and Roussou 1992, 1993 cannot be on the right track. Empirical evidence from the syntax of Modern Greek and more specifically from the distribution of the bound pronoun *o idhios* 'he' discredits an operator approach to the licensing of these complements.

<sup>9</sup> An analogous strategy is invoked in Torrego & Uriagereka to explain the apparent extraction in certain indicative dependents.

<sup>10</sup> For the proper licensing of null operators, see Browning 1987.

<sup>11</sup> I should point out that the ideas formulated here are not consistent with Chomsky 1994 but have been developed through discussions in a seminar on Minimalism offered at the University of Maryland in Spring 1994 by Juan Uriagereka.

<sup>12</sup> The argument has been extended by Juan Uriagereka 1994 to the PF component where it is claimed that non-merging can solve the problem of stylistic inversion or different sorts of scrambling in various languages.

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## GERMAN IDIOMS: AN EMPIRICAL APPROACH

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This paper represents an expansion and development of Webelhuth 1994. Whereas the earlier study involved some 380 idioms, the present one is based on the syntactic and semantic analysis of 1000 German idioms. This makes it the largest study of its kind that we are aware of. Like the previous paper, this paper begins with a short overview of some previous theoretical works on idioms and tests them against counterexamples from the new, larger, corpus. Then some crucial results of the second study are presented (they essentially validate the previous smaller survey). Finally, it is shown that the behavior of idioms centrally involves the features of stereotypical reasoning.

### 1. Previous claims

In this section four proposals about universal constraints on the structure of idioms are presented and tested against our corpus.<sup>1</sup> The first proposal comes from Coopmans and Everaert (1988:79).<sup>2</sup> They propose (1):

- (1) The idiom formation that  $X^0$  undergoes can only affect its direct  $\theta$ -role.

Our corpus contains many idioms consisting of a verb and a frozen direct object consistent with this proposal. (2) is an example:

- (2) X reitet **den Amtsschimmel**  
X rides the official white horse  
'X behaves unnecessarily bureaucratic'

However, there are also many frozen expressions in idioms that are usually not analyzed as direct  $\theta$ -role recipients. One class involves idioms with frozen indirect objects as in (3) [the indirect object is bold]:

- (3) Idioms with frozen indirect objects
- a. X treibt Y **dem Gegner** in die Arme  
X drives Y the enemy into the arms  
'X makes that Y joins the enemy'
- b. X traut **dem Braten** nicht  
X trusts the roast not  
'X considers the situation suspicious'

- c. X gibt **der Wahrheit** die Ehre  
 X gives the truth the honor  
 'X tells the complete truth'

A particularly productive type of idiom contains a frozen locative adverbial (for a similar observation on English see Kiparsky 1987). Many of these locatives are not arguments of the verb at all; those that are would not usually be considered direct arguments. A few representative examples are given in (4):

(4) Idioms with locative adverbials

- a. X kommt mit einem Affen **nach Hause**  
 X comes with an ape to the home  
 'X comes home drunk'
- b. X liegt Y wie ein Alp **auf der Brust**  
 X lies Y like a nightmare on the chest  
 'X is a nightmare to Y'
- c. X haut Y **aus dem Anzug**  
 X beats Y out of the suit  
 'X beats up Y badly'
- d. X läßt Y **am steifen Arm** verhungern  
 X lets Y on the stiff arm starve to death  
 'X rides hard on Y'
- e. X trägt den Kopf **unter dem Arm**  
 X carries the head under the arm  
 'X is very sick'
- f. X geht mit offenen Augen **durch die Welt**  
 X goes with open eyes through the world  
 'X (wants to) see(s) things clearly'
- g. X steht mit einem Bein **im Grab**  
 X stands with one leg in the grave  
 'X is deadly sick'
- h. X predigt **vor leeren Bänken**  
 X preaches in front of empty benches  
 'X speaks in front of a small audience'

Finally, the idioms in (5) contain frozen adjuncts of other types: (a) contains the negation, (b) a frequency adverb, and (c) an instrumental:

(5) Idioms with other adjuncts

- a. Bei X ist es im Dachstübchen **nicht ganz richtig**  
 with X is it in the roof chamber not quite right  
 'X is slightly crazy'

b. X ist **ständig** auf Achse  
 X is always on the axle  
 'X travels frequently'

c. X hütet Y **mit Argusaugen**  
 X guards Y with Argus-eyes  
 'X guards Y very attentively'

Baltin (1987:6) posits a constraint on idioms which casts the net slightly larger than Coopmans' and Everaert's proposal:

(6) ... the participants in the idiom always involve the head of a phrase and the head of one of its complements (examples *make headway*, *keep track of*, *keep tabs on*). [Footnote omitted]

This proposal accounts for idioms such as those in (3) but the examples in (4) and (5) are inconsistent with it: the idioms in (4) and (5) are adjuncts rather than complements which are required on Baltin's account. Another large class of problematic cases comes from structures with frozen adjective phrases within NPs that are parts of idioms. (7) presents examples of this type. The bold adjective (phrase) in each case is not selected by the verbal head of the idiom nor do the adjective (phrase) and the noun stand in a head-complement relation:

(7) Idioms with attributive adjectives

a. X hat eine **noble** Ader  
 X has a noble vein  
 'X is generous'

b. X hat einen **schweren** Affen sitzen  
 X has a heavy ape sitting  
 'X is (very) drunk'

c. X hat einen **gesegneten** Appetit  
 X has a blessed appetite  
 'X eats a lot'

d. X hat einen **langen** Atem  
 X has a long breath  
 'X has stamina'

e. X spielt den **dummen** August  
 X plays the dumb August  
 'X plays dumb'

f. X hat eine **weiche** Birne  
 X has a soft pear  
 'X is crazy'

g. X erhält den **blauen** Brief  
 X receives the blue letter  
 'X is dismissed'

- h. X hat einen **breiten** Buckel  
 X has a broad back  
 'X is able to endure a lot'
- i. X zieht den **bunten** Rock an  
 X puts the colored jacket on  
 'X becomes a soldier'
- j. X zeigt die **weiße** Fahne  
 X shows the white flag  
 'X surrenders'

The third approach to idioms we consider comes from Van Gestel 1989, 1992:<sup>3</sup>

- (8) For any idiom  $X^m$ ,  $X^m$  contains all and only fixed material.

Of the approaches we have seen up to this point, this one is the most liberal since it refers only to constituency, irrespective of the thematic or grammatical-functional relationships among the daughters of the idiom. (8) is consistent with all the examples presented so far.

However, even this proposal faces a multitude of counterexamples from the corpus, including all of the examples in (9) which instantiate a very productive type of idiom. Here the idiom consists of a verb and a preposition (and perhaps additional material) but, crucially, the object of the preposition is non-frozen. Consequently, these idioms violate (8) because there is a non-fixed position within the otherwise completely idiomatic constituent.

- (9) Idioms with frozen prepositions whose objects are non-frozen

- a. X erregt Anstoß **bei** Y  
 X creates offense with Y  
 'X gives offense to Y'
- b. Es ist aus **zwischen** X **und** Y  
 it is out between X and Y  
 'X and Y's love relationship is over'
- c. Es steht nicht zum besten **mit** X  
 it stands not to the best with X  
 'Things are not well with X'
- d. X lastet bleischwer **auf** Y  
 X weighs lead-heavy on Y  
 'X lays heavy on Y's conscience'
- e. X richtet ein Blutbad **unter** Y an  
 X creates a bloodbath among Y PART  
 'X commits mass murder among Y'

- f. X macht ein großes Brimborium **um** Y  
 X makes a big fuss about Y  
 'X makes a big fuss about Y'
- g. X schlägt Brücken **zu** Y  
 X hits bridges to Y  
 'X makes connections with Y'
- h. Das ist chinesisch **für** X  
 that is chinese for X  
 'That is an unintelligible text for X'
- i. **Bei** X ist es im Dachstübchen nicht ganz richtig  
 with X is it in the roof chamber not quite right  
 'X is slightly crazy'
- j. X hält den Daumen **auf** Y  
 X keeps the thumb on Y  
 'X makes sure that money, etc. is spent rationally'

The examples in (10) present further challenges to the claim that idioms are constituents containing all and only fixed material. (10a) contains a constituent, i.e. the bracketed NP, with a flexible slot in it: that is, whereas the remainder of the constituent is fixed, the adjectival position is free.

(10) Other counterexamples to (8)

- a. X hat [<sub>NP</sub> eine Y Ader]  
 X has a ADJ vein  
 'X has a disposition of kind ADJ'
- b. X weiß nicht [<sub>S</sub> wie X **mit** Y dran ist]  
 X knows not how X with Y at it is  
 'X does not know what to think of Y'

It is equally hard to see how (8) can be reconciled with (10b). This idiom contains fixed material both in the main clause and the bracketed subordinate clause. The idiom contains various holes, some deeply embedded within the subordinate clause. (8) predicts that such idioms don't exist.

Finally we move to Marantz (1984:27) where we find the following observation:

- (11) ... there are countless object idioms in English like *kick the bucket* while subject idioms that are not also full phrasal idioms are rare, if they exist at all.

Marantz took (11) to be evidence for his view of theta theory that objects are theta-marked directly by the verb but that external arguments receive their theta role compositionally from the verb phrase containing the verb and its internal arguments.

While Marantz's observation concerning idioms carries over better to the German data than the more general proposals discussed earlier, it faces counterexamples as well.

(12) Idioms with frozen subjects

- a. **Der Schalk** sieht X aus den Augen  
the wag looks IO out of the eyes  
'X is a wag'
- b. X ist **der Appetit** vergangen  
IO is the appetite gone  
'X has lost his appetite'
- c. X geht **der Atem** aus  
IO goes the breath away  
'X has no money reserves left'
- d. X bleibt **der Atem** weg  
IO stays the breath away  
'X is very surprised'
- e. X gingen **die Augen** auf  
IO go the eyes open  
'X realizes the connections'
- f. X beißt wohl **der Affe**  
DO bites PART the ape  
'Has X gone totally crazy now?'
- g. als hätte X **der Erdboden** verschluckt  
as had DO the ground swallowed  
'X suddenly disappeared'
- h. X hat **e s** erwischt  
DO has it struck  
'X died'
- i. X hat **der Esel** im Galopp verloren  
DO has the donkey in the galloping lost  
'X is dumb'
- j. **Der Tod** nimmt X **die Feder** aus der Hand  
the death takes IO the feather out of the hand  
'Death ends X's writing career'

Observe that (a-e) do not contain a direct object, and that all of their frozen subjects are non-agentive. Data of this sort suggested to Marantz the appropriateness of treating such idioms in terms of unaccusativity: this would locate the surface subject within the VP at D-structure where it can be directly theta-marked by the verb. However, (f-j) resist such an analysis. Example (j) contains a frozen direct object besides the frozen subject and the verb meaning is not of the unaccusative type in any event. In (f-i) the verb governs a non-frozen direct object making this position inaccessible to the frozen



subject at D-structure as well. In addition, the verb in (f) does not show the prototypical semantic features of unaccusativity either. All in all, however, while Marantz's proposal does not seem to represent an absolute universal, it provides the basis for a very strong markedness statement concerning idioms.

On the other hand, however, because Marantz's proposal focuses exclusively on subjects, it would not appear to be sufficiently general to account for another strong tendency in German idioms. As the table (13) shows, not only subjects but also indirect objects show a powerful resistance to occur frozen in idioms:

(13) The relative resistance of grammatical functions to idiomatization

|                          | Number | Percent |
|--------------------------|--------|---------|
| Idioms with a frozen IO: | 55     | 5.5     |
| Idioms with a frozen SU: | 57     | 5.5     |
| Idioms with a frozen DO: | 417    | 41.8    |

In summary, we have established the following two empirical generalizations in this section:

(14) Generalizations to take away from this section

1. Idioms do **not** have to be phrase-structural constituents.
2. Subject and indirect object idioms are much rarer than direct object idioms.

**2. Other generalizations derived from the German corpus**

We will now take a closer look at the properties of the argument structure and the subcategorization frame of German idioms. The corpus yields particularly interesting generalizations in this regard.

We begin by inspecting the list of the nouns that appear as the heads of the frozen subjects in the subject idioms and as the heads of the indirect object idioms:

(15) The head nouns of the subject in subject idioms:

|         |              |              |                |
|---------|--------------|--------------|----------------|
| Du      | 'you'        | Blut         | 'blood'        |
| alles   | 'everything' | Bock         | 'ram, goat'    |
| es      | 'it'         | Boden        | 'ground'       |
| Ader    | 'vein'       | Butter       | 'butter'       |
| Affe    | 'ape'        | ich          | 'I'            |
| das     | 'that'       | Donnerwetter | 'thunderstorm' |
| Akten   | 'files'      | was          | 'something'    |
| Appetit | 'appetite'   | nichts       | 'nothing'      |
| Atem    | 'breath'     | Erdboden     | 'ground'       |
| Augen   | 'eyes'       | Esel         | 'donkey'       |
| Schalk  | 'wag'        | Fäden        | 'threads'      |
| Haare   | 'hair'       | Tod          | 'death'        |
| Bissen  | 'bite'       |              |                |

(16) The head nouns of the indirect object in IO idioms:

|           |             |              |               |
|-----------|-------------|--------------|---------------|
| Dir       | 'you'       | Gefahr       | 'danger'      |
| Liebe     | 'love'      | Beschreibung | 'description' |
| sich      | REFLEXIVE   | Braten       | 'roast'       |
| allen     | 'everybody' | Wahrheit     | 'truth'       |
| Gegner    | 'enemy'     | Erdboden     | 'ground'      |
| Vergnügen | 'enjoyment' |              |               |
| mir       | 'me'        |              |               |

Note the striking almost total absence of nouns referring to human beings in (15) and (16). Compare this with the first few nouns contained in an article from an arbitrarily chosen German newspaper:

(17) The head nouns of subjects in a recent newspaper article

|                               |                           |
|-------------------------------|---------------------------|
| <b>Kirche</b>                 | church                    |
| <b>Anglikaner</b>             | Anglicans                 |
| <b>Gegner und Gegnerinnen</b> | male and female opponents |
| <b>Diakoninnen</b>            | female deacon             |
| <b>Gemeinde</b>               | community                 |
| <b>Gäste</b>                  | guests                    |
| <b>Millionenpublikum</b>      | an audience of millions   |
| Ereignis                      | event                     |
| Kathedrale                    | cathedral                 |
| <b>Dekan</b>                  | dean                      |
| Applaus                       | applause                  |
| <b>Diakoninnen</b>            | female deacon             |
| <b>Bischof</b>                | bishop                    |
| <b>der</b>                    | he                        |

Eleven of the 14 nouns taken from this article (those which are bold) refer to human beings or collections of human beings. With indirect objects one would doubtlessly find a similar result. But the typical noun in (15) and (16) refers to some property of human beings (love, enjoyment, danger, body parts) rather than directly referring to a human or an institution of humans. On the basis of these observations we state two further generalizations:

(18) The head nouns of frozen subjects and indirect objects

3. The referents of the SUBJ and IO functions are in general more likely to be HUMAN than NON-HUMAN. These are precisely the functions that are least likely to be frozen in idioms (cf. Nunberg, Sag, and Wasow 1994).
4. However, when these functions (i.e. SUBJ and IO) ARE fixed in idioms, their conventional interpretation typically is NON-HUMAN.

The data just discussed of course suggests the conclusion that subjects and indirect objects occur in idioms relatively rarely precisely *because* they so frequently refer to human beings. The following counts are designed to shed more light on this hypothesis. The table

in (19) is concerned with the argument structure of idioms. In total, the 1000 idioms in the corpus take 1385 arguments (= non-frozen positions). We have classified each of these arguments according to whether it should denote a human being, a non-human entity, or whether it is compatible with both interpretations according to the selectional restrictions imposed by the idiomatic predicate. The results are striking: eight out of 10 open argument positions of idiomatic predicates are reserved for NPs referring to human beings, with another 4.7% being compatible with a human or a non-human interpretation. Contrast these findings with the results for frozen positions in (20): almost 9 out of 10 of those refer to NON-HUMAN referents. This data thus confirms the hypothesis stated at the beginning of this paragraph that grammatical functions which routinely express HUMAN participants occur frozen in idioms only rarely.

(19) The aboutness of idioms (I): Open positions

Database 1000 idioms (Friederich 1976)

Open positions 1385

| Selectional restrictions<br>on open positions | Absolute | Percent |
|-----------------------------------------------|----------|---------|
|-----------------------------------------------|----------|---------|

|           |           |            |
|-----------|-----------|------------|
| HUMAN     | 1109      | 80.1       |
| NON-HUMAN | 211       | 15.2       |
| VAGUE     | <u>65</u> | <u>4.7</u> |
| ALL       | 1385      | 100.0      |

(20) The aboutness of idioms (II): Frozen positions

| Selectional restrictions<br>on frozen positions | Absolute | Percent |
|-------------------------------------------------|----------|---------|
|-------------------------------------------------|----------|---------|

|           |          |           |
|-----------|----------|-----------|
| HUMAN     | 136      | 11.9      |
| NON-HUMAN | 1000     | 87.8      |
| VAGUE     | <u>3</u> | <u>.3</u> |
| ALL       | 1139     | 100.0     |

Having established that idioms are stereotypically about human beings, let us now look in more detail at exactly what kinds of nouns occur frozen in idioms.

(21) The aboutness of idioms (III): The conventional meaning of the head nouns of frozen positions (= 1139)

| Conventional meaning   | Absolute | Percentage |
|------------------------|----------|------------|
| BODY PARTS/HUMAN FOODS | 310      | 27.2       |
| CULTURE/TOOLS          | 258      | 22.7       |
| REFLEXIVES             | 110      | 9.7        |
| MENTAL PROPERTIES      | 46       | 4.0        |
| ANIMAL NAMES           | 38       | 3.3        |
| NAMES                  | 10       | .9         |
| HUMAN ACTIONS          | <u>9</u> | <u>.8</u>  |
|                        | 781      | 68.6       |

Number of idioms that contain at least one of the above: 638 (= 63.8%).

|                    |                                               |
|--------------------|-----------------------------------------------|
| Body parts, foods: | lap, shoulder, vain, sugar, ...               |
| Culture, tools:    | address, farming, cattle-breeding, files, ... |
| Mental properties: | idea, nightmare, fear, ...                    |
| Animal names:      | eel, ape, bear, ...                           |
| Names:             | Adam, Eva, Abraham                            |
| Human actions:     | die, shoot, bite, ...                         |

Almost 30% of all the idioms in the corpus contain a noun in a frozen position that conventionally refers to a human body part or a food for human consumption. Another 23% contain nouns that refer to human culture or tools used by humans. Fully 69% of all idioms contain a frozen noun that in its conventional interpretation is likely to occur in a sentence that is 'about' a human being or a group of human beings.

What about the remaining idioms that do not contain such an NP? It turns out, as is shown in (22), that many of these idioms contain verbs that in their conventional interpretation refer specifically to human participants:

(22) Some verbs that appear in the remaining idioms:

|              |                            |
|--------------|----------------------------|
| tun          | 'do'                       |
| heiraten     | 'marry'                    |
| lassen       | 'let, make'                |
| abmelden     | 'announce one's departure' |
| abschreiben  | 'to write off'             |
| nehmen       | 'take'                     |
| gehen        | 'go'                       |
| schreien     | 'yell'                     |
| hinauswerfen | 'throw out'                |
| abfahren     | 'drive off'                |
| sehen        | 'see'                      |
| daastehen    | 'stand there'              |
| rütteln      | 'rattle'                   |
| anbinden     | 'tie'                      |
| .....        |                            |

The data just presented can be summed up in the following two generalizations:

(23) The arguments and syntactic dependents of idiomatic predicates

5. There is a very strong preference for idiomatic predicates to assign theta-roles to their free arguments containing the entailment +HUMAN.
6. There is a very strong preference for idiomatic predicates to contain nouns or verbs that stereotypically cooccur with a +HUMAN NP.

### 3. Analysis

In this section we state three markedness principles that we take to be imposed on idiomatic predicates by Universal Grammar. The principles are designed to capture the core of the generalizations presented in the previous section. The third principle relates the meaning of an idiomatic expression to the meaning of a homophonous non-idiomatic expression if the latter exists. The collaboration of the principles will be illustrated in section 4 where it will be shown that many systematic counterexamples to previous theories of idioms can be handled successfully in our framework.

We begin with the conjecture that idioms form a universally available construction class of the sort familiar from interrogatives, imperatives, or passives. Like each of these constructions, the idiom construction can add information to that contained in the lexical items which appear in the construction. For instance, informally speaking, the imperative construction expresses that the speaker wants the addressee to do something and the passive construction prototypically expresses that the speaker wants the addressee to focus on what is happening to the patient rather than what the agent is doing, etc. In all of these cases, the construction ties together some meaning element (broadly construed) with some form and function-determining components. Thus, in the imperative construction we typically find the SUBJ left categorially unexpressed whereas in the passive construction the agent is either unexpressed or appears as an oblique of some sort. We believe that idioms form a construction in this sense as well, i.e. they follow general preference principles of meaning and form/function. We take it that the previous section has established this beyond doubt, at least with respect to German idioms.

We assume further that all idioms are phrasal predicates, i.e. they behave functionally as if they were associated with lexical valences, much like lexical items, but take on the form of phrases or parts of phrases. Separating phrasehood from functional lexicality in the case of idioms is plausible on at least two grounds. First, many idioms can appear in the passive construction (see Nunberg et al. 1994 for a massive amount of evidence) which by now is almost universally assumed to be a lexical construction in the unification-based approach to syntax which we are presupposing here. Secondly, if we follow the lexical-functional tradition in assuming that rules like passive must be lexical precisely because they express valences and all valence-expressing (or 'linking') rules are lexical in nature, then the linking preferences that we have found in the previous section would lead us postulate the expressions that obey them as lexical.

The proposal stated in the previous paragraph entails that there are phrasal lexical entries, i.e. entries which from a functional point of view behave as if they were just like morphologically synthetic lexical items like 'hit' even though from a categorial point of view

they are non-synthetic, i.e. have internal phrasal structure. This state of affairs is reminiscent of the claim made in Webelhuth & Ackerman 1992 that certain auxiliary-verb combinations in German are best analyzed as functionally lexical predicates with analytic categorial realizations. The evidence that idioms show similar behavior in our view considerably strengthens the case that theories of syntax should make a principled distinction between the functional and the categorial dimensions of predicatehood.

Returning now to the linking properties of idioms, we propose that each predicate that occurs in the idiom construction preferentially have the following argument structure and subcategorization properties:<sup>4</sup>

(24) The idiom's argument structure

Idiomatic predicates are strongly preferred to contain the entailment *Human(x)* for each of their argument positions *x*.

(25) The idiom's subcategorization frame

The individual-denoting expressions that are selected in the subcategorization frame of the head of a predicate are strongly preferred to have the entailment *Non-human(x)* in their conventional interpretations.

Finally, we state a principle about the relationship in meaning between the idiomatic interpretation of an expression and a non-idiomatic interpretation, should the latter exist:

(26) The idiom's meaning

The type of situation described by the idiom should be stereotypically related to the type of situation described by the literal expression.

#### 4. An analysis of some counterexamples to the theories discussed in section 1

In this final part of the paper we revisit some of the counterexamples to the theories of idioms described in section 1.

Recall that (27) is a counterexample to Coopmans' and Everaert's claim that only direct arguments of the verb can form an idiom with it:

(27) Coopmans and Everaert: 'direct arguments'

X haut Y **aus dem Anzug**  
 X beats Y out of the suit  
 X beats up Y badly

Example (27) does not violate any of the conditions that we have imposed on idioms in our theory, however. Observe that both the *x* and *y* arguments in the argument structure of the idiomatic predicate are specified as HUMAN in accordance with (24). Moreover, the only noun that is explicitly listed in the subcategorization frame of



the idiom is *Anzug* 'suit' which is NON-HUMAN in its conventional interpretation.

(28) Our analysis

Argument structure: <x: Human(x) y: Human(y) >

Subcategorization: < NP[Nom], NP[Acc], PP[aus dem Anzug] >

The meaning of the idiom 'to beat someone brutally' is derived by stereotype from the literal meaning of the expression ('to beat someone out of his/her suit'). The stereotype involved is obviously:

(29) Stereotype:

It takes a brutal beating to beat somebody out of their suit

The application of this stereotype licenses the transfer of meaning via the inference: if X beats Y out of his suit, then X beats Y brutally. It is instructive to compare our proposal with that of Coopmans and Everaert. First of all, they predict that such an idiom does not exist but it does. In addition, our theory captures generalizations concerning the prototypical argument structures, subcategorization frames, and the existence of stereotypes used in the meaning transfer of the idiom that Coopmans' and Everaert's theory misses in their entirety. It is arguably the case that these are linguistically significant generalizations that no theory of idioms should miss.

Example (30) is a counterexample to Baltin's claim that idioms involve all and only subcategorized material. The underlined adjective within the verb's direct object is neither subcategorized by the verb nor by the head noun *Brief*. We will see that in our theory the presence and identity of the adjective plays an important semantic role.

(30) Baltin: 'subcategorized arguments'

X erhält den blauen Brief

X receives the blue letter

'X is dismissed'

Note, first of all, that according to our theory, the idiomatic predicate in (30) has optimal argument structures and subcategorization frames: the idiom has only one semantic argument, i.e. the x argument, and that argument is semantically marked as HUMAN; secondly, the only noun mentioned in the subcategorization frame is the inanimate *Brief* 'letter'. Thus, whereas Baltin's theory of idioms which makes no reference to linguistic or cognitive notions other than phrase structure wrongly rules out (30) as a possible idiom, (30) is valued quite highly as a possible idiom according to our 'modular' or 'factorized' approach to idioms.

(31) Our analysis

Argument structure: <x: Human(x) >

Subcategorization: < NP[Nom], NP[den blauen Brief] >

Let us now turn to the idiom's meaning. It is obvious how in the culture of a company where dismissal letters are always sent out in blue envelopes the stereotype can develop that receiving a blue letter means to be dismissed. Our theory makes us expect that we should be able to find such a situationally plausible stereotype to connect the idiomatic and non-idiomatic meanings (if the latter exists) of an unmarked idiomatic predicate.

Example (32) is a counterexample to the third theory of idioms we presented in section 1.

(32) Van Gestel: 'Idioms contain all and only fixed material'

X schlägt Brücken **z u** Y  
 X hits bridges to Y  
 'X makes connections with Y'

The argument structure and subcategorization frame of the idiom satisfy the preference principles of our theory in (24) and (25). Note that the meaning of the idiom falls into place as well. It is based on the stereotype: to erect a bridge to someone/somewhere means that one becomes connected to someone/somewhere in a way one was not before. This stereotype is sufficient to connect the non-idiomatic meaning of the idiom ('to build bridges to Y') to its idiomatic meaning, i.e. 'to make connections to Y.'

(33) Our analysis

Argument structure: <x: Human(x) y: Human(y) >  
 Subcategorization: < NP[Nom], NP[Brücken], PP[PFORM zu] >

Finally, we discuss one of the counterexamples to Marantz' theory. Read as a strict prohibition against idioms with frozen subjects and flexible direct objects, his theory incorrectly rules out the existence of (34):

(34) Marantz: 'No subject idioms'

X beißt wohl **d e r** Affe  
 bites PART the ape  
 'Has X gone totally crazy now?'

Observe, as in the cases above, that this idiom violates neither of our preference principles in (24) and (25): its only semantic argument is HUMAN and each noun mentioned in the subcategorization frame is NON-HUMAN.

(35) Our analysis

Argument structure: <x: Human(x) >  
 Subcategorization: < NP[der Affe], NP[Acc], ADV[wohl] >

It is also easy to find a stereotype in the experiential world of a canonical German that would connect the non-idiomatic and idiomatic meanings of (34). Since your regular Germans do not meet apes in daily life, they may well feel that situations where they come

in contact with apes are somewhat unusual; what is more, if one finds oneself in a situation where one is *bitten* by an ape, one has every reason to believe that one would behave in unusual, even crazy, ways. This reasonable stereotype yields the invited inference: if X is bitten by an ape, then X may behave in crazy ways.

The crucial role that stereotype plays in our analysis of idioms provides an elegant explanation of why idioms like (34) are possible even though they have frozen subjects and flexible direct objects. Since idioms should be 'about' human participants and the hearer can expect the speaker to provide some hints about the idiomatic meaning via stereotype, it should be possible for the stereotype to involve a human who is affected in some manner in the situation described by the non-idiomatic meaning. Example (34) exploits the natural inclination of most of us to find a situation where we are bitten by an ape as outside our normal daily experiences. It is clear, then, that the intended effect depends on the ape being the agent of biting in the non-idiomatic reading and the affected human being the patient of biting. In the active voice, this naturally leads to the ape being referred to by the subject and the patient by the direct object.

Of course, general argument structure preference principles map HUMAN participants into the subject and indirect object functions. Verbs with prototypically inanimate subjects or indirect objects and prototypically human direct or prepositional objects are relatively rare. This is sufficient to explain the relative rarity of idioms with frozen subjects and indirect objects. No reference to any categorial asymmetries is needed. In light of the fact that categories and phrase structure alone do not seem to derive any of the other linguistically significant empirical generalizations derived from the German corpus, this is not really surprising.

## NOTES

<sup>1</sup> Space limitations do not allow us to provide much detail of the four theories to be discussed. The reader is encouraged to consult the original papers for more information.

The corpus consists of 1000 verbal idioms from Friederich 1976 that contain at least one non-frozen grammatical function. Fully sentential idioms were excluded because the present paper deals with the relative properties of frozen and non-frozen positions in sentences containing idioms.

<sup>2</sup> Everaert 1993 proposes some revisions of Coopmans & Everaert 1988.

<sup>3</sup> These papers have not been accessible to us at the time of writing. Van Gestel's claim (8) is reported in Everaert (1993:47). It would appear that a similar claim is presupposed by Larson (1988:340) in an argument for his double-VP analysis of ditransitive verbs in English.

<sup>4</sup> Some absolute constraints on predicates occurring in the idiom construction are stated in Webelhuth 1994.

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DEMONSTRATIVES, FOCUS, AND THE INTERPRETATION OF  
COMPLEX NPS IN MANDARIN CHINESE\*

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In Mandarin Chinese complex NPs, the order of pre-nominal modifier phrases and the demonstrative correlates with different interpretations of the NPs. After discussing some of the problems with previous accounts of the interpretive differences of such NPs, I show that English and Mandarin Chinese (MC) both signal focus in demonstrative NPs by means of intonational prominence. However, MC also indicates focus by word order in the NP. An analysis is then proposed based on the interaction between the interpretation of demonstratives and focus to account for the uniqueness implications observed of MC and English demonstrative NPs in a uniform way.

1. Introduction

In this paper, I investigate the interpretation of complex NPs like (1) and (2) in Mandarin Chinese (MC). In these NPs, the order of the prenominal modifier phrase (MOD-*de*) and the demonstrative correlates with different interpretations. I will refer to the demonstrative as DEM and ignore the accompanying classifier for now.

(1) [NP DEM MOD-*de* N' ] VP  
Nei wei dai yanjing de xiansheng shi shei?  
that cl wear glasses de gentleman be who  
'Who is **that** gentleman wearing glasses?' (Chao 1968:286)

(2) [NP MOD-*de* DEM N' ] VP  
Dai yanjing de nei wei xiansheng shi shei?  
wear glasses de that cl gentleman be who  
'Who is **the** gentleman wearing glasses?' (Chao 1968:286)

The NP in (1) with DEM preceding MOD-*de* 'wearing glasses' reads as 'that gentleman wearing glasses'. All that is required for (1) to be uttered appropriately is that there be a unique gentleman wearing glasses the speaker IS POINTING AT. Namely, (1) is consistent with there being more than one gentleman wearing glasses. But the NP with MOD-*de* 'wearing glasses' preceding DEM in (2) reads as 'the gentleman wearing glasses', and the expression is appropriate only if in the context of utterance of (2) there is exactly one most salient gentleman wearing glasses. The order-related contrast between (1) and (2) may be schematically described as in (3):

- (3) a. DEM MOD-*de* N' → no uniqueness effect  
b. MOD-*de* DEM N' → uniqueness effect



In discussing (1)-(2), Chao makes an important observation: when MOD-*de* is contrastively stressed, the definite reading surfaces even if DEM precedes MOD-*de*. For example, if *dai yanjing de* 'wearing glasses de' in (1) is contrastively stressed, as indicated by the capital letters in (7), the sentence will have the same interpretation as sentence (2) (1968:286).

(7) [NP DEM MOD-*de* N' ] VP  
 Nei wei DAI YANJING de xiansheng shi shei?  
 that cl WEAR GLASSES de gentleman be who  
 'Who is **the** gentleman WEARING GLASSES (not the one not wearing glasses)?'

(1) [NP DEM MOD-*de* N' ] VP  
 Nei wei dai yanjing de xiansheng shi shei?  
 that cl wear glasses de gentleman be who  
 'Who is **that** gentleman wearing glasses?' (Chao 1968:286)

(2) [NP MOD-*de* DEM N' ] VP  
 Dai yanjing de nei wei xiansheng shi shei?  
 wear glasses de that cl gentleman be who  
 'Who is **the** gentleman wearing glasses?' (Chao 1968:286)

This observation turns out to be relevant for the account I propose — I will come back to it later. Now let's look at Annear's analysis.

## 2.2. Annear (1965): there are two *nei*'s

Annear (1965) attributes the different readings in (1) and (2) to the existence of lexically distinct *nei*'s: deictic *nei* 'that', ordered before MOD-*de*; definite *nei* 'the', following MOD-*de* (1965:33,35,42-43). An obligatory transformation is responsible for preposing MOD-*de* to definite *nei* 'the', and the analysis predicts the order-related readings in (1) and (2).

There are several problems with Annear's analysis. First of all, if *nei* can be either deictic or definite, there is no obvious reason why it has to be a definite determiner when it follows MOD-*de* but deictic when it precedes MOD-*de*. In other words, the analysis is stipulative: there is no reason why the facts could not be the other way round.

Second, deictic determiners carry information on proximity but the definite determiner does not (Lyons 1975). In English, for example, if the speaker is standing next to the addressee and is referring to a dress in hand, it would be inappropriate to utter (8a), since 'that' indicates [-proximal] and one needs to use 'this' or 'the', as in (8b) and (8c), instead.

- (8) Context: The speaker is standing next to the hearer and is referring to a dress in hand.
- a. #You borrowed **that** dress that I like.
  - b. You borrowed **this** dress that I like.
  - c. You borrowed **the** dress that I like.

The same applies to the corresponding MC examples in (9). In the context described, *zhei* 'this' or a bare noun are appropriate, as in (9b) and (9c), but *nei* in (9a) is not. This shows that *nei* is marked with respect to proximity features and therefore is not the definite determiner 'the' when it follows MOD-*de* in the NP.

(9) Context: The speaker is standing next to the hearer and is referring to a dress in hand.

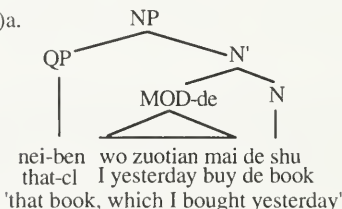
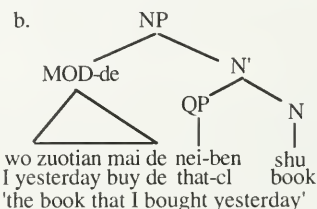
- a. #Ni jiele wo xihuan de **nei** jian yifu.  
 you borrowed I like de that cl dress  
 'You borrowed **that** dress that I like.'
- b. Ni jiele wo xihuan de **zhei** jian yifu.  
 you borrowed I like de this cl dress  
 'You borrowed **this** dress that I like.'
- c. Ni jiele wo xihuan de yifu.  
 you borrowed I like de dress  
 'You borrowed **the** dress that I like.'

Third, cases with contrastive stress within the NP provide further evidence in favor of a uniform treatment of *nei* in both pre- and post-MOD-*de* positions. The uniqueness implication occurs when MOD-*de* follows DEM and is stressed, as in (7) (Chao 1968). Under Annear's analysis, there is no reason to expect this.<sup>1</sup>

- (7) [NP DEM MOD-*de* N' ] VP  
 Nei wei DAI YANJING de xiansheng shi shei?  
 that cl WEAR GLASSES de gentleman be who  
 'Who is **the** gentleman WEARING GLASSES (not the one not wearing glasses)?'

### 2.3. Huang (1982, 1983): scope relations and uniqueness implications

Huang proposes that the uniqueness implications observed with the order MOD-*de* DEM is scope-related (1982,1983:37,55-56,61). For example, the demonstrative *nei* in (10a) is not c-commanded by the modifier phrase and hence is outside the scope of the MOD-*de*.

- (10)a. 
- b. 

According to Huang, when DEM is outside the scope of MOD, as in (10a), DEM's referential function is independent of MOD, and MOD is descriptive; when DEM is inside the scope of MOD, as in (10b), DEM's referential value is subject to modification by the MOD, and MOD is restrictive.

The problem with Huang's theory is that his analysis needs to be supplemented with a more explicit account of how the semantics of the demonstrative and modifier scope in MC yield the uniqueness implication in (10b) but not in (10a). For instance, with Huang's analysis, when MOD-*de* precedes DEM, as in (2), the descriptive content should be needed to specify the referent of the NP.

- (2) [NP MOD-*de* DEM N' ] VP  
 Dai yanjing de nei wei xiansheng shi shei?  
 wear glasses de that cl gentleman be who  
 'Who is **the** gentleman wearing glasses?' (Chao 1968:286)

So (2) should correspond to the English sentence in (11), where the descriptive content is also used to specify the referent of the NP:

- (11) Who is that gentleman wearing glasses?

Yet we know that (11) can be used deictically without implicating that there is a unique gentleman wearing glasses: what (11) requires is that there be a unique gentleman wearing glasses in the direction of the pointing. Sentence (11) thus indicates that the fact that the descriptive content is essential to determine the meaning of the demonstrative NP is insufficient to explain the uniqueness implication in (10b) and (2).

## 2.4. Summary

I have shown that previous analyses based on restrictive modification, on two *nei*'s, or on scope relations are not sufficient to explain the uniqueness implications observed of MC demonstrative NPs. Demonstratives and focus play a major role in the analysis I propose. The following is some background on the two.

## 3. Background on demonstratives and focus

### 3.1. Deictic use of demonstrative NPs

Demonstrative NPs such as *that student*, when used as a deictic referring expression, instruct the addressee to locate a specific individual (or group of individuals) in a spatial region ordinarily indicated by pointing:<sup>2</sup>

- (12) John talked to that student.  
 (John talked to the student the speaker is pointing at.)

As shown in (13), one can use demonstrative NPs with the same descriptive content to refer to different objects in the environment by adjusting the accompanying demonstration (Kaplan 1977:492).

- (13) That student [pointing at student A] and that student [pointing at student B] danced.

In comparison, substituting the definite determiner *the* for the demonstrative *that* in (13) is not acceptable, whether accompanied by pointing or not, as in (14).

- (14) \*The student [pointing at student A] and the student [pointing at student B] danced.

Demonstratives may have non-deictic uses as well. But we will not be discussing them here. Now we turn to focus.

### 3.2. Focused constituents

Consider the expressions in (15) through (17) below. Sentence (16) with intonational prominence (represented in capital letters) on the subject *Mary* is a natural answer to (15), but (17) with intonational prominence on the object *cake* is not.

- (15) Who baked the cake?  
 (16) MARY baked the cake.  
 (17) #Mary baked the CAKE.

In comparison, (17) is a natural answer to (18), but (16) is not.

- (18) What did Mary bake?  
 (16) #MARY baked the cake.  
 (17) Mary baked the CAKE.

The role of intonational prominence in these sentences is standardly described by saying that the intonationally prominent elements carry new information and are in focus (Stechow 1991). Now consider (19) and (20).

- (19) It was Mary who baked the cake.  
 (20) It was the cake that Mary baked.

The WH-question tests (15)-(19)-(20) and (18)-(19)-(20) show that despite the difference in syntactic structure, (19) and (20) are identical to (16) and (17) respectively for discourse purposes.

- (15) Who baked the cake?  
 (19) It was Mary who baked the cake.  
 (20) #It was the cake that Mary baked.  
 (18) What did Mary bake?  
 (19) #It was Mary who baked the cake.  
 (20) It was the cake that Mary baked.

The fact that a constituent is in focus is therefore signaled in at least two different ways: by intonational prominence, as in (16)-(17), or structurally, as in (19)-(20).

### 3.3. Focus determines a set of alternatives

Rooth (1985) suggests that the main contribution of focus is a set of alternatives. For example, assuming that WH-words are the foci of the questions they head, a question like (15) introduces into a discourse a set of alternatives of the form in A:

- (15) Who baked the cake?  
 A: x baked the cake.  
     y baked the cake.  
     etc.



The function of focus in answer (16) is to indicate that indeed the set of alternatives in A is under consideration. The proposition expressed by (16) tells us that the alternative that obtains is the one in which Mary baked the cake.

(16) MARY baked the cake.

In comparison, focus in (17) signals that alternatives of the form B are under consideration. The proposition expressed by (17) tells us that the alternative that obtains is the one in which Mary baked the cake. But set B is not the right set for question (15).

(17) Mary baked the CAKE.

B: Mary baked x.

Mary baked y.

etc.

#### 4. Demonstrative NPs and focus

Before going back to MC, I will use focus in English demonstrative NPs to illustrate my point. The English data in (21) through (24) show that focus signaled by intonational prominence on the demonstrative or the descriptive content correlates with different presuppositions. (A = Assertion; P = Presupposition)

(21) John asked that student wearing glasses.

A: John asked the student wearing glasses we are pointing at.

P: no uniqueness presupposition that only one (salient) student wears glasses.

(22) John asked that student wearing GLASSES.

A: John asked the student wearing glasses we are pointing at.

P: there is one and only one (salient) student wearing glasses.

(23) John asked THAT student wearing glasses.

A: John asked the student wearing glasses we are pointing at.

P: there is more than one (salient) student wearing glasses.

(24) John asked THAT student wearing GLASSES.

A: John asked the student wearing glasses we are pointing at.

P: no uniqueness presupposition that only one (salient) student is wearing glasses.

Take (21), for example. By uttering (21), we assert that John asked the student wearing glasses we are pointing at. There is no uniqueness presupposition that only one (salient) student is wearing glasses. Uttering (22), we assert the same thing, but there is a uniqueness presupposition. Uttering (23) and (24), we again make the same assertion, and there is no uniqueness presupposition in either case. Crucially, if focus is on the descriptive content alone, as in (22), there is a uniqueness presupposition, which is not present otherwise. We may thus draw the following generalization for English demonstrative NPs:

**Generalization:** In demonstrative NPs, a uniqueness presupposition occurs only when the descriptive content alone is focused.

Now let's go back to the MC sentences (1) and (2). Given the generalization about focus and demonstrative NPs, we have a reason for the contrast between (1) and (2).

(1) [NP DEM MOD-*de* N' ] VP  
 Nei wei dai yanjing de xiansheng shi shei?  
 that cl wear glasses de gentleman be who  
 'Who is **that** gentleman wearing glasses?' (Chao 1968:286)

(2) [NP MOD-*de* DEM N' ] VP  
 Dai yanjing de nei wei xiansheng shi shei?  
 wear glasses de that cl gentleman be who  
 'Who is **the** gentleman wearing glasses?' (Chao 1968:286)

More precisely, this contrast falls out if we assume that MOD-*de* preceding DEM signals that the descriptive content (MOD-*de*) is in focus:

(25) MOD-*de* DEM N' → MOD-*de* is in focus

Given this assumption, the contrast between (1) and (2) is predicted by the same generalization drawn for English demonstrative NPs, namely, in demonstrative NPs, there is a uniqueness presupposition if the descriptive content is in focus. The interpretive difference between (1) and (2) may therefore be reduced to a subcase of a more general phenomenon, namely, the interaction between the interpretation of focus and that of demonstratives, which may be treated in a uniform way across English and MC.

Indeed, it may be shown that, once we assume that MOD-*de* is in focus when it precedes DEM, focus-related presuppositions of MC demonstrative NPs replicate those found in the English data in (21-24). All follow from the same generalization for demonstrative NPs.

## 5. Further evidence for structural focus in Mandarin Chinese

In the following I examine additional data about focus in demonstrative NPs to provide further evidence for the claim that the order MOD-*de* DEM in MC amounts to focus on the descriptive content (MOD-*de*).

### 5.1. Focus patterns in English

Again, we start with English data. The pattern (26-27) in English shows that intonational prominence, hence focus, may not be placed on background information (information that is already 'given'). As in (27), an appropriate answer to (26) can either have no intonational prominence, or have intonational prominence (focus) on the DEM *that* only. Intonational prominence cannot be on the descriptive content *student wearing glasses*, because this is background information already given in the context of (26). (int.pr. = intonational prominence)

- (26) Which student wearing glasses did John ask?
- (27) a. That student wearing glasses. (no int.pr.)  
 b. THAT student wearing glasses. (focus on 'that')  
 c.#That student wearing GLASSES. (focus on 'glasses')  
 d.#THAT student wearing GLASSES. (focus on 'that', 'glasses')  
 e.#That STUDENT wearing glasses. (focus on 'student')  
 f.#THAT STUDENT wearing glasses. (focus on 'that', 'student')  
 g.#That STUDENT wearing GLASSES. (focus on 'student','glasses')

### 5.2. Back to Mandarin demonstrative NPs

Now let's go back to demonstrative NPs in MC. Consider the question in (28). Once (28) is uttered, the information carried by the modifier phrase 'wearing glasses de' is taken for granted.

- (28) Lisi wenle na ge dai yanjing de xuesheng?  
 Lisi asked which cl wear glasses de student  
 'Which student (who is) wearing glasses did Lisi ask?'

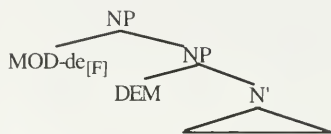
Now consider the answers in (29):

- (29) a. Nei ge dai yanjing de xuesheng. (with no int.pr.)  
 that cl wear glasses de student  
 'That student wearing glasses.'  
 b. NEI ge dai yanjing de xuesheng. (int.pr. on 'that')  
 that cl wear glasses de student  
 'THAT student wearing glasses.'  
 c.#Nei ge DAI YANJING de xuesheng. (int.pr.on 'wear glasses')  
 d.#NEI ge DAI YANJING de xuesheng. (int.pr. on 'that' and  
 'wear glasses')  
 e.#Dai yanjing de nei ge xuesheng.(with no int.pr.)  
 f.???Dai yanjing de NEI ge xuesheng.(int.pr. on 'that')  
 g.#DAI YANJING de nei ge xuesheng. (int.pr.on 'wear glasses')  
 h.???DAI YANJING de NEI ge xuesheng. (int.pr.on 'wear glasses'  
 and 'that')

The critical data for my argument are the pairs (29e)-(29a) and (29f)-(29b). The only difference within each pair is the order of MOD-*de* and DEM. There is no intonational prominence on the MOD-*de* in these pairs. Yet, (29a) and (29b) are appropriate in the context of (28), but (29e) and (29f) are not. Given the assumption that when MOD-*de* precedes DEM, MOD-*de* is in focus, (29e) and (29f) are correctly ruled out on a par with (27c)-(29c) and (27d)-(29d) respectively. Therefore, the pattern (28-29) provides additional evidence for my claim that MOD-*de* is in focus when it precedes DEM in MC.

Following Aoun & Li (1993), I assume that when MOD-*de* precedes DEM, it is an adjunct to NP. The claim that this is a focus position for MOD-*de* may be expressed by assuming that MOD-*de* in this position is marked with the feature F, as in (30).<sup>3</sup>

(30) NP → MOD-de<sub>[F]</sub> NP



### 5.3. Summary

Assuming that MOD-*de* is focused grammatically in MOD-*de* DEM N' but not so in DEM MOD-*de* N', the difference in uniqueness implications between cases like (1) and (2) in MC is predicted. Such an analysis allows us to reduce the contrast between (1) and (2) in MC to a subcase of a more general phenomenon, namely, the interaction between focus and demonstratives. Independent evidence for the assumption that, when MOD-*de* precedes the demonstrative, MOD-*de* is in focus, is provided by (28-29). MOD-*de* is taken to be an adjunct to NP when focused structurally.

## 6. Towards an analysis of the interaction between demonstratives and focus

I have shown that uniqueness implications in demonstrative NPs occur when descriptive content (DC) alone is focused. A plausible analysis of these uniqueness implications must therefore be based on an account of the interaction between the interpretation of the demonstrative (DEM) and the interpretation of focus. The following explains how and why such an account works.

### 6.1. The interpretation of demonstrative NPs

Informally, the meaning of NPs of the form *that N'* can be described as follows:

- (31) In a context *c*, '*that N'*' denotes the unique individual *x* in *c* such that
- (a) *x* is an N' in *c*, and
  - (b) *x* is in the spatial region indicated by the speaker in *c*.

Definition (31) does not require that the referent of *that N'* be the only individual with the property denoted by N' in *c* or the only individual in the space indicated by the speaker in the context of utterance. However, the referent of *that N'* is unique in satisfying both (31a) and (31b).

### 6.2. The interpretation of focus in demonstrative NPs

As already mentioned, focus introduces a set of alternatives to the denotation of the item in focus. I take it that the NPs in (32a) and (32b) have the same denotation. Where they differ is in the alternative sets they introduce.

- (32) a. THAT student with glasses (pointing at location *x*)  
referent: the student with glasses at location *x*

- b. that student with GLASSES (pointing at location  $x$ )  
referent: the student with glasses at location  $x$

### 6.2.1. Focus on the demonstrative

When focus is on DEM, the range of pointing is usually narrow enough to select the referent and set it apart from other individuals in the context of utterance. Suppose that I utter sentence (33):

(33) THAT student with glasses is happy.

This utterance is appropriate only if the property of being a student with glasses is insufficient to single out an individual and the burden of picking out the referent rests mainly on the demonstration. In other words, an utterance of (33) is only appropriate in a context in which there are several students with glasses who are salient and my pointing selects one of them. This suggests that the NP in (33) is associated to the alternative set in (34):

(34) Alternative set:

- { the unique student with glasses in  $c$  at location  $x$  ,  
the unique student with glasses in  $c$  at location  $y$  ,  
the unique student with glasses in  $c$  at location  $z$  , etc. }

The alternatives in (34) are individuals who are students with glasses indicated by different acts of pointing. The contrast between these alternatives gives rise to the implication that there are different students wearing glasses in the perceptual field of the participants of the conversation and the pointing singles one out. Therefore, when focus is on DEM, there is no uniqueness implication with respect to the individuals with the property denoted by the descriptive content of the NP.

### 6.2.2. Focus on the descriptive content

When DC alone is focused in the demonstrative NP, the range of pointing is usually not narrow enough to single out a unique individual, and the property expressed by the DC in focus bears the main burden of selecting the referent. Consider sentence (35), for example:

(35) That student with GLASSES is happy.

Typically, this type of intonational prominence is used when there are several students in the area of pointing and the property of wearing glasses is what singles one out in that area. This suggests that the NP in (35) is associated to the alternative set in (36):

(36) Alternative set:

- { the unique student with glasses in  $c$  at location  $x$  ,  
the unique student with a hat in  $c$  at location  $x$  ,  
the unique student with gloves in  $c$  at location  $x$  , etc. }

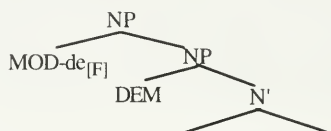
Of course, depending on the context, different properties may be chosen to construct the alternative set. This alternative set gives us the set of salient individuals. The uniqueness implication is due to the fact that this set contains exactly one student with glasses.

### 6.2.3. Summary

The uniqueness implication introduced by demonstrative NPs with focused descriptive contents depends on the fact that the alternative sets introduced by these NPs include exactly one individual satisfying the property denoted by the N'.

The issue of how to determine compositionally the denotation of MOD-*de* DEM N' will not be addressed here. With the syntactic analysis in (30), the structurally focused MOD-*de* does not form a constituent with the N'.

(30) NP  $\rightarrow$  MOD-*de*<sub>[F]</sub> NP



Semantically, however, the MOD-*de* contributes to the N' meaning and is essential to determining the referent of the NP. In order to get the semantics right, I suggest extending Bach & Cooper's proposal for Hittite 'relative clauses' (1978) to the structurally focused MOD-*de* in MC. Hittite 'relative clauses' do not form a syntactic constituent with the N' but contribute semantically to the N' meaning in the NP. A structurally focused MOD-*de* is like the Hittite relative clause in these respects, and a compositional semantics for demonstrative NPs in MC should be possible in line with what B&C proposed.

## 7. Conclusion

In this paper, I examined the correlation between word order and semantic interpretation in Mandarin Chinese demonstrative NPs. I showed that English and MC both signal focus in demonstrative NPs by means of intonational prominence. However, MC also indicates focus by word order in the NP. I proposed that when MOD-*de* precedes DEM, it is structurally focused, and that the uniqueness interpretation in demonstrative NPs is accounted for by an analysis based on the interaction between the interpretation of focus and the interpretation of demonstratives in the NP.

## NOTES

\* I sincerely thank Alessandro Zucchi for critical comments on earlier versions of this paper and for the many suggestions that are incorporated in the paper here.

<sup>1</sup> As emphasized in Annear, her analysis is limited to cases with 'a normal stress pattern' in the NP (1965:51). In line with Annear's treatment of constructions with normal stress patterns, transformational rules may be added to derive constructions like (7) from deep structures containing the definite *nei*. However, since such rules treat



the constructions as unrelated to one another, the analysis would still not explain why we find the different stress, word order, and interpretation patterns with the constructions here.

<sup>2</sup> Overt pointing is not always necessary (or sufficient) to determine the referent. I assume, however, that whenever a demonstrative NP is used deictically, the context of utterance provides either an explicit act of pointing or some clues that are equivalent to an act of pointing.

<sup>3</sup> Whether or not a DP analysis such as that proposed in Tang 1990 is needed for complex NPs in MC, the structure in (30) is sufficient for the purpose of the discussion here.

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CONTENTS

|                                                                                                                |     |
|----------------------------------------------------------------------------------------------------------------|-----|
| Preface                                                                                                        | v   |
| AKINBIYI AKINLABI: Alignment constraints in ATR harmony                                                        | 1   |
| ANDREW BARSS: Derivations and reconstruction                                                                   | 19  |
| J. FRASER BENNETT: Ambiguity in Thai                                                                           | 39  |
| DEBORAH MILAM BERKELEY: The OCP and gradient data                                                              | 59  |
| RAKESH MOHAN BHATT: On experiencers and subjects of perfect predicates                                         | 73  |
| ANDREW CARNIE, ELIZABETH PYATT & HEIDI HARLEY: The resurrection: Raising to Comp? Some evidence from Old Irish | 85  |
| JENNIFER COLE & CHARLES W. KISSEBERTH: An optimal domains theory of harmony                                    | 101 |
| MICHEL DEGRAFF: The morphology-syntax interface in creolization (and diachrony)                                | 115 |
| MAARTEN DE WIND: Checking interrogative subject pronouns in French                                             | 133 |
| ALEXIS DIMITRIADIS: Clitics and island-insensitive object drop                                                 | 153 |
| GEORGE FOWLER: Verbal prefixes as functional heads                                                             | 171 |
| STEFAN FRISCH: Reanalysis precedes syntactic change: Evidence from Middle English                              | 187 |
| JANINE GRAZIANO-KING: Selection properties of raising verbs                                                    | 203 |
| GEORGIA M. GREEN: The structure of context: The representation of pragmatic restrictions in HPSG               | 215 |
| REBECCA HERMAN: "La Double Vie De W" or the status of [w] in Karuk                                             | 233 |
| ELIZABETH HUME & DAVID ODDEN: Contra [consonantal]                                                             | 245 |
| JONGHO JUN: A constraint-based analysis of place assimilation typology                                         | 263 |
| MARK KAS & FRANS ZWARTS: Intervention phenomena: Towards an extended monotonicity calculus                     | 279 |
| DAVID KATHMAN: Infinitival complements in a Minimalist theory of grammar                                       | 293 |
| ANDREAS KATHOL: Parasitic "gaps" in German revisited                                                           | 303 |
| BYONG-KWON KIM: VP-internal subject hypothesis and ATB gap parallelism                                         | 317 |
| MARTINA LINDSETH: Overt expletives and thematic subjects in West Slavic                                        | 333 |
| JAIRO NUNES: Another look at Lithuanian impersonal passives                                                    | 347 |
| MARI BROMAN OLSEN: The semantics and pragmatics of lexical aspect features                                     | 361 |
| JANINA RADÓ: Complexity limitations on parsers and grammars                                                    | 377 |
| CARSON T. SCHÜTZE: Serbo-Croatian second position clitic placement: Syntax is not enough                       | 389 |
| KUO-MING SUNG: A typological study of NP extraction from QP                                                    | 403 |
| ELLEN THOMPSON: The syntax and semantics of temporal adjunct clauses                                           | 419 |
| NATSUKO TSUJIMURA: Resultatives and motion verbs in Japanese                                                   | 429 |
| SPYRIDOULA VARLOKOSTA: Factive complements and wh-extraction                                                   | 441 |
| GERT WEBELHUTH & FARRELL ACKERMAN: German idioms: An empirical approach                                        | 455 |
| MARY WU: Demonstratives, focus, and the interpretation of complex NPs in Mandarin Chinese                      | 473 |

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**LANGUAGE, GENDER AND POWER**

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**VOLUME 25, NUMBER 2**  
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## CONTENTS

|                                                                                                                                                   |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Introduction                                                                                                                                      | 1   |
| <b>Section 1: Cross-Sex Communication: Dominance or Difference?</b>                                                                               |     |
| ANITA TAYLOR: Language and the construction of gender: Clarifying ideas about gender                                                              | 11  |
| V. L. DEFRANCISCO: Difference or dominance: A critique of two theoretical attempts to explain gender based communication barriers                 | 29  |
| <b>Section 2: Gender Marking in Language and Language Use</b>                                                                                     |     |
| V. C. MUELLER GATHERCOLE & D. J. HASSON: Gender marking in Spanish: Linguistic and sociological determinants of feminine form in words for humans | 49  |
| T. M. VALENTINE: What's the point? Storytelling by women in India                                                                                 | 77  |
| <b>Section 3: Gender and Power in Classroom Interaction</b>                                                                                       |     |
| V. L. BERGVALL: Joining in academic conversation: Gender, power and the apportionment of turns at talk                                            | 105 |
| GERALD J. SAVAGE: Sociolinguistic construction of power in two classroom peer groups                                                              | 131 |
| <b>Section 4: Gender and Language in the Professions</b>                                                                                          |     |
| SUSAN S. CASE: Gender, language and the professions: Recognition of wide-verbal-repertoire in speech                                              | 149 |
| JENNIE DAUTERMANN: A case for examining professional voices in institutional settings: Nurses in conversation                                     | 193 |
| LYSANNE LANGEVIN: Of manpower and words: A study of linguistic markers of inclusion and exclusion in managerial work in the educational system    | 217 |
| Bibliography                                                                                                                                      | 231 |
| Notes on Authors                                                                                                                                  | 265 |
| Index                                                                                                                                             | 269 |



## INTRODUCTION

Researchers studying language have always been interested in language variation related to the parameter of gender (see, e.g., Jespersen 1922, Hudson 1980 (120-21), Trudgill 1974 (78-99)). Sociolinguists have noted the special features of male vs. female speech in several 'exotic' cultures, e.g., Sapir (1929) discusses male and female forms of speech in Yana of California, Taylor (1951) describes the Black Carib's of Honduras where women and men use two different languages, and Trudgill (1974) describes the gendered speech in Koasati and Chukchi. The more familiar European languages, such as English, did not come under scrutiny to the same extent before the impact of feminism on linguistic research in the 1970s.

In the past decades the awareness created by feminist movements has led to a flurry of activities in the field of language use in the context of not-so-exotic languages, including those of Europe and Asia (e.g., Lakoff 1975 on American English, Shibamoto 1985 on Japanese, Holmes 1995 on New Zealand English). The aims of research have also become varied. The interest no longer is confined to what the gender-linked differences are or how the different linguistic features are used by women and men. Rather, the search is on for finding out how gender-linked differences originate, and are manifested and manipulated for societal purposes.

Gender is an important linguistic device and grammatical gender has been studied throughout the history of grammars. Grammatical descriptions of individual languages generally point out how the classification of nouns in terms of either two (masculine and feminine) or three (masculine, feminine and neuter) genders may or may not correspond to natural categories of biological sex and animacy. Gender categories and agrément patterns in terms of gender, number, person, etc. have traditionally been set up according to systematic contrasts within the language under description. Unlike grammatical gender, however, the study of social gender involves non-linguistic sociocultural constructs which are

considered outside the purview of linguistic theories and grammatical descriptions. Nevertheless, linguistics is crucially involved in research on social gender; it addresses several important and complex questions in two sets of important domains. In the domain of language in society, it provides insight into the biological and cultural bases of language acquisition, language variation, linguistic change, and conditions for communicative success. In the domain of cognition, it illuminates the relation between language and thought, and linguistic power and societal privilege. In short, linguistic research offers insights into the intricate interactions of biological sex and social gender with language and its societal use (McConnell-Ginet 1992).

Lakoff (1975) was one of the earliest studies in this tradition that not only identified certain linguistic devices (e.g., politeness, hedges, tag-questions) used by women in the English-speaking community, but also linked it to their subordinate position in the society. This led to investigations on several fronts at once. Studies were conducted to determine if women's speech is characterized by the features identified by Lakoff (1975), e.g., features such as hedges, polite forms, tag-questions, etc. Findings both questioned and supported the claims of Lakoff (1975). For instance, DuBois and Crouch's study (1975) did not support the claim that women use more tags as compared to men, but Eakins and Eakins (1978) found that sex differences in language use (e.g., use of hedges, tags) in academic settings subordinate women. Soon, investigations led to a new direction in research: questions were raised regarding how the observable differences between men vs. women's speech could be explained.

This theoretical concern linked to explanation has resulted in, broadly-speaking, two competing paradigms of research. One approach relates what women and men do with language to the concepts of power and dominance to explain gender-related differences (e.g., Kramarae 1981, Kramarae, Schulz and O'Barr 1984, Spender 1985 [1990], Thorne and Henley 1975). The other approach, predominantly adopted by sociolinguists, demonstrates that there are



differences in how girls and boys are socialized through language in speech communities as well as what networks they form as adults, which explains the observable differences in their language use as adult women and men (e.g., Maltz and Borker 1982, Milroy and Margrain 1978, Tannen 1987, 1990, 1994). In methodology, paradigms based on quantitative methods as well as sociocultural or ethnographic ones (e.g., the studies in Coates and Cameron 1988) have been used to investigate various aspects of gender-linked differences in language and language use.

In spite of the increasingly sophisticated research on gender and language, however, the debates continue. In the past decade sociolinguistic models of research have come under severe scrutiny and have drawn more than their fair share of sharp criticism by researchers, both from the inside (Cameron and Coates 1985) and the outside (Kramarae 1986). The former challenges the findings that women's speech is in greater conformity with standard forms because they are more conservative, less secure in their social status and they participate less frequently in the vernacular culture. The latter criticizes sociolinguistics for treating gender merely as one variable on par with other variables such as age, social class, race, ethnicity, etc. Kramarae would like to see gender treated as the organizing principle of language studies since the category of gender interacts with all other categories such as age, class, race, ethnicity, occupation, education, etc.

The struggle between explanations in terms of culture and socialization on the one hand and power and dominance on the other is not difficult to understand. It is, however, difficult to understand why these two approaches are viewed as contradictory rather than complimentary to each other. As Coates (1988: 73) points out, "[E]xplanations of sex-differentiated language need to take a more sophisticated view of social behavior and social structure, acknowledging *both* dominance and subordinations in gender relations *and* the different subcultures to which women and men belong and in which they interact"

(emphasis in the original). And as Tannen observes (Tannen 1994), difference does not preclude dominance, instead, the framework of cultural difference provides a model for explaining how dominance is executed in face-to-face interaction. Interactional sociolinguistics assumes the following fundamental notions: roles and context are not given, they are created in interaction. Everything that occurs in an interaction is a joint production. Linguistic features such as interruptions, volume of talk, etc. can never be aligned on a one-to-one basis with interactional intentions or meanings. All linguistic features are ambiguous and polysemous (Tannen 1994). For instance, interruptions can signal control and power (West and Zimmerman 1983) or cooperation and solidarity (Tannen 1990, 1994). It is interesting to note that interruptions, by virtue of being disruptive and, to some extent, difficult to deal with, may, nevertheless, turn out to be ultimately cooperative: in group interactions among women, interruptions enable women to articulate realities perceived as overwhelmingly threatening by them (Hayden 1994).

The suggestion for treating gender as the central organizing principle in interactional sociolinguistic research may yield as valuable results as treating any other socio-economic parameter as central. It is, however, problematic, especially in cross-cultural studies. The three social dimensions that have been found to be useful in such research--independent of age, gender, economic status, educational level, etc.-- are solidarity-social distance, power, and formality (Holmes 1995). The first two have been discussed in great detail in interactional sociolinguistic and ethnomethodological literature (e.g., Brown and Levinson 1987). The third has justifiably been added in Holmes (1995) in view of the fact that negative politeness strategies occur more often in formal settings and interactions, while positive politeness tends to characterize more intimate and informal situations. Both women and men's interactional strategies are guided by concerns of these three factors and show observable differences. In most contexts, the three factors are intertwined. Their differential distribution in

women's and men's talk, when observed and documented, are illuminating in terms of their different socialization as well as the strategies they use to exercise power and control. This is true of studies that treat the topic globally, and those that look at specific contexts or aspects of cross-sex interactions.

For instance, Holmes (1995) confirms that New Zealand society is a "gendered" society and consequently, women's talk in New Zealand English is more polite. The study also demonstrates that men tend to value public, referentially-oriented talk, while women value and enjoy intimate, affectively-oriented talk. Each gender probably contributes more in situations in which they are most comfortable (p. 37). Furthermore, a study of small group interactions between pupils in New Zealand secondary schools suggests that patterns of male dominance in group discussions, which is definitely in the public domain, are well-established by the age of fifteen (p. 53).

Interactional patterns in occupational contexts exhibit differences accompanied by power. Fisher (1993) contrasts medical consultations between women patients and nurse practitioners, who are generally women, and women patients and doctors, who are generally men and have higher prestige than nurse practitioners. In his interaction with women patients, the doctor persistently recreates both his status as medical expert and his dominance as a man and medical care provider. He also persistently recreates the patient as the other, lay person, as woman and subordinate (p.117). In contrast the nurse practitioner has much less at stake. As a woman and as a medical care provider, she is located at the margins of dominant discourse. From this position, she is able to move more easily between hegemonic and alternative discourse. While engaging in a presumably value-free medical discussion, she undermines hegemonic discourses as she encourages the patient to resist them (p. 118).

Studies that attempt to accommodate difference to variables other than gender have provided insight into women's and men's language. For instance, Smythe and Meyer (1994) show that when interacting with individuals not of their

own social group, both women and men adapt their speech styles in order to diminish real or imagined differences between themselves and their partners. In this study, women and men participated in completing tasks that were sex-typed. In same sex interactions, women dealt with each other in a more accommodating manner, but both men and women adjusted their language usage to more closely parallel that of their partner in cross-sex interactions. Participants also adapted their language use as a function of the task that they completed with their partners, that is, the female sex-typed task elicited more collaborative and less competitive speech from men.

The above brief discussion of trends and issues in gender and language research shows that the field is alive and vibrant. The papers included in this volume represent several contemporary trends. One group of two studies deals with very broad and comprehensive topics: the paper by Anita Taylor raises a basic question: How valid is the dichotomous concept of gender reflected in our use of terms such as 'man' vs. 'woman' when the biological definition of gender and sex is inconclusive. The second paper, by Victoria DeFrancisco, compares the two theoretical approaches of male power and dominance vs. differential socialization of women and men in gender and language studies, and concludes that her data support the power and dominance theory. The data consist of verbal interaction between seven different couples.

The second group of studies deals with gender marking in language and language use. Virginia Gathercole and Deborah Hasson examine the gender marking of human nouns in spoken Spanish and arrive at the conclusion that there are compelling linguistic (grammatical) and sociological factors that determine gender marking in language use. Tamara Valentine's study investigates female-specific strategies in Western and non-Western settings. She describes in detail the female North Indian story telling strategies following the framework of interactional sociolinguistics (a la Gumperz 1982, Tannen 1987, among others). The study is based on data collected in fieldwork in the north of

India in 1989 and supports the cooperative nature of women's verbal interaction (Tannen 1987).

The third group of papers focuses on gender and power in classroom interaction. Victoria Bergvall carried out an experiment in a university classroom to see how actual turns were distributed among male and female participants. The study revealed that gender was one variable, and not a determinant of how turns were apportioned in the interaction. Gerald Savage conducted an ethnographic study of two cross-sex peer groups and their instructors in a first year college English class. In both groups, two women emerged as leaders of their respective groups, with the physically largest men playing the role of their lieutenants. But, neither the perception of every member of the group was identical with respect to who the leader or the lieutenant was, nor was it identical with respect to notions of power and dominance. Some felt these concepts were not relevant to their situation. Thus, this study points to the need for more ethnographic research on group power structure and its functioning in specific contexts.

The last group of papers is concerned with gender and language in the professions. Susan Case investigated male and female speech in managerial interaction and found that in addition to the two styles, a composite wide-verbal-repertoire also exists and is used by both women and men. This study questions some of the polemic issues in male / female speech. Jennie Dautermann conducted a study based on the interaction among five nurses negotiating for revision of a regulation system of their hospital. The study, based on oral and written data of their interaction, shows the strategies used for empowerment of the nurses. Finally, Lysanne Langevin investigated women's access to managerial positions in educational systems in Quebec's educational system. The study is based on twenty four interviews with male administrators in the system. On the basis of epistemic, deontic and appreciative modalities in speech, three management styles--participatory, democratic and collegiate--and their

correlation with levels of education are pointed out. It is also pointed out that "how power is 'spoken', that is to say, how it presents itself in language, helps us to a better understanding of how it is 'thought', of how it is represented in our symbolic system."

These studies thus represent a variety of approaches--interactional sociolinguistic, variational sociolinguistic, and sociological on the one hand, and quantitative and ethnographic on the other. Some are data-driven while others are theory-driven. All of them, however, raise interesting questions and contribute significant insights. The complex question of biological sex and universal societal concepts of gender as reflected in labels such as 'man' and 'woman' is looked at in one of the papers (Taylor), while the interplay of grammatical and psycho-sociological factors in linguistic gender-marking are explored in another (Gathercole and Hasson). Data from a different culture is brought to bear upon the question of women's story-telling to achieve group solidarity in one study (Valentine) and a specific professional group's strategies for their own empowerment is discussed in another (Dautermann). One study confirms the concerns of those researchers who explain women's and men's talk in terms of power (e.g., DeFrancisco), whereas others question such an assumption and point to the relevance of specific contexts and group power structures (Bergvall, Case, Langevin, Savage). All these studies suggest the need for more ethnographic studies of same-sex as well as cross-sex interactions in various settings based on various models and following diverse methodologies. Exploring gender and language and the ideological issues the topic raises remains an exciting field of research.



## SECTION 1

Cross-Sex Communication: Dominance or Difference?



## Language and the Construction of Gender: Clarifying Ideas About Gender

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This paper raises questions about gender and language at a fundamental level. I am asking: what is gender<sup>1</sup> anyway? What is this "thing" we're discussing? When I pose that question I am really asking to what do we refer when we use the term? I am interested both in how we use language to construct gender and what the nature of what we construct is. Because I believe there is some relationship between the "reality out there" and the language used to refer to it (Lakoff 1987), I also explore what it is we think is "out there" to which we attach the label *gender*. Two incidents crystallize the complexity of these questions.

A woman, a state-level judge in a state with judges who work in panels, was identified by one of her colleagues as Puerto Rican. She responded that she was not: Her father was African American, her mother, Irish American. The colleague responded, "Oh, so you're Black!" After a pause she said, "Well, yes . . ." and he followed with, "Then how come you speak Spanish?"

Recently, in a grocery store aisle, I pushed my cart past a young woman with an infant who could have been no more than two weeks old, the child wrapped in a blanket in a baby carrier in her cart. Another woman met us in the aisle. Her face lit up at sight of the infant, and she said, "What a lovely baby! How old is he?" The young woman responded, rather apologetically, "It's a she; I just have her dressed wrong."

Many points about how we think, which affect how we think about gender, can be drawn from each of these incidents; I will focus on two. The first point is seemingly simple, and best illustrated by the second case: We have no way of seeing or talking about a baby, or any person, without assigning them to one of two categories, which categories we assume to be dichotomous (separate and opposite) and unchanging. We think of these categories as created by biological realities and we expect them to be demonstrated by social behavior--the rules of which this mother must have felt she violated. I'll return to this idea later to show that the process is neither simple nor consistently applied.

The other point, derived from the first case, does not at first appear to relate to the construction of gender at all. But it illustrates what Hardeman (1992) has described as basic postulates of English, which do relate to gender. Hardeman describes *postulates* as the themes or concepts that are manifested structurally all across a language. One such postulate in English is number. Hardeman notes that it is nearly impossible "to produce a sentence in English in which there is no singular or plural mark, . . . It is possible, but such sentences can't say much." She adds that "correlatively, we think of the unmarked number, singular, as being primary" (p. 2). In this case, the postulate is illustrated as the races join: one cannot be two races (or two genders). We have no pattern of talking or thinking about a "racial" identity that combines African American and Irish American, to become a new identity combining elements of both previous ones. In the case of mixed racial heritages, one racial identity is presumed to dominate, in this case the Black one.

The postulate is illustrated in another way with some cases of race and ethnicity. We sometimes want to believe in an entirely new identity, the American, replacing prior heritage. Hence, our nearly uncritical adoption of the melting pot metaphor and idea. But we deny such a possibility to this particular American (and any Americans with African heritage, regardless how small) because of how we conceive the Black "race" (Davis 1991). Or, as Toni

Morrison (1992) argues, the exclusion may arise from how we define American and white as synonymous. In either case, we clearly construct these racial categories much more narrowly than would be necessary to refer to the "reality" of the combined racial heritages that occur in the U.S., in part at least because of our giving primacy to the number one.

In the case of what we now describe as Black or African American, we refuse to recognize racial blending into some combination, and we refuse to legitimize any such identity by naming it. Our absent language signifies that, where black and white are concerned, white is the unmarked category and any deviation from it puts one out of the white category. We recognize no gradations in between. Moreover, by using these two (and only two) racial categories for black and white we conveniently ignore the vast differences within the two groups. Thus, we create a polarized "reality" of race reified by the language of race.

Three things make clear the arbitrary nature of these racial constructions: our (U.S) insistence on only two racial categories for black and white, the fact that other cultures do not use the "one drop rule" of African American classification, and the fact that we treat no other racial group in parallel fashion (Davis 1991).

Here racial language parallels language about gender. Our language reveals a dichotomous conception of gender much narrower than the "reality" on which the concept of gender is supposedly based. And, like race, the language of gender conceals the wide variations among people placed within the two categories, with African American women perhaps the paradigmatic example. Using English, we find it nearly impossible to talk about how whiteness is inherently involved in how we construe gender (Spellman 1988). On one level, English suggests that the experience of being a woman or a man is unaffected by whether one is white or not, but one needs little reflection to reject that assumption. Sojourner Truth may have presented the point best in

her classic "Ain't I a Woman?" speech urging women's rights in 1851. She argued persuasively, being Black, that her experience of being female differed greatly from that of white women. Hooks (1981, 1984), Spellman (1988), and others have shown that this pattern persists. They note, among other examples, what the widespread use of the phrase *women and minorities* says about African American women.

How such dichotomous and hierarchical thinking constitutes a barrier, both pervasive and pernicious, in our talk about gender is explored in this paper. While we often recognize that the dichotomies of our talk about gender are inappropriate to fit the "facts" about which we talk, we have not managed to find appropriate ways to discuss that recognition. We have not done so because we have divorced neither the idea of, nor the language about, gender from the dichotomies of our thinking about sex.

## Concept of Sex/Gender

Using English, we cannot talk about the sex of a human without using a dichotomy. That is, we see a human's sex as being one of two bipolar (opposite) categories which we assume to exist in fixed and unchangeable amounts. One is either fully female or male, and not just a little bit of either. And one cannot be both. Again, Hardeman's (1992) postulate is at work. We treat anyone with ambiguous or mixed sex manifestations as abnormal, in need of repair. Kessler (1990) notes this phenomenon even among physicians who at one level acknowledge that children born with ambiguous genitals or "abnormal" hormones can develop either gender.

Our use of such categories results in other curiosities. It is no accident that among sexual categories, *female* is the marked version of a larger category, *man*, which is taken to be synonymous with human (Penelope 1990; Spender



1985). At the conscious level, most English speakers do not recognize that they think in such a way (as when they are jarred by such sentences as "Man, being a mammal, breastfeeds his young", and when they habitually choose the feminine pronoun as generic when referring to a sex-stereotyped role such as nurse or secretary). But, at another level (and much more often), we clearly do equate male to the unmarked primary position as shown when we exclude the concept of motherhood from the concept of employment; or when we talk about "the family of man" or "the history of mankind." Indeed, Hardeman (1992) argues that the equation of *male* with the primary singular is another of the postulates of English.

Those of us in the scholarly community want to believe we are more enlightened. Most scholars say they think of gender, as distinguished from biological sex, as socially constructed, and much research has concentrated on examining the nature of gender (e.g., Bem 1987; Deaux and Major 1990; Flax 1987; Kessler and McKenna 1978, among dozens of others). Yet many scholars, if not most, use the term *gender* when they have measured whether people identify themselves or are identified by others as male or female, or when the reference is to women or men as a group. And, as has become disconcertingly clear (Gentile 1993; Unger and Crawford 1993), many use the terms *sex* and *gender* synonymously. Scholars regularly use the term *gender* to refer to "something" closer to an idea of fixed, bipolar categories, than to a less concrete, socially created referent.<sup>2</sup> I use the term *something* intentionally here. Recent scholarly discussions suggest we should recognize gender as relational (Flax 1987), as a verb (Unger 1990), as a continuum (Taylor and Miller 1994), or as a process of negotiation with the culture (Schwichtenberg 1991). One of the leading sex/gender researchers in psychology (Deaux 1993) suggests that scholars, at least in the behavioral sciences, should return to the term *sex* with a hyphen: sex-related or sex-correlated. Thus, she argues, we can continue to examine how people in one of the two groups (sexes) might

systematically vary from people in the other group (sex). In making this suggestion, Deaux notes the necessity of recognizing that sex is a marker rather than a cause of much behavior identified with either group.

Unfortunately, none of these recent suggestions successfully untangles the thicket in which the ideas and language of sex and gender intertwine. In part, we talk and write as we do because our language supplies no good alternatives. More critically, I believe, we have no good way to describe gender as other than two unchanging and bipolar categories because we have not conceptualized it in any other way. At the most fundamental level, we have no clear concept of gender as other than based on invariable, bipolar "realities." Indeed, recent controversies among feminist scholars in a variety of disciplines spring, in large part, from arguments about the sources of differences between men and women. Gender is the idea, but it gets measured by a biologically-based identification.

Most people, even outside scholarly communities, will agree that human behavior and attributes rely on one's sex to only a limited extent. And scholars agree that gender is socially constructed. What is problematic is that we have never conceptualized gender without a biological base in bipolar entities.

We have sometimes characterized the social construction as that of men and women or of feminine and masculine, but in either case, the categories were based on acceptance of a pre-existing biological dichotomy. Many scholars have attempted to examine the nature of this socially created phenomenon. Some scholars in psychology have created measuring instruments (e.g., Bem 1974 and 1979, who derived a "psychological" sex scale; Spence and Heimreich 1978, who devised a personal attributes scale related to ideas of masculinity and femininity). In other fields, many followed the lead of such scholars and examined characteristics (e.g., communication behaviors, identity socialization, sex-role behaviors, management and administrative behaviors, etc.) using the Bem or the Spence tools. Attacks on

the measurement schemes themselves led to proposed modifications (Wheeless and Wheeless 1982), which have themselves been criticized (Wheeless 1985)<sup>3</sup>. Some have completely rejected such measurement tools and turned to different methods of scholarship. Many scholars now see the methods of ethnography and the humanities as more useful in studying gender, so that descriptive and critical methods characterize much current scholarship about gender. Much of this literature is rich with the recognition that women and men, as groups of women and men, have much in common. And much of it reflects an awareness--at least at some levels--that within the groups of men and women are vast differences among women and among men.

Still, that literature has generated no language to distinguish some women from others, or some men from others--as women and men. I believe that is because the vast majority of scholars interested in gender still rely, at a very basic level, on the following implicit assumptions: (1) that there are distinct biological sex categories (male and female); (2) that these precede gender; (3) that gender is tied to them; (4) that these categories do not change, even though surgery and hormones can alter the physical manifestations; and (5) that the categories are bipolar.

Relying on these axiomatic beliefs about sex results in fuzzy conceptualizations of gender that appear in a number of ways, but most consistently in conversations about the nature and sources of differences between women and men. In recent feminist scholarship, for example, disagreements about research into the differences between women and men reflect the sex/gender connections in thinking. In different disciplines these discussions play out in various ways, usually with different vocabularies. Psychologists discuss the issues of essentialism vs. constructionism (e.g., Bohan 1993; Hare-Mustin and Maracek 1990) as sources of differences between men and women. Language scholars debate culture vs. power (e.g., Uchida 1992) in creating female and male differences. In communication and

in law (among other areas), the debates have been about difference vs. dominance (Kramarae 1981; Rhode 1989). But in every case, the groups discussed are men and women, with only some recognition that the people within these groups themselves differ. In contrast, in many humanities disciplines, postmodernism prevails, with the result that some feminist writers express concern that such theory will collapse all categories and result once again in the disappearance of women from scholars' attention (Perry 1991).

What I find striking in reviewing these different perspectives is that all revolve around the problems of reacting to perceived differences between two (and only two) disjunctive categories into which a person may be placed and expected to remain, regardless of how one set of circumstances may vary from another. Feminist theory is illustrative. One set of research shows how the differences, at least the nonphysical ones, "between" (a not insignificant word) women and men are not very large (Canary 1993; Hall 1984; Halpern 1986; Hyde 1990). Or conversely, when finding substantial differences, scholars attribute them to social structures (Epstein 1988; Kanter 1977; Lott 1990). In contrast, radical feminists, some lesbian feminists, and more recently a variety of neo-Freudians have echoed many U.S. 19th-century suffragists by seizing the concept of difference and arguing that women display many more positive qualities than men and that a feminized (or refeminized) culture is needed (e.g., Daly 1978; Ferguson 1989; Miller 1976;).<sup>4</sup> Other writers, such as Hooks (1981, 1984, 1990), Joseph and Lewis (1981), and many other African American feminists have correctly challenged the dominant white feminists about ignoring how race and class divide women, an argument Spellman (1988) developed with great precision using a philosopher's tools. So, now (rightly) we have learned to celebrate feminismS, and to value diversity among women, not just differences from men.

And yet, within all this scholarship, few have challenged the underlying assumptions: that in spite of differences among women and men due to race,

class or other elements, the words *women* and *men* refer to two supposedly distinct categories of entities. Rhode, who edited a fine volume in which writers struggled with how to conceptualize and use difference, exemplifies the point when she says, "Of course, whatever else we say about difference between the sexes, we cannot deny its existence." (Rhode 1990: 4). In other work, Rhode cogently argues that focus should be shifted away from a concern about what the differences are among women and men and how large they are, towards a consideration of "the difference difference makes," or what she calls "gender disadvantage" (Rhode 1989: 3). However, in this thorough and persuasive argument and appeal for law and legal scholars to recognize the blurred boundaries of a series of false dichotomies created by law and culturally assigned roles, Rhode does not challenge the underlying assumption of two unchanging genders.

In sum, careful consideration of our scholarship shows that while we want to construe gender as socially constructed, we have not divorced our thinking about gender from the deeply buried categorical assumptions about sex. Even less successfully have we created new language categories to reflect or legitimate new ways of thinking.

## Thinking and Naming Crucial Distinctions

One useful way to examine our problems of thinking and naming is to attend to people who challenge the biological categories assigned to them, or who reject the cultural concomitants of being male or female, and to consider these people without thinking of them as freaks or deviants who reflect failed socialization or flawed gender-identity acquisition (Devor 1989; Kessler and McKenna 1978). Even academics who reject judgmental assessments of these "gender outlaws" (Chapkis 1993) tend to omit them from their research because they are thought to be so rare. If we instead recognize that the very existence of

these "gender blenders" (Devor 1989) and "gender benders" (Bornstein 1992), no matter how few, challenges the fundamental assumptions upon which our theories are built, we will make more progress toward creating new ideas and new language about gender.

Kessler and McKenna (1978), like Fausto-Sterling (1985), demonstrate unequivocally that the supposedly clear biological dichotomy between male and female humans is neither clear nor dichotomous. Unless one defines as male any individual with a Y chromosome and as female anyone without a Y chromosome, the categories are not mutually exclusive, though they may seem to be. That is true whether the criterion is hormones, or any other of a variety of sex markers or secondary sex characteristics. Such markers or characteristics are shared by members of both (supposedly distinct) sexual categories, and, to a large degree, vary more among the members within each sex-category than do the averages of the two categories vary from each other. Kessler and McKenna also showed that many people with the "wrong" chromosomes develop female gender identities while some people with no Y chromosomes develop male gender identities. Cross-cultural studies describe cultures which permit gender identities that contradict external sex organs or in which people were attributed special status for possessing biological manifestations of both male and female. But no such flexibility exists in the English language or in the thinking of most people who use English.

In moving toward more useful language, distinctions made by Kessler and McKenna (1978) will be useful. They distinguish among gender assignment (what infants are labeled at birth), gender identity (what one calls oneself), gender role, and gender attribution (what gender other people decide a person is). For thinking about new gender categories, I would add that gender identity has at least two facets, each of which probably varies by situation: how one identifies oneself to oneself, and how one identifies oneself to others. We need language that responds both to data and to theorists' arguments that sex-



correlated behavior varies according to the situation, as shown by numerous studies supporting Giles' accommodation theory. Both men and women accommodate to each other, communicating more similarly in mixed sex groups than in single sex groups (Keashley 1994; Kramarae 1981; Mulac 1988; Watson 1994).

For us to move forward in gender research in any discipline, we must divorce the idea of gender from the dichotomous categorization between women and men. To do that we need at least two elements: a change in thinking and a change in language. We will need to be consistent in foregrounding our concepts of gender as plural, as mental constructs created as we interact with self and others, and with our culture. Hence, we need always to be clear that genders exist in relation.<sup>5</sup> I purposefully do not say *in relationships*. When one says genders exist in relation, the English speaker thinks, in relation to what (or to whom)? Which is precisely the point. But we must be sure also to say: when? under what circumstances? We need to imbue our mental constructs of gender-as-relation with the quality of continuous variables so as to avoid polarizing. We must not think of a scale with *female* or *feminine* on one end and *male* or *masculine* on the other. We need to be able to ask: to what extent do we "do" genders, when we do them?<sup>6</sup> To what extent does the constructing of gender (or genders) for me take place in the mind and behavior of those I interact with? The gender-blending women interviewed by Devor (1989) often found themselves ejected from women's restrooms. Such gendered behavior is more complex than a reaction to how one dresses. When we have constructs reflecting such complexity, we will be clear that genders aren't something we "discover" either from biology or culture. They are ideas of something that people co-create as they interact with each other in specific situations, calling, of course, on their resources of biology, as well as language, ideology, culture, and previous personal experience.

Clearly, neither lay nor scholarly language yet provides much assistance to us in thus "verbing" gender. Indeed, the mind boggles at the effort required to create appropriate words for the task. And yet, once we manage to divorce sex and gender, options are not out of reach. Even lay speakers recognize that *masculine* and *feminine* refer to behaviors as well as attributes, not to biology. They also recognize the concepts as variable. When asked to describe the most feminine and masculine person they know and to say when that person was most or least feminine, many students responded with words describing behavior as well as biology and with words denoting variable amounts (Miller and Taylor 1993).

Kessler and McKenna (1978) and Lott (1990) raise a legitimate question. If we want our scholarship to be accurate, why do we start with an assumption of two sexes or genders and then investigate differences in ANYTHING? Why not look at other characteristics or behaviors, categorize the practices or characteristics, then seek to see what variability there might be within the new categories? We have found, in the vast majority of (almost all) research comparing women and men, that within-sex variation is greater than between-sex variation. See, for example, the summaries in Epstein (1988), Fausto-Sterling (1985), Hall (1984), and Hyde (1990). Many others are available.

As an example, suppose we started with the categories of polite or not-polite speech. Then, after distinguishing those two categories, we could inquire to see if any of a variety of qualities characterize polite people, such as age, social group, economic status, amount of education, particular settings, relationships to recipient of politeness, expectations of recipient, etc. We could ask about sex as well. We have good reason to hypothesize that polite people would vary on these other characteristics as much or more than by whether they are men or women.

This kind of change is not so large as to be unthinkable. Why, then, have we, in our study of genders, so rarely analyzed them in such a way? One

(certainly not the only) reason we don't do this is that we conceptualize genders as fixed, discrete categories. In contrast, we recognize politeness as behavior that varies, and that the situation influences how politely a person behaves. Since we don't see genders (or sex) as continuous variables, nor as influenced by situation, we do not think of doing such research.

However, we should. Clearly, once the idea of gender is separated from sex, gender is behavior, and it is behavior in relation. Gender attributions are made by each person with whom we interact, usually in the absence of seeing or knowing the assumed biological basis for that attribution. In ways most of us never focus on (including use of language), each of us is always "doing" gender. Yet as scholars, we know very little about what "doing" gender consists of because, led by our unstated assumptions about the link between gender and sex, we have concentrated on studying gender as an attribute, fixed once identified, which varies (discretely) from male to female.

How much more productive would be our research about language and communication if we never again wrote or talked as if sex or gender were things, characteristics, or attributes! How productive if we stopped asking what men and women do or say and, instead, began to ask what do people do or say that leads us to decide they are male or female, or to decide they are feminine or masculine. Then, having hypothesized and tested some answers to that question, we could ask: under what circumstances are those decisions made? And how do the decisions vary as the circumstances vary? Foremost also among the questions about circumstances would be how the people involved relate to each other, and what power asymmetries may exist among them. This is, of course, only a partial list of rich research possibilities.

How much do we gain, compared to the dangers, when we continue to accept and even perpetrate the perception of genders as dichotomous?<sup>7</sup> Even our poorly conceptualized research about gender has demonstrated that differences between men and women are always smaller (often much smaller)

when actual behavior is examined than when such differences are examined via self-reports of behavior, or when people report their expectations for behavior of others (Epstein 1988; James 1991; Keashley 1994; Ruble and Schner 1994; Smythe 1989; Watson 1994). Yet widespread in the scholarly and "lay" populations alike are beliefs about differences in women's and men's behavior. Moreover, recent essentialist constructions of difference have spurred both lay and scholarly beliefs about biological bases for those differences. Even Tannen (1990b), while developing an argument about differences between men and women as cultural, relies on the fixed gender polarities. Moreover, in relying heavily on research about children's behavior, this work reinforces beliefs in biological causes for the different cultures. Jagger (1990) persuades me that even when we try to reclaim female differences as positive ones, we risk reinforcing a world view historically hostile to women.

In 1989, Kramarae made a point I have heard from many other places. She noted that one seldom hears the word *androgyny* any longer. And, while I make no brief for the term or for the various ways in which measurement has been attempted, I do believe we need to develop a construction of gender that rejects fixed, discrete, bipolar categories. Women of color have pushed current feminist thinking a long way toward that goal. We now largely recognize that there is no unifying "essence" that unites all women, and that we must accommodate differences among women if our thinking and research are to be accurate and useful. But so far we have ignored the really radical implications of such thinking. Perhaps women and men are not the most useful ideas. They implicitly perpetuate the concept of *man* to which woman is the alternative, and the concept of these two ideas as invariable bipolar entities.

We probably need new language, since conceiving of an idea is difficult without the words with which to describe it, and since the concept of gender may be by now inextricably linked with invariability and dichotomy. Perhaps we need to discuss sex-correlated behavior as Deaux (1993) suggests. But,

equally important is to do as Unger and Crawford (1993) argue: clarify our thinking. In that process, the questions I have suggested should be helpful. With new processes to name, we will develop new language. But whether we coin new phrases or reappropriate old ones, we need to progress much farther in conceptualizing.<sup>8</sup>

## Conclusion

I do not claim to have enumerated all the ideas which the concept of gender must involve, but some of them are clear. The concept must reflect the multifaceted nature of identity, and its constantly in-process quality. It must also reflect how we "do" gender through behavior and in relation. It must discard the idea of gender as a discrete category. The concept cannot be built on an assumption of biology as the base of two, and only two, invariable genders. It needs to recognize aspects of situations (including power and ideology, among other things), as modifying both the nature and salience of the variable. In 1988, Barbara Bate identified a delight in creativity as one component common to the communication of a wide variety of women. What seems to be needed now is for us to call on that creativity, not just in deconstructing the current concept of gender, but in constructing useful alternative ideas.

## Notes

1 It should be obvious here that I do not refer to gender in the sense of linguistic marking. I am discussing gender as a concept of sex-correlated or sex-marking behavior (including talk), attitudes, attributes, etc.

2 I encourage readers to review the useful exchange about the language which behavioral scientists interested in sex and gender should employ, which is included in the technical commentary section of *Psychological Science*, March 1993, pp. 120-126.

3 Documents describing the measurement controversy include Bem (1979), Spence (1984), Spence and Heimreich (1979), and Wheelless (1985).

4 The work of Belenky, Clinchy, Goldberger, and Tarule (1986) and Gilligan (1982) has provided much recent impetus to the "women are better" debate, although I do not, myself, read their work as either essentialist or polemical. As a result, I don't classify them among the "women's ways should be valorized over men's" theorists, even though many others do and these researchers may perhaps locate themselves there.

5 Though certainly not the only one to do so, Flax (1987) issued a call for recognizing a category described as gender relations. And while this idea is quite similar to what I am proposing, I intentionally avoid pluralizing the term to avoid creating a noun that does not automatically prompt the following question, *to what or to whom?*

6 Kessler and McKenna (1978) suggested that we "do" gender; Unger (1990) suggested gender should be thought of as a verb.



7 See Deaux and Major (1990), for an argument regarding the danger of the dichotomy.

8 I should also make clear that mine is not the only, nor the first, call for reconceptualization. The Kessler and McKenna work could be read in such a way; and many others have made similar arguments, including Bem herself (1987). See, for example, Flax (1987), Morawski (1987), and Unger and Crawford (1993). But insofar as few such results are yet visible, the argument is still fresh.



## Difference or Dominance: A Critique of Two Theoretical Attempts to Explain Gender-Based Communication Barriers

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In this paper I address the age-old question: Why can't women and men communicate? The discussion is based on a qualitative study of heterosexual married couples' ongoing interactions in their homes. In an attempt to explain the communication dissatisfaction discovered there, I applied various theoretical perspectives. In this paper I explore two of these: The Cross-Cultural Communication Theory proposed by Maltz and Borker (1982) and advanced more recently by Tannen (1986, 1990b), and the Multi-Determined Social Context Approach presented by Henley and Kramarae (1991).

While the conversations analyzed in this study often suggested many of the same types of gender differences in communication Tannen addresses (1986, 1990b), I found the Cross-Cultural explanation for these differences inadequate when compared to information gained from the participants' views. Their dissatisfaction was not simply about misunderstandings, but about differing communication preferences.<sup>1</sup> The Cross-Cultural Theory does acknowledge that women and men are likely to develop differing communication preferences (e.g. Tannen 1986: 127), but I found the explanations inadequate regarding why men's preferences typically receive priority. Instead of asking *how* women and men communicate differently, the approach presented by Henley and Kramarae (1991) suggests that a question

we should be asking is *why* women and men cannot communicate to their *mutual* satisfaction?

What follows is a brief explanation of the two theoretical views and the research methods used in this study. Given page limitations and the purpose of this paper, I will not report all the analyses and results of the original study (see DeFrancisco 1989, 1991). Instead, I focus on some central conversational behaviors which are also addressed from the Cross-Cultural perspective, particularly in Tannen (1990b), on communication problems between women and men.

## The Cross-Cultural Theory

Generally speaking, the theory suggests that since girls and boys are socialized in different so-called gender roles,<sup>2</sup> they develop differential conversational rules and conceptions of appropriate communication behaviors. In essence, they are described as coming from separate sociolinguistic groups. This theory was derived from a classic study by Maltz and Borker (1982) where they applied Gumperz's (1982) approach to studying cross-ethnic communication barriers to cross-sex communication problems. Maltz and Borker (1982) suggest that these sociolinguistic gendered groups are primarily influenced by peer-group activities in childhood when sex segregation is strongest (pp. 199-201).

Girls are said to play typically in more private, smaller, cooperative groups, where friendship involves intimacy. Here Maltz and Borker suggest girls learn communication skills for creating and maintaining close equal relationships. They learn to be tactful when criticizing others, and they learn to correctly interpret others. Boys are said to play typically in larger, more hierarchically structured groups where friendship involves competition. Here, the authors

suggest, boys learn communication skills of verbal dominance. Consequently, when adult women and men experience communication barriers, the researchers suggest it is due to interpreting incorrectly the others' behavior through their own frame of reference (or conversational style), rather than, for example, bad faith.

### A Multi-Determined Social Context Approach

Henley and Kramarae (1991) propose an approach to explaining communication problems between women and men which acknowledges differential perceptions in feminine and masculine cultures, but which also acknowledges the inequalities of these different domains. "[C]ultural difference does not exist in a political vacuum; rather, the strength of difference, the types of difference, the values applied to different forms, the dominance of certain forms--all are shaped by the context of male supremacy and female subordination" (Henley and Kramarae 1991: 40). Furthermore, it is believed that the Cross-Cultural approach overemphasizes the segregation of girls' and boys' socialization. Power differentials are not just based in childhood experiences, but in the present situation. And finally, the Social Context Approach reminds us to examine the ways in which other cultural inequalities, such as race, ethnicity, sexual orientation, class, and age may interact with gender. Like gender, these are not natural or innocent social variables, but socially constructed hierarchies subject to change (Kramarae 1989).

## Research Design

Participants in the present study lived in two mid-sized Midwestern cities. Seven couples from outside the university participated; each was paid \$20. Ages ranged from 21 to 63; they had lived together for periods ranging from 2 to 35 years. The participants described their marital relationships as being generally satisfying and stable. Their descriptions of relational and domestic duties suggested that they follow traditional gender-role behaviors and have fairly traditional white marital relationships. One woman described herself as Hispanic; the other participants were Caucasian.

I studied ongoing interactions where individual attempts to initiate conversation could be noted over time. To do so, a tape recorder with an omnidirectional microphone was set up in the central living area of each couple's home for a week to 10 days, producing an average of 12 hours of taped interactions. The couples were asked to run the recorder whenever both partners were present for an extended period of time and to go on about their regular household activities. They had the right to erase recordings or turn off the machine at any time.

A week after the taping, I conducted a private interview with each person. The individual listened to 2 to 3 varied episodes, totaling approximately 30 minutes, and was asked to point out anything she or he liked or disliked (communication preferences) about the interaction and to provide contextual information. The episodes they reviewed plus an additional 30 minutes of interaction per couple were transcribed, using an adaptation of Jefferson's system (in Sacks, Schegloff, and Jefferson 1974).

The focus of analysis was the partners' relative efforts in conversational development. These efforts were inferred from a number of conversational devices identified as problematic in previous research: talk time; topic initiation;



topic success/failure; question-asking; and turn-taking violations, including interruptions (as opposed to non-dominant forms of simultaneous talk) and turns at talk which seemed minimal, delayed, or complete failures to respond. Unlike much of the previous research on gender communication, identifications were made in context, rather than imposing universal definitions. In making these identifications, I relied on the transcripts, the original recordings, and the participants' contextual information and communication preferences as stated. Given the problems of quantifying these conversational devices across episodes and couples, results here are meant to be suggestive only. Furthermore, rather than the focus on results for individual analyses, it is the patterns which developed from these that are most informative.

## Results: Alternative Explanations

What follows are 3 gender-related conversation issues which seemed to capture the essence of the communication problems discovered in the present study and which also seemed central to Tannen's discussion of communication problems between women and men (1986, 1990b).

### Women's Accommodating Style

By an accommodating style, I am referring to a variety of verbal and nonverbal behaviors which a speaker may incorporate to provide conversational harmony, according to the needs of the other speakers. Accommodating may include selecting topics the other person prefers, adapting to the other person's body language (Tannen 1990b: 235-38), and performing

more of the conversational maintenance, such as asking questions and using other attentive-listening cues to show interest (Fishman 1983).

Although Tannen does not recognize the consequences of many men's traditional behavior as dominance, she does review research which shows that men's preferences tend to set the communication norms in a variety of social settings (1990b: 235-238). Many women seem to do more accommodating to satisfy men, even at the sacrifice of their own preferences. Spender refers to this accommodating by women as *conversational housekeeping* (personal communication), suggesting that such behaviors are consistent with other domestic chores or unpaid and unacknowledged, yet skilled, labor traditionally assigned to women. In an earlier study of heterosexual couples at home, Fishman (1983) found that the women did more accommodating than the men, and were still less successful than the men in initiating interactions. The women raised more topics, asked more questions, and used more of the other attention-getting devices than the men, but still had more failed topics than their partners.

In the present study, there were several similar evidences of the women doing more of the conversational work. For example, women talked more (139 minutes, or 63% of 222 total), yet seemed to have far fewer turn-taking violations (197, or 36% of 343 total). They also raised more topics (236, 63% of 376 total), yet succeeded less often in developing these into conversations (156 or 66% succeeded, compared to 106, 76% for the men). While talking more is often seen as a dominance behavior, when speakers dominate the floor they also tend to interrupt more (Spender 1980c) and are more successful at maintaining their topics, neither of which was the case here. And, while raising a topic is not always an effort to accommodate another, all of the women noted efforts to raise topics their husbands would not protest. Thus these behaviors were interpreted as conversational work and attempts to accommodate.

[I]f we talk about anything, usually [it's something] I got from a magazine article. . . . Usually I'll bring it up and I'll say, 'well how do you feel about it?' It's one thing he seems to be really interested in, the articles in *Time*. I'll bring something up and he'll, he'll get really, maybe I bring it up so much because he gets interested in it. He'll show interest and he'll talk usually about those things. (Sandy, Hispanic, age 21)

In contrast to the women's efforts, there was evidence that the men's participation varied greatly with topic preference; this was true particularly with four of the men. When discussing the women's personal concerns (topics the men said they preferred to avoid), the number of the men's turn-taking violations went up markedly, suggesting a lack of cooperation. At the same time, the women asked for their husbands' opinions more often, and kept talking, so that they began to sound as if they were talking to themselves. The men's relative participation went up dramatically on topics they enjoyed, while the women's participation appeared to remain relatively constant. The following is an example.

Cathy and Curt were 32 and 33 years old, respectively. Both had college degrees. She was the full-time caretaker at home and he was a library clerk. Their joint income was reported as \$20,000 or less. The couple had been married 11 years and had 3 young children. The conversation took place on a late Sunday afternoon. Prior to this conversation they had both been reading the newspaper. The children were playing outside and Cathy began to prepare dinner. The tape recorder was on a shelf in the adjacent kitchen/dining area where Curt seemed to be sitting.

1. Cathy: My allergies have been really bad today. (.5)
2. Curt: What? (.)
3. Cathy: Allergy problem's been bad today. (.)

4. Curt: Mmmm. (.)
5. Cathy: Think it's because I drank some vitamin C enriched juice yesterday. (3)
6. Curt: Hmm. (2)
7. Cathy: I'm wondering if I should go back to the allergist and have ((3 words -----)). (2.5) It's been nearly four years, ah, (2) well no, it's been (.) over four years. (1)
8. Curt: Mmmm. (.)
9. Cathy: A little over four years. (5) This is kinda dangerous. (.) If I ever have to take the medication, I won't be able to take it. (.5) I mean, (the long turn-over).
10. Curt: [Mmm.
11. Cathy: I'm gonna have to take antibiotics (somethin) (2) half a week or somethin. (9) I get kinda concerned about that (.) when I think about it. (2) It can't be that (.5) ((word)) a part of my life, especially when ((2 words)). Ha. (8) They insist they can't give me shots, ((3 words-----)) they don't even wanna try. (.5) That's what gets me. (1) They don't think it's important enough to try. (15) I may (have to) call doctor ((word)) see what he'd have (me) do. He'd probably just tell me to rant and rave at them, haha, that's what he's told me to do before. (3) (He must of (word) them.) (5.5)
12. Curt: Mmmm. (3)
13. Cathy: It's just that it can't go on like this. (4.5) He is a turkey.
14. Curt: (3.5) What? Hahh! (1)

The total discussion lasted 10 minutes. During it, I interpreted Curt as having 14 no-responses and 5 minimal responses. Cathy had 1 no-response, plus 2 that I was uncertain of. She talked a total of a minute and a half (335 words), he spoke only 36 seconds (90 words). While each of these indicators

alone may seem insignificant, there were similar patterns of turn-taking in three other discussions Curt said he did not want to participate in. In contrast, Curt talked more than Cathy in all the other transcribed interactions.

The conclusion I formed after reviewing several similar interactions with participants, is that the women did not work harder to accommodate their spouses merely because of learned gender-role behaviors; they were trying to satisfy their own preferences for relational sharing. These behaviors were not selfless accommodation; they were the strategies of the less powerful.

Kramarae's Speech Strategy Model (1981) helps to explain this. "The division of labor--with more value given to men's activities--means that women and men have different resources and different amounts of legitimate power, and will thus have different strategies to obtain their goals" (p. 118). Kramarae hypothesized that because of this differential access to speech, women will be more conscious of the speech strategies available to them. However, speech behaviors can be unconsciously learned, such as is true with gendered behaviors, and still be strategic in nature (Brown and Levinson 1978: 90).

Thus, while the Cross-Cultural description of women's more accommodating style is consistent with the present study, the explanation offered does not acknowledge that if women desire interaction with men, they may be forced to accommodate out of necessity, not just from altruistic desires to nurture. Suggesting that men's behaviors are not domineering because they are not due to bad faith, but rather due to unconscious, learned behaviors, ignores Brown and Levinson's (1978) point that even unconscious behaviors can be strategic. Furthermore, the focus on innocent intent dismisses the fact that such behaviors occur in a larger patriarchal context, or that individuals may engage in self-deception (Thorne, personal communication).

## Men's Silence

A variety of researchers have discussed the complaint many women have made regarding men's relative silence in romantic relationships (e.g. Hite 1987; Komarovskiy and Philips 1967; Rubin 1976, 1983; Sattel 1983). In these reports, male silence is commonly seen as a power device. By being silent, men are able to withhold information, to protect their vulnerabilities, and to gain the upper hand as the less interested party. In discussing men's silence, however, Tannen suggested an alternative explanation of why silence can become a form of power. According to Tannen, by insisting that a man speak, the woman is actually giving him power over her. If instead she withdrew as the man did, the woman would prevent his silence from becoming an effective *weapon* (p. 231). Thus it is the opposing communication styles or preferences which make the silence powerful, not the man's seeming lack of cooperation.

The Cross-Cultural Theory suggests men are more silent because they come to value activity-based interaction through their boyhood play, rather than to value talk, as is central to girlhood relationships. Furthermore, Tannen suggested that men's silence may actually be a sign that they are listening intently (1990b: 142-43). Women misinterpret the silent listening because they are socialized to use active-listening cues, such as *uh-huh* to show acknowledgment as another speaks (Maltz and Borker 1982). For men, *uh-huh* and *yeah* are used to convey agreement only (Tannen 1990b: 142). And, finally, Tannen suggested that men may be silent because of their social role as *protector* (p. 288).

In the present study, most of the men did mention being silent at times because they did not want to upset their wives. But in the interviews with both the women and the men, another interpretation of this silence became clear: the men did not want to deal with the women's emotions. As Bud put it:



When we have a conversation that's really gonna get to the point, I know the points [have] gotta be few because, it's like shoveling snow, you're tired the haha more haha, ya heap haha on there haha. . . . Then the next time you have that same conversation, you know what happened the last time, before. That conversation's either gonna be real short or not happen. (Age 37).

In referring to the same taped conversation, Bud's spouse, Mary (age 37), complained that it is usually up to her to bring up family matters she believes they need to discuss. "Sometimes I feel like it is all on my shoulders," she said. Similarly, Sue complained about her husband's unwillingness to let her work through emotional issues the way she prefers:

I learned a long time ago crying's not going to do any good when I'm around Robert. I'm not gonna get any sympathy from him. And Robert (age 25) sometimes is like, [imitating him] 'crying's not gonna do any good,' and I'm like, 'well I know, but it makes me feel better.' (Age 23).

When does being silent for women's *own good* become patronizing, since these women prefer to share emotional concerns and wish their partners would reciprocate more? The results from the present study suggest we must examine the relative silence of a partner, coupled with that person's communication preferences and the other person's preferences and communicative efforts. The men's silence seemed to be accompanied by other cues of uncooperativeness. They not only raised fewer topics, they also exhibited more no-response turn-taking violations, delayed responses, and minimal responses (distinguished from active-listening cues which occur during the other speaker's turn). These behaviors suggest direct refusals to respond to specific requests for interaction. In response, the women seemed forced to accommodate and acquiesce.

The Cross-Cultural explanation of male silence also ignores the vast majority of research on talk time, according to which men have been found to talk more than women (see, for example, literature reviews by Giles and Street 1985, and Spender 1980c). In these studies, the so-called activity the men seem to prefer is competitive control of the conversational floor, not silence. A difference between these studies and those cited earlier on male silence seems to be the context. In public settings and non-family relations, men have been found to dominate by talking more, but in private settings and family relationships they have been found to dominate through silence. Tannen (1990) does acknowledge men's tendency to *lecture* women: to see themselves as the expert whose role is to impart knowledge to women, in which case the women are rendered silent (pp. 123-148). But as Tromel-Ploetz (1991) says, Tannen makes no attempt to explain why "men who talk all day long. . . cannot say two sentences to their wives at home" (p. 496). While the Cross-Cultural Theory may not be able to explain these seemingly inconsistent behaviors, the Social-Context Approach (Henley and Kramarae 1991) and the Speech Strategies Model (Kramarae 1981) do so very succinctly. The common ingredient in both behaviors is power. The members of the group in power have the most say about how particular situations and relationships will be defined and valued.

### Conflict Avoidance

The Cross-Cultural view suggests that girls and women are conflict-avoiders. They are not as socialized in competitive sport activities, and as nurturers, girls and women become the peacemakers in many relationships. In contrast, boys and men are more accustomed to conflict and do not find direct confrontation as intimidating (Tannen 1990b: 149-87). Given that men are

supposed to have superior skills in confronting conflict, it is interesting that they often do not use them in relations with women. In the present study, as well as others on marital relations, men were typically conflict-avoiders (e.g. Barnes and Buss 1985; Belk et al. 1988; and Schaap, Buunk, and Kerkstra 1988).

In visiting with participants in the present study, it was clear that actually both the women and the men disliked conflict, but the strategies they used to avoid it were markedly different. The women chose to voice objections, and solicit their partners' objections, to seek compromises, and to talk out problems before they escalated. These behaviors seem consistent with the earlier description of the women's accommodating style and are reflective of what researchers have labeled *collaborative conflict-avoidance strategies* (Belk et al. 1988: 165). The men chose what these researchers have labeled *unilateral conflict-avoidance strategies*, as exemplified by behaviors such as withdrawal and efforts to have more efficient conflict resolutions, generally avoid sensitive topics of discussion, and get their wives to be less emotional. The men's preference for unilateral conflict-avoidance seems consistent with their general tendency to be silent and to exhibit more delayed, minimal, and no-response turn-taking violations, since the conflict-avoider is generally thought to be apathetic and disinterested (Fitzpatrick 1988; Folger and Poole 1984).

The problem, of course, is that when there are two conflict-avoiders using opposing strategies, the strategies themselves may come into conflict. In this case, the strategy which requires less cooperation is likely to prevail. The men in the study were able to put forth less effort and still obtain their wishes more than the women. For example, Joyce and Warren, ages 57 and 63, married 36 years, were discussing topics in the newspaper when Joyce mentioned something about their son Steven (inaudible). Warren's voice became louder and deeper as he said, "You've got to let it go!" Joyce replied, "It still hurts me and I'm gonna need to talk about it from time to time." However, the couple didn't proceed to talk about it. The radio went on and eventually they returned

to current-event topics in the newspaper they were reading. When I reviewed the conversation with Joyce she said their son had told her he resented her working outside the home while he was growing up. He felt she hadn't *been there* for him. Joyce felt she might never get over it and said talking helped, but Warren wanted to put the incident behind them. Warren was also disinclined to discuss it with me.

Perhaps a Cross-Cultural theorist would argue that unilateral conflict-avoidance is not a dominance attempt, but that boys and men are socialized to avoid fighting with girls and women as a part of their role as *protector* (Tannen 1990b: 288). However, participants in the present study lead me to a different interpretation. In reviewing the conversation presented earlier in this paper, Chuck said this in response to his wife's request to talk about her health: "Why worry about something until it happens?" His minimal responsiveness was not to protect her; he said he just didn't want to hear about her health concerns again. Similarly, when Sue began to cry, Robert said, "If you can't do anything about it, why talk about it?" In referring to the same conversation, his spouse Sue said, "If he can't tell ya how to solve it, he doesn't want to hear it." And Bud's earlier comparison between difficult conversations and shoveling snow illustrates his view that discussing conflict is work, and that he prefers to keep the work minimal. In other words, why heap more snow on the shovel than you have to? His preference is for efficient conflict resolutions. In these cases the question which seems to remain is: who's feelings are being spared by not talking--the women's or the men's?

## Conclusion

Obviously, one way to look at these findings regarding gender differences in communication is to note that the behaviors are reflective of so-called gender-role socialization, as suggested by the Cross-Cultural Theory. However, as mentioned at the beginning of this paper, I do not believe this theory goes far enough to explain what are presented as communication barriers between women and men.

First, the focus on gender differences and gender roles as a given suggests that these behaviors have *naturally evolved*. Not only does this approach mask any socially constructed power differentials, it also leads to a research focus on compiling lists of communication differences as a product of gender, rather than on identifying how gender is created and maintained everyday *through* our interactions (Rakow 1986). Gender identities are not created once and for all in our childhood experiences. They are redefined and reinforced throughout our lives. The Cross-Cultural theory seems to de-emphasize the powerful role of communication in this process and the strategic nature of that communication.

Second, the Cross-Cultural theory does not adequately explain why men's communication preferences often seem to be met at the cost of women's preferences. This is particularly perplexing since an alternative conclusion from Tannen's study and my own, could be that women have superior communication skills. A competent communicator is commonly defined as one who exhibits behavioral flexibility like that of the accommodating speaker. However, in relationships between women and men, the partner who seems to be the less competent communicator--less cooperative and flexible--is able to put forth less effort and still get his way. As a consequence, these men have more control in defining the relationships. Tannen does acknowledge this

*asymmetrical* nature of women's and men's communication styles (1990b: 280-96), but does not seem to address the interpersonal or societal consequences of these asymmetries. Why is it that in a society where emphasis is placed on heterosexual relationships, only one partner traditionally develops the accommodating communication skills necessary to maintain such relationships? Women and men do not grow up in completely separate cultures; they grow up in the same one--one where men set the rules.

Third, through norms of silence and uncooperative conflict-avoidance, men can create a context in which expectations for women to accommodate and be controlled emotionally are a daily fact of life. Kramarae (1992) suggests that such seemingly innocent gestures as patronizing, complimenting, and demanding that females smile to please others are forms of sexual harassment (p. 101). They create a climate conducive to physical and sexual assault against women. To dismiss these consequences as the result of different cultural socialization or of different conversational styles is to deny women's silent oppression and to mask the ways in which gender hierarchies are created and maintained in our daily lives.



### Notes

1 The term *communication preferences* as used here refers to individuals' likes and dislikes in communication with their spouses, not the structure-based preferences referred to by some linguists.

2 The Cross-Cultural Theory fails to recognize that so-called gender roles are historical, cultural products which are no more natural than race roles or social-class roles. When the term is used in this paper, it is meant to refer to the socialization of women and men into unequal characteristics and roles based on gender.

## Appendix A

## Transcription Key

- (1) The numbers in parentheses refer to the length of pauses, timed to tenths of a second. Anything below a tenth of a second is marked as (.) to indicate that a pause was audible but not long enough to time. Most pauses are presented without periods, representing seconds.
- = There was no pause discernible between speakers or within one speaker's multiple utterances.
- (word) Words in parentheses indicate that the transcriber was unsure of the exact wording heard.
- (( )) Double parentheses are used to relay related contextual information to the reader.
- .,?! Punctuation marks are used to indicate intonation, not grammar, although, for example, a rising intonation may accompany a question.
- [ A single bracket at the beginning of a speaker's utterance indicates an overlap of speech, that is, the speaker began her or his turn within 2 or fewer syllables of the other speaker's ending (Sacks et al., 1974), or the speaker began during the internal pause of another speaker's turn.

## SECTION 2

### Gender Marking in Language and Language Use



## Gender Marking in Spanish: Linguistic versus Sociological Determinants of Feminine Form in Words for Humans<sup>1</sup>

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This study explores native Spanish speakers' productive control of linguistic gender in nouns that refer to males and females. The aim of the study was to determine whether it is the linguistic factors of lexical convention and morphological shape or the sociological factor of knowledge or stereotypes of real-world sex roles that is the primary determinant of gender-marking patterns for words that refer to females. The study thus tests whether there is a direct correlation between speakers' use of gender in language and their knowledge or stereotypes of the roles of women in society.

Languages with gender are commonly divided into two types: those with "natural" gender and those with "grammatical" gender. In the former type of language, gender marking in nouns carries a semantic function that is directly related to the sex of the referent. English falls basically into this type. Thus, *boy* refers to a child who is male, and *girl* to a child who is female; *mother* refers to a parent who is female, *father* to a parent who is male. In a grammatical-gender language, on the other hand, gender marking in nouns and their modifiers is a means of establishing morpho-syntactic concord among those elements. The particular gender into which a given noun falls is in general arbitrary. Spanish is a language that has grammatical gender. Every noun is categorized as either masculine or feminine and can only co-occur with modifiers (articles and adjectives) marked for the same gender. On the whole, the gender of a noun is

arbitrary; one cannot predict on the basis of meaning whether a given object will be labeled by a masculine or a feminine noun. For example, *puerta* 'door' is feminine, while *puerto* 'port' is masculine; *chaqueta* 'jacket' is feminine, while *abrigo* 'coat' is masculine.

The traditional perspective on gender in Spanish (see, e.g., Anderson 1961; Echaide 1969; Saporta 1962) is that the primary markers for masculine and feminine gender are *-o* and *-a*, respectively (as in the examples above). According to some analyses (e.g., Saporta 1962), each of these markers alternates allomorphically with *-e* and  $-\emptyset$ , in forms such as *valle* 'valley' (masculine) and *sol* 'sun' (masculine), and *calle* 'street' (feminine) and *col* 'cabbage' (feminine). Of these endings, *-o* and *-a* are fairly consistent indicators of masculine and feminine gender: Teschner and Russell (1984) calculate that nouns ending in *-o* are masculine 99.87% of the time (p. 117), and nouns ending in *-a* are feminine 96.3% of the time (p. 116). In the case of  $-\emptyset$ , the word-final sound of the root is often a predictor of the gender class (Teschner and Russell 1984)--e.g., words ending in *-d* are feminine 97.57% of the time (p. 116); those ending in *-l, -r, -m, -t, -u, -x, -y, -b, -c, -ch, -f, -g, -j, -k, -ll, -p* are masculine at least 90% of the time (pp. 117-118). In the case of *-e*, Teschner and Russell found that words ending in this vowel are masculine 89.35% of the time (p. 117); however, frequent *-e* words are often feminine: among the 24 *-e* nouns in the thousand most frequent words in Spanish, two-thirds are feminine (p. 124). This high correlation, though imperfect, between form and gender class is consistent with the fact that gender in Spanish carries out a primarily morpho-syntactic, rather than semantic, function.

Despite this primarily grammatical function, gender in words that refer to humans generally follows biological sex. Males are typically referred to with masculine nouns, females with feminine nouns. Thus, a boy would be called a *niño*, a girl a *niña*; a male writer an *escritor*, a female writer an *escritora*; a male boss a *jefe*, a female boss a *jefa*. (There are several highly productive



alternations between masculine and feminine noun endings. These include masculine *-o*, *-Ø*, and *-e* alternating with feminine *-a*, as in the preceding examples, but exclude the possibility of a masculine *-o* or *-a* alternating with a feminine *-e*, or a masculine *-a* alternating with a feminine *-o* (Harris 1991). This close link between gender in words for humans and the sex of the referent is one way in which Spanish exemplifies some characteristics of natural-gender languages. However, the match is not perfect.

First, not all words have both masculine and feminine forms to refer to the two sexes. Some words have an invariant form. *Criatura* 'creature', *persona* 'person', *víctima* 'victim' are invariably feminine, despite the referent; *bebé* 'baby' and *piloto* 'pilot' are almost invariably masculine; *marido* 'husband' has no feminine counterpart. (See Harris 1991.) Still other words favor one gender (usually masculine) and have only occasional or awkward counterparts in the other gender. Thus, *abogado* 'lawyer' (masculine) and *jefe* 'boss' (masculine) are used quite productively, while *abogada* (feminine) and *jefa* (feminine) are avoided by many speakers (De Mello 1990: 394, 396). Second, even when both masculine and feminine forms exist, the masculine form serves as the "unmarked" form that is used in reference to groups of mixed sex or for generic reference (e.g., Echaide 1969; Harris 1991; Roca 1989). For example, boys and girls together are referred to as *niños*; male and female writers together as *escritores*. (See Roca 1989, for some exceptions.)

Drawing on this traditional perspective, several feminist scholars have taken issue with the linguistic practices surrounding gender in words that refer to humans. Two concerns have been voiced. First, several researchers have suggested that the use of masculine forms as unmarked forms leads to a "people=male bias" (Silveira 1980), or to the placement of men in the foreground, and women in an invisible non-existence (Suardiaz 1973). (See Blaubergs 1980; Korsmeyer 1977; MacKay 1983; Martyna 1980, 1983;

McConnell-Ginet 1979, for discussion.) Hampares (1976) credits grammarians for creating this situation:

In Spanish, the grammatical rule of "masculine takes precedence" governs the use of a masculine plural pronoun to refer to a group of persons or objects that represent both masculine and feminine gender. . . . Similarly, the plural of nouns referring to people covers mixed gender: *padres* ['parents'], *abuelos* ['grandparents'], *españoles* ['Spaniards'], *católicos* ['Catholics'], *profesores* ['teachers'], and so on. Feminists may well claim that the grammarians who formulated these rules were sexist. (p. 100, emphasis added)

A second concern voiced by some writers is that feminine forms are not always readily available for nouns that refer to professions in which women participate. The assumption is that as women move steadily into all realms of the work force, feminine forms should be generated to refer to those women; the language should "accommodate" or "develop an adequate terminology, appropriate to the new social conditions" (Malinowski 1980: 207). Working under this assumption, Hampares finds it illogical that there is not a direct correspondence between the availability of feminine forms in Spanish and the presence of females in a profession. She examines the citation of feminine forms for Spanish nouns in three dictionaries, and she expresses astonishment, for example, at the fact that *astronauta* ('astronaut') is designated as both masculine and feminine by all three dictionaries, while words for more female-intensive professions are cited without feminine forms. She calls this gender assignment for *astronauta* "the most surprising gender designation of the entire study" (p. 103): "One cannot possibly imagine why this occurs when so many occupations in which women *are* engaged are not assigned feminine endings or gender" (Hampares 1976: 103-104). She credits the lexicographers with this

inconsistency: "This incongruity aptly leads us to the only conclusion that we can draw from our discussion of form and gender: the lexicographers follow no method in assigning feminine endings or gender to nouns of professions or occupations" (Hampares 1976: 104).

Hampares displays similar astonishment at the asymmetry and "puzzling inconsistency" observed in the gender assignment of synonymous words (Hampares 1976: 107). She comments, again crediting lexicographers: "It is curious that all three dictionaries list *aviadora* ['aviatrix', feminine] but none gives a feminine ending for *piloto* ['pilot', masculine]. . . . The two are quite synonymous, but we may speculate that Amelia Earhart's renown as an aviatrix may have influenced the lexicographers" (Hampares 1976: 102).

The assumption that feminine forms for nouns should develop (or be developed) as females enter an increasing array of professions rests on an unspoken supposition that gender in nouns for humans is natural gender. That is, there is the expectation that a noun's gender will reflect the real-world sex of the referent. However, one might well ask to what extent the speakers of a grammatical-gender language treat gender in nouns referring to humans as natural gender. If speakers do interpret gender in nouns for humans as natural gender, then they can be expected to try to generate feminine forms for those categories and professions in which females are perceived to participate as fully as males. For example, as more and more women become pilots, the natural-gender perspective would predict the emergence of a feminine form like *pilota* to refer to those women. If, on the other hand, speakers treat nouns for humans as having grammatical gender, then they can be expected to treat nouns as simply following some convention, whether that convention classifies the word as feminine or masculine. In this case, it would not be problematic that females are not always referred to with feminine nouns and males are not always referred to with masculine nouns. A final possibility, of course, is that speakers may interpret gender in nouns for humans in an ambiguous fashion--

sometimes as natural gender, sometimes as grammatical gender. Work on present-day usage in French by Malinowski (1980) suggests that there are instabilities and hesitations in contemporary French usage, lending support to this third possibility.

These alternative predictions are based on a traditional perspective on gender. More recent approaches to gender in Spanish make the picture somewhat more complex. Klein (1989) and Harris (1991) have both argued that, contrary to the traditional view, *-o*, *-a*, *-e*, and *-Ø* are not gender markers. Both researchers agree that *-e* is an epenthetic vowel inserted for phonological reasons, generally after roots that end in consonant clusters or single obstruents other than /d, s/ (Klein 1989:150). This puts word-final *-e* on a par with both the epenthetic *e-* placed before word-initial consonant clusters in which the first consonant is *s*, as in *español*, and the epenthetic *e* placed between root-final consonants and the plural *s*, as in *mujer-e-s* 'women'. With regard to *-o* and *-a*, Klein argues that these are merely endings that "go with" masculine and feminine nouns; the nouns themselves carry the gender classification with the root. Harris calls *-o* and *-a* "word markers", endings that give words acceptable form. (This explains, for example, why both endings occur on words that do not carry gender--e.g., adverbs such as *dentro* 'inside' and *fuera* 'outside'.) Harris argues, furthermore, that there is no "masculine" gender in Spanish, only feminine gender. Words are either marked feminine or literally left unmarked for gender. What is traditionally viewed as masculine gender is nothing more than a default, with actually no gender specified at all.

Given this more recent approach, how might the predictions we could make regarding expected changes towards feminine forms be modified? Certainly, this approach lends more distance between these endings and the sex of referents than the traditional approach. Under the traditional approach, even if *-o*, *-a*, and *-e* are viewed as markers of grammatical gender, they are still seen as markers of *gender*, which leaves them available for possible movement

from marking grammatical gender towards the marking of natural gender. Under both Klein's and Harris' approaches, on the other hand, gender is a property of the noun root rather than the suffix. In fact, *-e* has nothing at all to do with gender or even with morphological structure; *-e* is inserted purely for phonological reasons. We could, thus, expect that forms whose "masculine" shape ends in *-e* might be unlikely to develop feminine forms that differed from this shape. Predictions for words ending in *-o*, under Harris' and Klein's analyses, are somewhat more difficult to make. Under Klein's analysis, *-o* is correlated with masculine gender in nouns; we might, therefore, expect words ending in *-o* to develop a "feminine" ending (*-a*) more often than *-e* words do. Under Harris' analysis, we might expect that, since *-o* does not mark gender, words whose "masculine" shape ends in *-o* might be unlikely to undergo change to a "feminine" shape. On the other hand, Harris also proposes that for nouns for humans, there is a set of redundancy rules that specify "Human Cloning" and "Human Gender" (pp. 51-53): (1) For every lexical entry referring to humans, two entries are formed, one specifying "male" reference, the other "female" reference, and (2) words with "female" reference are further marked as having feminine gender. Words with feminine gender surface with an *-a* marking, unless this marking is blocked by the presence of another class marking. Under this proposal, we might expect human nouns ending in *-o* to readily develop *-a* counterparts.

The present study was conducted in order to explore these issues. Specifically, this study examines what linguistic measures Spanish speakers take to use single-gender masculine (in the traditional sense) words (e.g., *piloto*) in reference to females. Speakers have three options: (1) leave the noun and its modifiers in the masculine ('el piloto') (Harris' "most conservative option", p. 40), (2) use the masculine form of the noun with the feminine form of the modifiers ('la piloto') (Harris' "moderate option", p. 40), or (3) "invent" a feminine form for the noun and use it with feminine modifiers ('la pilota') (Harris'

"most liberal option", p. 40). In addition to exploring the choices speakers make, this study attempts to address the reasons for those choices. Are the choices dependent on convention (Have speakers heard others use this form?), on morphological shape (What ending does the noun have?), or on sociological factors (To what extent are women represented in this profession or category)?

## Study

The general method followed in this study was to ask native monolingual speakers of Spanish to perform a cloze task, filling in blanks with nouns and articles as labels for females in 96 professions or categories. Eighty-six of the terms tested were real words; 10 were nonsense words. (See Appendix for a list of the words used.) The 86 real words varied along three parameters: the first difference among words was conventionality, or the availability of both masculine and feminine forms of the word. Conventionality was measured, drawing on Hampares (1976), on the basis of the citation of both masculine and feminine forms for a word in three dictionaries. The second difference lay in the morpho-phonological shape of the words. Some endings in Spanish have clear and productively correlated feminine and masculine counterparts; others have less readily available counterparts. The third difference was in the incidence, or the perceived incidence, of women in the profession or category labeled by each word. The perceived incidence of males and females in each category was determined by a separate test with a separate set of subjects. In that test, subjects were asked to judge the percentage of females versus males in each of the 86 groups. The 10 nonsense words varied along the parameter of morpho-phonological shape.



## Preliminary Study

A preliminary study was conducted to determine the perceived incidence of females and males in each category named by the real-word stimuli. Subjects were asked to estimate the percentage of males and females in each of the 86 categories named by the real words used in the study.

## Method

### Subjects

Subjects for the pre-test were 29 university students in a psychology class at the Universidad Autónoma in Madrid, Spain. All were native speakers of Spanish. Twenty-two were female, seven were male.

### Procedure

All subjects were asked to fill out a sheet that asked them to estimate the percentage of males and females in each of the 86 categories named by the real words used in the major test of this study. The task took approximately 15 minutes.

### Results

The responses of subjects were sorted according to the following criteria. (1) Those categories for which at least 75% of subjects estimated that at least 25% of the group was male and at least 25% of the group was female were deemed to be perceived as having more or less equivalent numbers of females and males as members and were labeled "Gender Equivalent". (2) Those categories for which at least 75% of the subjects estimated that 75% or greater

of the group consisted of males were labeled "Predominantly Male". (3) Those categories for which at least 75% of the subjects estimated that 75% or greater of the group consisted of females were labeled "Predominantly Female". Those categories for which it was not the case that 75% of the subjects uniformly placed the group into one of the first three categories were sorted into two others: (4) those categories for which judgments ranged between "gender equivalent" and "predominantly male" were labeled "Tend Towards Male"; and (5) those categories for which judgments ranged between "gender equivalent" and "predominantly female" were labeled "Tend Towards Female".

Words fell into all of these categories except the third one, "Predominantly Female". Words are marked for perceived gender distribution in the Appendix.

## Main Study

### Method

#### Stimuli and Procedure

Ninety-six sentences were developed as test sentences. Each was missing an article and a noun that the subject was required to fill in. Every sentence had the name of a female or a common noun that referred to a female as its grammatical subject. (A pilot test had revealed near-absolute performance when male names were used as subjects: 99.5% of responses consisted of both a masculine article and the masculine form of the noun. Male-referring subjects were thus dropped from the main study, in order to maximize the information that could be gleaned from the more variable response types given with female-referring subjects.) For each sentence, experimental subjects

were given a base word, in the "unmarked" masculine form, and asked to complete the sentence. Subjects were instructed, in Spanish, to "Complete the following sentences using the noun that appears. Fill in the sentence according to what you would say in a normal, informal conversation." Example sentences are shown in (1).

(1) zapatero Juanita es \_\_\_ de mi pueblo.

('Juanita is the shoemaker of my village.')

físico Carolina es \_\_\_ que nos explicó la teoría.

('Carolina is the physicist who explained the theory to us.')

As noted above, the 86 real nouns varied along three parameters. First, the words were sorted according to their categorization by three dictionaries, following Hampares (1976). Words fell into three types: (a) words which are reported to have a masculine form, but no feminine form, by all three dictionaries ("M Only"); (b) words that are reported to have both masculine and feminine forms by all three dictionaries ("M & F"); and (c) words for which only one or two of three dictionaries cite feminine forms along with masculine forms ("M & F?"). Each word's Dictionary Categorization is shown in the Appendix.

Words also varied in their Morpho-Phonological shapes, as follows: (a) 36 words consisted, in their masculine forms, of a stem plus *-o*; there is a readily available counterpart to *-o*, *-a*, for forming a feminine equivalent; (b) 10 words consisted, in their masculine forms, of a stem plus *-ero*, which includes the agentive suffix *-er*; *-era* is a readily available feminine counterpart for this suffix; (c) 15 words ended in *-or*, which in traditional terms can be analyzed as the agentive *-or* plus *-Ø*; a feminine counterpart, *-ora*, is readily available; (d) 9 words ended in *-nte*; *-nta* is a potential feminine counterpart; (e) 5 words ended in *-e*; potentially *-a* is an available feminine alternative; (f) 8 words ended in *-a* in both the masculine and feminine forms; and (g) 3 words ended in *-Ø* attached

to roots ending in /n, l, z/. The 10 nonsense words followed patterns (a) through (e), 2 for each pattern. These Morpho-Phonological classifications are shown in the Appendix.

Finally, words varied according to the Perceived Distribution of females and males as members of the categories. The Perceived Distributions were judged according to the preliminary study described above.

The 96 sentences were divided into two sets of 48 sentences, to be administered on separate days. Half the subjects received the first set on the first day; half received the second set first. For each set of 48 sentences, four distinct orders of presentation were drawn up. Approximately equal numbers of subjects were assigned to each of the four orders of presentation.

Each set of sentences took approximately 15 minutes to complete.

## Subjects

Subjects were 68 monolingual Spanish-speaking adults, psychology students and faculty at the Universidad Autónoma in Madrid, Spain. The student subjects here plus those used for the pre-test constituted all of the students enrolled in one psychology class; it was thus impossible to control for the number of male versus female subjects. Because 10 of the subjects were absent on the second day of administration of the test and were thus unable to complete the second portion of the test, these subjects were dropped from the study. The remaining subjects consisted of 43 females and 15 males; there was approximately the same proportion of male to female subjects across the distinct orders of presentation.

## Results

Preliminary tests revealed no significant differences either between responses given on the first versus the second day of testing, or between responses given by subjects receiving distinct orders of presentation. These data are, therefore, pooled for all subsequent analyses.

Responses fell into three main types: use of a masculine article (*el* or *un*) with the masculine form of the word, use of a feminine article (*la* or *una*) with the masculine form of the word, and use of a feminine article with the feminine form of the word. Out of a possible total of 5568 responses, 37 were unscorable for a number of reasons (the subject gave an incomplete answer, had illegible writing, or mistakenly used a noun other than the target noun), and 39 were No-Responses. The nonsense words were responsible for 38 of the 39 No-Responses, and for 4 of the unscorable responses.

Tables 1 through 3 show the scorable responses according to the Dictionary Categorization of words, the Perceived Distribution of females and males within categories, and the Morpho-Phonological shapes of the words.  $X^2$  analyses revealed significant differences within each of these:  $X^2=100.6$ ,  $df=6$ ,  $p<.001$ ;  $X^2=248.7$ ,  $df=6$ ,  $p<.001$ ;  $X^2=1301.9$ ,  $df=10$ ,  $p<.001$ , respectively.

The response type varied according to the Dictionary Categorization of words, in the direction expected. (See Table 1.) Words categorized as "M Only" yielded significantly more responses (than the group as a whole) in which both a masculine article and masculine noun form (M-M, e.g., "el crítico") were used, and significantly more responses in which a feminine article and masculine noun form (F-M, e.g., "la arquitecto") were used. Words categorized as "M & F" yielded significantly fewer responses of these two types and significantly more responses in which both a feminine article and a feminine noun form were used (e.g., "la autora"). Nonsense words, like the "M Only" nouns, occurred significantly more often (than the group as a whole) with the noun form unchanged, and either a masculine or feminine article. Thus, as expected,

subjects treated "M Only" nouns as having a more invariant noun shape than other nouns, and "M & F" nouns as having a more flexible noun shape than other nouns. Nonsense words were treated as having a relatively invariant noun shape.

The response type also varied according to the Perceived Distribution of women and men across groups named by the nouns (Table 2). Gender-Equivalent groups elicited fewer responses with a masculine noun shape (either M-M or F-M) and more responses with a feminine noun shape. Predominantly Male groups showed the opposite effect. These elicited more F-M responses and fewer F-F responses than the general pattern. Both of these results are consistent with what one could expect if noun shape is determined by speakers' knowledge of the occurrence of the members of the two sexes in the category. However, the results for the Tend Towards Male and Tend Towards Female groups are inconsistent with this expectation. The former of these had fewer F-M responses than the general pattern; the latter had more F-M responses and fewer F-F responses. If choice of noun shape is contingent on the perceived distribution of the sexes in the categories being named, response patterns for the Tend Towards Male group should favor masculine noun shapes, and those for the Tend Towards Female group should favor feminine noun shapes.

Responses by Morpho-Phonological type (Table 3) revealed a high incidence of F-F responses with words that end in *-ero* and *-or*, with concomitant decreases in the use of M-M and F-M forms. In addition, there was a significantly lower incidence of responses of the F-F type with words ending in *-nte*, *-e*, and *-Ø*, with corresponding increases in the incidence of F-M responses for all of these, and more M-M responses for the *-e* words. Thus, the endings *-ero* and *-or* appear to promote the productive use of a feminine noun shape, while *-nte*, *-e*, and *-Ø* promote the use of an invariant, masculine noun form.



These overall results suggest that conventionality, morpho-phonological shape, and, to some extent, perceived incidence of males and females in individual groups all contribute to a speaker's choice of form when referring to female referents. However, it is possible, because of the impossibility of controlling for the balanced distribution of these three factors across stimuli, that an observed effect overall in one of them may in fact be the result of an imbalanced occurrence of one of the other factors within it. Further analyses examined the responses for each Dictionary Categorization by Morpho-Phonological type and for each Perceived Distribution by Morpho-Phonological type.

$X^2$  analyses of Dictionary Categorization X Morpho-Phonological type reveal significant effects within each of the Morpho-Phonological types except *-or*.  $X^2 = 323.3$  for *-o*, 170.9 for *-ero*, 62.6 for *-nte*, and 59.3 for *-e*, respectively ( $p < .001$  in all cases). In every case, those words that are categorized as M Only have a significantly lower incidence of F-F forms, with corresponding increases in M-M and F-M forms; and those words that are categorized as M & F have significantly higher incidences of F-F forms or lower use of M-M or F-M forms.

$X^2$  analyses of Perceived Distribution X Morpho-Phonological type similarly reveal significant effects within every category except *-or*. ( $X^2 = 153.4$  for *-o* words, 79.7 for *-ero* words, 63.1 for *-nte* words, 76.4 for *-e* words,  $p < .001$  in all cases.) In the case of *-o* words, there are significantly more F-M responses, and fewer F-F responses, to Predominantly Male words, and there are significantly more M-M responses to Tend Towards Male words and fewer M-M responses to Tend Towards Female words. In the case of *-ero* words, there are significantly fewer F-M responses to Gender Equivalent words, and significantly more to Predominantly Male words. Within *-nte* words, there are significantly fewer F-F responses to Tend Towards Male words, and significantly more to Tend Towards Female words. These results are all consistent with expectations, if the perceived distribution of males and females in the category

determines linguistic form. However, these results are considerably scattered, and the results for *-e* words run counter to predictions. In the case of *-e* words, Gender Equivalent words show significantly more M-M, and fewer F-F, responses, and Tend Towards Male words show significantly more F-F, and fewer F-M, responses. This is opposite to what should be predicted if knowledge of the incidence of males and females in a category directly determines linguistic gender. On closer examination of the data, these results for *-e* words are due to the incidence of M-M responses with the Gender Equivalent word *bebé* ('baby'), and F-F responses with the Tend Towards Male word *jefe/jefa* ('boss').

In sum, these group results suggest the concerted influence of all three factors--conventionality, morpho-phonological shape, and perceived distribution of the sexes within categories--in the determination of the gender shape that these words take. The first two appear to yield greater influence, in that the perceived distribution makes a number of predictions that are inconsistent with the results observed.

Closer examination of the data suggests further that conventionality may, in fact, play a greater role than morpho-phonological type and perceived distribution in determining the form a word takes. Table 4 presents a number of words for which response patterns run counter to what might be predicted according to the perceived distribution of women and men in the given category. For example, in the case of Gender Equivalent words like *médico* and *testigo*, the low occurrence of F-F forms can only be explained in terms of conventionality. Or the striking lack of a single F-F response for the Tend Towards Female word *modelo* is similarly inexplicable in terms of morpho-phonological shape and perceived distribution. It can only be because speakers have never heard *la médica*, *la testiga*, and *la modela* that they avoid such forms.

One final question worthy of consideration is whether competing terms may have an effect on the options available to speakers. In some cases, the feminine form of a noun has a meaning distinct from that of the masculine form. For example, *crítico* means 'critic'; *crítica* means 'criticism'. In these cases, one might hypothesize that speakers will avoid the use of the feminine noun shape in reference to humans in order to avoid a homonymic clash (Malinowski 1980: 209). In the data, there were 6 words for which this might have occurred. These are listed in Table 5, along with information on subjects' responses to these items. A comparison with other words with similar morpho-phonological shapes suggests that there may, indeed, be operating some such strategy that limits the availability of F-F forms for these lexical items. However, the limitation is certainly not absolute (see, e.g., *físico* and *químico*).

## Discussion

The results of this study suggest that conventionality, morpho-phonological shape, and the perceived distribution of men and women in groups all contribute to the determination of the gender status of words used in reference to females. Perhaps the least influential of these, however, is the last. Some predictions one can make on the basis of this factor are contradicted by the data, and the influence of this factor appears weak when one examines effects while keeping morpho-phonological shape constant.

These results suggest, in general, that in Spanish there are competing forces continually pulling in somewhat opposite directions. The force of grammatical gender pulls the speaker away from considering gender marking as directly related in any way to the real-world status of referents. This force is one that favors conventionality, in that the gender shape of a noun is inherent to the noun, not to the referent of that noun. Not only the differences among M

Only, M & F, and M & F? nouns, but also the reluctance of speakers to generate a feminine form (which they will have never heard) for the Nonsense words, support speakers' observance of convention.

Morpho-phonological shape, on the other hand, may push the speaker in favor of certain productive rules. E.g., if the word ends in *-ero* or *-or*, the speaker can freely change the ending to *-era* or *-ora* when making reference to a female. Note that in both of these cases, there is a derivational suffix in addition to the *-o*, *-a*, or *-Ø* suffix. The derivational suffix common to these words may obscure differences in the availability of feminine forms across the words.

The perceived distribution of men and women in a category, along with the fact that there is a tendency for females to be labeled by feminine nouns and males by masculine nouns, can push the speaker of the language to consider gender marking as something more than a grammatical device and as having something to do with the real-world referents of the words being used.

The specific results obtained here also provide some support for predictions made under Klein's and Harris' analyses. Most importantly, words that end in *-e* (including *-nte*) and *-Ø* (without an agentive suffix) were much less likely to be transformed into a feminine form than those ending in *-or*, *-ero*, and *-o*. This supports an analysis in which *-e* and *-Ø* do not function as gender markers. Performance on *-o* nouns seems to support the predictions made above in conjunction with Klein's analysis and Harris' "Human Cloning" proposal: speakers generated feminine forms for the *-o* words much more frequently than they did for the *-e* or *-Ø* words.

It should be noted that the results here reflect *speakers'* use of gender marking in Spanish. The observed results indicating forces pushing in opposing directions and suggesting variability of usage according to convention and morpho-phonological shape are, thus, not to be attributed to grammarians, but to psychologically real phenomena embedded in the language and its speakers themselves.

Finally, it should also be noted that the method used in this study tapped speakers' judgments directly. The extent to which similar results might be obtained using a less metalinguistic task can only be determined through further research.

## Notes

1 Special thanks go to Eugenia Sebastián and José Luis Linaza of the Universidad Autónoma in Madrid and to Soohee Kim for their valuable assistance in the preparation of this study.



TABLE 1  
 RESPONSES ACCORDING TO DICTIONARY CATEGORIZATION  
 (IN PERCENT)

| <u>Dictionary<br/>Categorization</u> | <u>Responses</u> |                |              |
|--------------------------------------|------------------|----------------|--------------|
|                                      | M Art-M Noun     | F Art-M Noun** | F Art-F Noun |
| M Only                               | 22.0*            | 55.1*          | 22.8*        |
| M & F                                | 8.0*             | 12.4*          | 79.5*        |
| M & F?                               | 9.8              | 34.5           | 55.5         |
| Nonsense                             | 21.7*            | 50.3*          | 27.8*        |
| TOTAL                                | 12.3             | 32.0           | 55.7         |

\* significant at  $p < .05$

\*\* Word ending in -a, such as *dentista*, can be said to be "gender ambivalent" (Teschner & Russell 1984, p. 115, fn. 2). Use of such words with *la* is reported in the second column, to reflect the absence of a change in noun form. These could just as easily have been placed in the third column. Two of these words fell into the M Only category, 6 into the M & F category.

TABLE 2

RESPONSES ACCORDING TO PERCEIVED DISTRIBUTION  
OF WOMEN AND MEN ACROSS CATEGORIES  
(IN PERCENT)

| <u>Perceived<br/>Distribution</u> | <u>Responses</u> |              |              |
|-----------------------------------|------------------|--------------|--------------|
|                                   | M Art-M Noun     | F Art-M Noun | F Art-F Noun |
| Gender<br>Equivalent              | 9.4*             | 26.4*        | 64.3*        |
| Predominantly<br>Male             | 15.2             | 38.9*        | 45.8*        |
| Tend Towards<br>Male              | 13.4             | 24.8*        | 61.6         |
| Tend Towards<br>Female            | 14.0             | 46.9*        | 39.0*        |
| TOTAL                             | 12.3             | 31.9         | 55.7         |

\* significant at  $p < .05$

TABLE 3  
 RESPONSES ACCORDING TO MORPHO-PHONOLOGICAL TYPE  
 (IN PERCENT)

| Morpho-<br>Phonological<br>Type | Responses    |              |              |
|---------------------------------|--------------|--------------|--------------|
|                                 | M Art-M Noun | F Art-M Noun | F Art-F Noun |
| -o                              | 11.4         | 23.7         | 64.9         |
| -ero                            | 16.0         | 13.5*        | 70.5*        |
| -or                             | 8.6*         | 2.3*         | 89.1*        |
| -nte                            | 10.9         | 68.9*        | 20.4*        |
| -e                              | 25.3*        | 48.2*        | 26.5*        |
| -∅                              | 19.9         | 51.4*        | 28.7*        |
| TOTAL                           | 12.9         | 26.8         | 60.3         |

\* significant at  $p < .05$

TABLE 4

INDIVIDUAL WORDS WITH ARTICLE-NOUN GENDER DISTRIBUTIONS THAT ARE UNEXPECTED, GIVEN THE PERCEIVED DISTRIBUTION OF WOMEN AND MEN IN THE CATEGORY (NUMBER OF RESPONSES)

| Perceived<br><u>Distribution</u> | <u>Responses</u> |              |         |
|----------------------------------|------------------|--------------|---------|
|                                  | M Art-M Noun     | F Art-M Noun | F Art-F |
| Noun                             |                  |              |         |
| A. <u>Gender Equivalent</u>      |                  |              |         |
| <i>médico</i>                    | 18               | 30           | 10      |
| <i>testigo</i>                   | 6                | 51           | 1       |
| B. <u>Predominantly Male</u>     |                  |              |         |
| <i>mecánico</i>                  | 6                | 26           | 25      |
| <i>ministro</i>                  | 3                | 14           | 41      |
| <i>zapatero</i>                  | 4                | 2            | 52      |
| <i>agricultor</i>                | 4                | 0            | 54      |
| <i>aviador</i>                   | 9                | 0            | 48      |
| <i>embajador</i>                 | 4                | 0            | 54      |
| <i>senador</i>                   | 4                | 1            | 53      |
| C. <u>Tend Towards Male</u>      |                  |              |         |
| <i>catedrático</i>               | 7                | 4            | 46      |
| <i>diplomático</i>               | 8                | 1            | 49      |
| <i>veterinario</i>               | 3                | 8            | 47      |
| <i>panadero</i>                  | 3                | 1            | 54      |
| <i>administrador</i>             | 3                | 1            | 51      |
| <i>conductor</i>                 | 4                | 0            | 54      |
| <i>editor</i>                    | 2                | 2            | 54      |
| <i>escultor</i>                  | 2                | 0            | 56      |
| <i>pintor</i>                    | 2                | 0            | 56      |
| D. <u>Tend Towards Female</u>    |                  |              |         |
| <i>modelo</i>                    | 0                | 58           | 0       |

TABLE 5

WORDS THAT HAVE A CORRESPONDING FEMININE FORM  
WITH A DISTINCT MEANING, BY MORPHO-PHONOLOGICAL CATEGORY  
(IN PERCENT)

| Noun                                               | M Art-M Noun | F Art-M Noun | F Art-F |
|----------------------------------------------------|--------------|--------------|---------|
| A. -o                                              |              |              |         |
| <i>crítico</i><br>(‘critic’/<br>‘criticism’)       | 44.8         | 27.6         | 27.6    |
| <i>físico</i><br>(‘physicist’/<br>‘physics’)       | 22.4         | 25.9         | 51.7    |
| <i>mecánico</i><br>(‘mechanic’/<br>‘mechanics’)    | 10.5         | 45.6         | 43.9    |
| <i>químico</i><br>(‘chemist’/<br>‘chemistry’)      | 22.4         | 24.1         | 53.4    |
| TOTAL                                              | 25.1         | 30.7         | 44.2    |
| Other -o words                                     | 9.4          | 21.1         | 69.5    |
| B. -ero                                            |              |              |         |
| <i>cartero</i><br>(‘mailman’/<br>‘wallet’)         | 32.8         | 25.9         | 41.4    |
| Other -ero words                                   | 11.2         | 10.2         | 78.7    |
| C. -a                                              |              |              |         |
| <i>policía</i><br>(‘policeman’/<br>‘(the) police’) | 13.8         | 86.2         | 0       |
| Other -a words                                     | 4.2          | 95.8         | 0       |

## APPENDIX

## RESPONSES ON INDIVIDUAL WORDS TESTED

| Gloss                | Dictionary<br>Categoriz. | Perceived<br>Distribution | Morpho<br>Phono-<br>logy | Responses |      |      |      |
|----------------------|--------------------------|---------------------------|--------------------------|-----------|------|------|------|
|                      |                          |                           |                          | M-M       | F-M  | F-F  |      |
| <i>abacero</i>       | (nonsense word)          | -                         | -                        | -ero      | 27.6 | 19.0 | 48.3 |
| <i>abogado</i>       | lawyer                   | M & F?                    | Gen. Equiv.              | -o        | 13.8 | 19.0 | 67.2 |
| <i>acostre</i>       | (nonsense word)          | -                         | -                        | -e        | 24.1 | 63.8 | 3.4  |
| <i>administrador</i> | administrator            | M & F                     | Tend Male                | -or       | 5.2  | 1.7  | 87.9 |
| <i>agricultor</i>    | farmer                   | M & F                     | Predom. Male             | -or       | 6.9  | 0.0  | 93.1 |
| <i>alcalde</i>       | mayor                    | M & F                     | Predom. Male             | -e        | 6.9  | 13.8 | 79.3 |
| <i>almirante</i>     | admiral                  | M & F?                    | Predom. Male             | -nte      | 27.6 | 62.1 | 10.3 |
| <i>analista</i>      | analyst                  | M & F?                    | Gen. Equiv.              | -a        | 6.9  | 93.1 | 0.0  |
| <i>arqueólogo</i>    | archeologist             | M & F?                    | Gen. Equiv.              | -o        | 12.1 | 3.4  | 82.8 |
| <i>arquitecto</i>    | architect                | M Only                    | Tend Male                | -o        | 22.4 | 43.1 | 34.5 |
| <i>autor</i>         | writer                   | M & F                     | Gen. Equiv.              | -or       | 3.4  | 0.0  | 94.8 |
| <i>aviador</i>       | aviator                  | M & F                     | Predom. Male             | -or       | 15.5 | 0.0  | 82.8 |
| <i>bebé</i>          | baby                     | M Only                    | Gen. Equiv.              | -e        | 65.5 | 29.3 | 3.4  |
| <i>bibliógrafo</i>   | bibliographer            | M & F?                    | Gen. Equiv.              | -o        | 6.9  | 10.3 | 82.8 |
| <i>bibliotecario</i> | librarian                | M & F                     | Gen. Equiv.              | -o        | 3.4  | 0.0  | 94.8 |
| <i>bombero</i>       | fireman                  | M Only                    | Predom. Male             | -ero      | 24.1 | 46.6 | 29.3 |
| <i>boticario</i>     | apothecary               | M & F?                    | Gen. Equiv.              | -o        | 1.7  | 8.6  | 89.7 |
| <i>cacique</i>       | cacique                  | M & F                     | Predom. Male             | -e        | 20.7 | 77.6 | 1.7  |
| <i>canarro</i>       | (nonsense word)          | -                         | -                        | -o        | 10.3 | 55.2 | 24.1 |
| <i>capitán</i>       | captain                  | M & F?                    | Predom. Male             | -Ø        | 32.8 | 13.8 | 53.4 |
| <i>cartero</i>       | postman                  | M Only                    | Tend Male                | -ero      | 32.8 | 25.9 | 41.4 |
| <i>catedrático</i>   | professor                | M & F                     | Tend Male                | -o        | 12.1 | 6.9  | 79.3 |
| <i>científico</i>    | scientist                | M & F?                    | Tend Male                | -o        | 19.0 | 22.4 | 56.9 |
| <i>cirujano</i>      | surgeon                  | M & F?                    | Tend Male                | -o        | 19.0 | 31.0 | 50.0 |
| <i>comandante</i>    | commander                | M & F?                    | Predom. Male             | -nte      | 17.2 | 75.9 | 5.2  |
| <i>comediante</i>    | comedian                 | M & F                     | Gen. Equiv.              | -nte      | 5.2  | 70.7 | 19.0 |
| <i>comentarista</i>  | commentator              | M & F?                    | Gen. Equiv.              | -a        | 3.4  | 93.1 | 0.0  |
| <i>comerciante</i>   | merchant                 | M & F?                    | Gen. Equiv.              | -nte      | 3.4  | 87.9 | 6.9  |
| <i>conductor</i>     | driver                   | M & F                     | Tend Male                | -or       | 6.9  | 0.0  | 93.1 |
| <i>confitero</i>     | confectioner             | M & F                     | Gen. Equiv.              | -ero      | 6.9  | 3.4  | 89.7 |
| <i>crítico</i>       | critic                   | M Only                    | Tend Male                | -o        | 44.8 | 27.6 | 27.6 |
| <i>dabidor</i>       | (nonsense word)          | -                         | -                        | -or       | 27.6 | 12.1 | 53.4 |
| <i>dependiente</i>   | assistant                | M & F                     | Gen. Equiv.              | -nte      | 0.0  | 44.8 | 53.4 |
| <i>dermatólogo</i>   | dermatologist            | M & F?                    | Gen. Equiv.              | -o        | 10.3 | 13.8 | 75.9 |
| <i>dipomático</i>    | diplomat                 | M & F?                    | Tend Male                | -o        | 13.8 | 1.7  | 84.5 |
| <i>doctor</i>        | doctor                   | M & F                     | Gen. Equiv.              | -or       | 6.9  | 1.7  | 91.4 |
| <i>dramaturgo</i>    | playwright               | M Only                    | Gen. Equiv.              | -o        | 10.3 | 36.2 | 53.4 |
| <i>droguero</i>      | druggist                 | M & F?                    | Gen. Equiv.              | -ero      | 19.0 | 6.9  | 74.1 |
| <i>editor</i>        | editor                   | M & F?                    | Tend Male                | -or       | 3.4  | 3.4  | 93.1 |
| <i>embajador</i>     | ambassador               | M & F                     | Predom. Male             | -or       | 6.9  | 0.0  | 93.1 |
| <i>enfirante</i>     | (nonsense word)          | -                         | -                        | -nte      | 17.2 | 72.4 | 3.4  |
| <i>escultor</i>      | sculptor                 | M & F                     | Tend Male                | -or       | 3.4  | 0.0  | 96.6 |
| <i>estenógrafo</i>   | stenographer             | M & F                     | Tend Male                | -o        | 8.6  | 10.3 | 79.3 |
| <i>farmacéutico</i>  | pharmacologist           | M & F?                    | Gen. Equiv.              | -o        | 3.4  | 0.0  | 93.1 |
| <i>filólogo</i>      | philologist              | M & F?                    | Gen. Equiv.              | -o        | 3.4  | 13.8 | 82.8 |
| <i>físico</i>        | physicist                | M & F?                    | Tend Male                | -o        | 22.4 | 25.9 | 51.7 |
| <i>gamero</i>        | (nonsense word)          | -                         | -                        | -ero      | 29.3 | 24.1 | 39.7 |
| <i>general</i>       | general                  | M Only                    | Predom. Male             | -Ø        | 32.8 | 32.8 | 32.8 |
| <i>geógrafo</i>      | geographer               | M & F?                    | Tend Male                | -o        | 13.8 | 20.7 | 65.5 |
| <i>gerente</i>       | manager                  | M Only                    | Tend Male                | -nte      | 8.6  | 86.2 | 1.7  |



| Gloss              | Dictionary Categoriz. | Perceived Distribution | Morpho       | M-M  | F-M  | F-F   |      |
|--------------------|-----------------------|------------------------|--------------|------|------|-------|------|
|                    |                       |                        | Phono-logy   |      |      |       |      |
| <i>geriatra</i>    | gerontologist         | M Only                 | Tend Male    | -a   | 0.0  | 100.0 | 0.0  |
| <i>ginecólogo</i>  | gynecologist          | M & F?                 | Gend. Equiv. | -o   | 8.6  | 12.1  | 79.3 |
| <i>grafilo</i>     | (nonsense word)       | -                      | -            | -o   | 19.0 | 43.1  | 29.3 |
| <i>ilustrador</i>  | illustrator           | M & F                  | Gend. Equiv. | -or  | 10.3 | 0.0   | 89.7 |
| <i>ingeniero</i>   | engineer              | M Only                 | Predom. Male | -ero | 20.7 | 27.6  | 50.0 |
| <i>jefe</i>        | boss                  | M & F                  | Tend Male    | -e   | 19.0 | 10.3  | 70.7 |
| <i>juez</i>        | judge                 | M Only                 | Predom. Male | -Ø   | 8.6  | 70.7  | 20.7 |
| <i>lavadero</i>    | washer                | M & F                  | Tend Female  | -ero | 3.4  | 0.0   | 96.6 |
| <i>lexicógrafo</i> | lexicographer         | M & F?                 | Gend. Equiv. | -o   | 12.1 | 19.0  | 67.2 |
| <i>licenciado</i>  | lawyer                | M & F                  | Gend. Equiv. | -o   | 5.2  | 1.7   | 93.1 |
| <i>lingüista</i>   | linguist              | M & F?                 | Gend. Equiv. | -a   | 8.6  | 91.4  | 0.0  |
| <i>maestro</i>     | teacher               | M & F                  | Gend. Equiv. | -o   | 1.7  | 0.0   | 98.3 |
| <i>mecánico</i>    | mechanic              | M Only                 | Predom. Male | -o   | 10.3 | 44.8  | 43.1 |
| <i>mecanógrafo</i> | typist                | M & F                  | Tend Female  | -o   | 0.0  | 3.4   | 94.8 |
| <i>médico</i>      | doctor                | M & F                  | Gend. Equiv. | -o   | 31.0 | 51.7  | 17.2 |
| <i>ministro</i>    | minister              | M & F?                 | Predom. Male | -o   | 5.2  | 24.1  | 70.7 |
| <i>modelo</i>      | model                 | M & F?                 | Tend Female  | -o   | 0.0  | 100.0 | 0.0  |
| <i>modisto</i>     | fashion designer      | M & F?                 | Gend. Equiv. | -o   | 1.7  | 5.2   | 93.1 |
| <i>narrador</i>    | narrator              | M & F                  | Gend. Equiv. | -or  | 6.9  | 0.0   | 93.1 |
| <i>odontólogo</i>  | orthodontist          | M & F?                 | Tend Male    | -o   | 6.9  | 19.0  | 74.1 |
| <i>oficinista</i>  | office worker         | M & F?                 | Tend Female  | -a   | 0.0  | 100.0 | 0.0  |
| <i>palador</i>     | (nonsense word)       | -                      | -            | -or  | 24.1 | 15.5  | 53.4 |
| <i>panadero</i>    | baker                 | M & F?                 | Tend Male    | -ero | 5.2  | 1.7   | 93.1 |
| <i>pastelero</i>   | pastry maker          | M & F                  | Gend. Equiv. | -ero | 6.9  | 0.0   | 91.4 |
| <i>pediatra</i>    | pediatrician          | M & F?                 | Tend Male    | -a   | 6.9  | 93.1  | 0.0  |
| <i>pertrante</i>   | (nonsense word)       | -                      | -            | -nte | 13.8 | 77.6  | 3.4  |
| <i>piloto</i>      | pilot                 | M Only                 | Predom. Male | -o   | 20.7 | 77.6  | 1.7  |
| <i>pintor</i>      | painter               | M & F                  | Tend Male    | -or  | 3.4  | 0.0   | 96.6 |
| <i>policía</i>     | policeman             | M Only                 | Predom. Male | -a   | 13.8 | 86.2  | 0.0  |
| <i>presidente</i>  | president             | M & F?                 | Predom. Male | -nte | 5.2  | 31.0  | 62.1 |
| <i>profesor</i>    | teacher               | M & F                  | Gend. Equiv. | -or  | 3.4  | 1.7   | 94.8 |
| <i>psicólogo</i>   | psychologist          | M & F?                 | Gend. Equiv. | -o   | 6.9  | 5.2   | 87.9 |
| <i>psiquiatra</i>  | psychiatrist          | M & F?                 | Gend. Equiv. | -a   | 3.4  | 96.6  | 0.0  |
| <i>químico</i>     | chemist               | M & F?                 | Tend Male    | -o   | 22.4 | 24.1  | 53.4 |
| <i>sastre</i>      | tailor                | M & F                  | Gend. Equiv. | -e   | 25.9 | 46.6  | 20.7 |
| <i>secretario</i>  | secretary             | M & F                  | Tend Female  | -o   | 5.2  | 0.0   | 93.1 |
| <i>senador</i>     | senator               | M & F?                 | Predom. Male | -or  | 6.9  | 1.7   | 91.4 |
| <i>serviente</i>   | servant               | M & F                  | Tend Female  | -nte | 1.7  | 44.8  | 51.7 |
| <i>sociólogo</i>   | sociologist           | M & F?                 | Gend. Equiv. | -o   | 3.4  | 10.3  | 86.2 |
| <i>sorape</i>      | (nonsense word)       | -                      | -            | -e   | 8.6  | 84.5  | 0.0  |
| <i>tendero</i>     | shopkeeper            | M & F                  | Gend. Equiv. | -ero | 6.9  | 1.7   | 91.4 |
| <i>teniente</i>    | lieutenant            | M & F?                 | Predom. Male | -nte | 13.8 | 84.5  | 1.7  |
| <i>testigo</i>     | witness               | M Only                 | Gend. Equiv. | -o   | 10.3 | 87.9  | 1.7  |
| <i>traductor</i>   | translator            | M & F                  | Gend. Equiv. | -or  | 3.4  | 0.0   | 96.6 |
| <i>veterinario</i> | veterinarian          | M & F?                 | Tend Male    | -o   | 5.2  | 13.8  | 81.0 |
| <i>zapatero</i>    | shoemaker             | M & F?                 | Predom. Male | -ero | 6.9  | 3.4   | 89.7 |



## What's the Point? Storytelling by Women of India

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"The universe is made of stories, not of atoms."--Muriel Rukeyser

It has only been in the last couple of decades that sociolinguistic research has seriously directed its attention to studying sex differences in verbal interaction, but not without its shortcomings and obstacles. Traditional sociolinguistic methods in the 1970's were frequently designed with male speakers in mind, excluding women as informants (Labov 1972b; Reid 1978); female speakers were viewed as marginal or deviant verbal participants (Spender 1980c). Later research was devoted to quantifying differences in women's and men's usage of certain linguistic forms: phonological, syntactic and even pragmatic variables (Scherer and Giles 1979); sex was seen as an independent variable easily correlated with the occurrence of the frequency of a variant. In the 1980's, there was a shift away from the traditional models, and attempts were made toward a more systematic description of language use: discourse between women and men. A majority of these studies examined the interactional features of gender talk; however, great leaps were made in generalizing gender behavior in mixed conversation (Fishman 1983; West and Zimmerman 1983; Zimmerman and West 1975). This dominance or gender-based communication model, as it is known, viewed women's speech as a cooperative style, while men's style was viewed as a competitive one: language strategies were seen as a microcosm of the patriarchal society.

Today, this approach advocates that miscommunication is due to male speakers dominating female speakers in conversation. Even the most recent model, the difference or culture-based type, has its own shortcoming of focussing predominantly on white, middle-class American-English speakers. This approach claims that females and males differ on what is behaviorally and socially appropriate for them as speakers of English in various American-English-speaking sociolinguistic situations (Jones 1980; Maltz and Borker 1982; Tannen 1986 and 1990b). As a result of different styles of speech, potential for miscommunication between genders arises.

Each of these accounts assumes that both female speakers and male speakers all over the world belong to homogeneous groups, and that the speech of Westerners can be generalized to all groups of women and men. Fortunately, in the past few years language has become a feminist issue. The resulting approaches and views have helped to rid the previous research of its male bias.<sup>1</sup> But these efforts fall short in that they too fail to represent the varieties of sociolinguistic contexts in which language is used in settings around the world.

In order for more accurate reporting and results, I suggest in this paper that more attention needs to be paid to social and linguistic features *within* gender groups: the discourse patterns of women talking to women, men talking to men. And for a global understanding of language, focus needs to shift to intracultural female-specific strategies in both Western and non-Western settings. As Minister observes, "we will not be able to hear and to interpret what women value if we do not know how to watch and how to listen and how to speak with women as women. We first need to know consciously how women do communicate privately and with each other" (1991:32).

## Collection of Data

The present study, in contrast to previous research, was undertaken in the summer of 1989 in four Hindi-speaking major cities of North India: Delhi, Allahabad, Lucknow, and Meerut.<sup>2</sup> In collecting the data, I tape-recorded the natural speech of over fifty female Hindi speakers, whose ages ranged from 19 to 76, in various private and public domains of the home, workplace, and marketplace, in both urban and rural settings of these North Indian cities. The hours of tape-recorded data I collected covered various types of social situations: singing, narrative, conversations, lectures, etc. For this paper, I have extracted some of the stories told by the women--stories which I recognize as having a distinct beginning, connected episodes, and a story ending.<sup>3</sup>

## Features of Storytelling

A narrative discourse is structured to project a passage of time in some world by drawing a time-line demarcated by discrete moments at which instantaneous occurrences are reported to take place (Polanyi 1989). In this paper, I examine one form of narrative, the story, whereby the teller describes and shares with her audience (a) significant event(s) that take(s) place in some past-time world. I ask the following questions: Do both genders conform to this structure of storytelling? Do all cultural groups tell stories in the same way? Do all storytellers describe events in the same manner? Are all stories significant?

Considerable evidence exists which supports the theory that the patterns of interaction of all-women groups differ from those of all-men groups. Studies show that at a young age, girls and boys exhibit distinct features of sociolinguistic subcultures learned early and carried into later life (Maltz and

Borker 1982). Communication for girls focuses on establishing equality and intimacy in small, same-sex groups, whereas for boys interaction is based on leadered large-group play, hierarchically arranged. These "play" styles find expression in the oral narrative styles of adult women and men.

Studies show that American men's stories are linear, chronological narratives with dramatized dialogue and action, often centering around topics of current affairs, travel, sports, and themes of aggression and superiority (Baldwin 1985; Hall and Langellier 1988; Silberstein 1988). Men recount a specific, remarkable event with a definite point that they feel is worth telling. Sometimes, in making their point, men omit or alter details of their experience or reconstruct "what must have happened" to get directly to the point (Silberstein 1988). Men are more interested in opposition and action (Tannen 1990b). Their purpose in narrating is to entertain and to tell a story better than the last one. To display male assurance, men choose particular vocabulary items and slow their speech (Silberstein 1988).

In contrast, American women's stories are not necessarily chronologically arranged leading up to a definite point; rather they tend to be structured atemporally (Kačičik 1975). Women's stories recount a commonplace experience or typical circumstance rather than a remarkable event (Polanyi 1979). Often the stories are open-ended and told with non-narrative elements: descriptive details, facts, and background information. Women tell stories to connect and share an event with the audience rather than to elevate themselves or to outdo another speaker (Kačičik 1975). Women rely not on their own justifications for decisions, but cite the opinions of others (Silberstein 1988). Women tend to share personal information about themselves and talk about their feelings and relationships to others (Tannen 1990b). In women's groups, women collaboratively develop stories by relating anecdotes centered around a kernel idea (Kačičik 1975). Stories are inclined to be gender-specific and context-specific (Hall and Langellier 1988, Riessman 1988, Silberstein



1988). Talk centers on personal and domestic topics and settings among women in their roles as women (Jones 1980).

The following conversations of American college students illustrate the two distinctive gender styles of narrative. When the female and male speakers were asked a question about a death experience, they responded in styles characterized by gender-specific features very similar to those observed in the above-mentioned same-sex studies.<sup>4</sup>

Male college students, 20-24 years old, boarding house

Q: Has anyone come close to dying, before?

L: I almost did. I crawled through my, um, the barn, barn, barn floor. If it weren't for a beam I woulda fallen two stories into a cement floor. ...Yes. I fell through a barn floor, an' I thought I was gonna die an' if I would've, if I would've ah (pause) if there wasn't this beam right under it, like, um, the beam was, like, two feet under the floor, fer, uh, I don't know, I don't know why it was there. It was just (pause) it was, it wasn't like a part of the floor, really, it was just a beam holding another part of the floor which is further on..But if it wasn't there I would've fell right down, an' probably woulda (pause) broken all the bones in my body (pause)

D: I can't, the closest I think I came to death was, um, when I (pause) was in, um (pause) oh, it was in December, I was on my way down to Florida with some, two friends (pause) fer my senior trip (pause) and the tr.. we were drivin' the truck, an' the truck started spinning. [Were the roads icy or not?] Yeah, they, they were icy, but they didn't look icy. So I sped up, ya know, I was doin', like, sixty. An' all of a sudden we just lost control an' the truck... [Who was drivin'?] I was.

But we didn't end up goin' off the road or anything, but we were goin' down the highway sideways. [You were lucky.] I know it. We really were. But we were all just screamin'...

M: Yeah, I almost drowned ta death.....

Female college student, 36 years old, boarding house

L: Actually, I had (clear throat) in the last couple of years, both my parents have died. (pause) An' I remember, my father died first. He died about six years ago (pause) and I know I talked about this with you. An' when the hospital called, ya know, they wantchoo to come and view the body. Er they ask you if you wanna come and view the body. (pause) No way, I mean, I was like (pause) first of all you know, you get the news, an' it's like, yer, yer, yer already yer crying, I mean, you're reacting to the news [Right] An' you don't think of, gee, let's go down to the car, and get to the hospital, an' view the body [How can you drive? I know] I mean, you don't even think about something like that [Yeah] But I've always regretted it. And then (pause) well, I didn't at first, but when my mother died and they called, and they called me first in Detroit instead of my other family that was at the house in Wyandotte. An' they called me in Detroit, an' asked if I wanted to come and see the body and I thought, uhuh, this time I'm going to, and I went there, and I, after that, that's when I really began to regret not seeing my father because (pause) before seeing my mother dead, I mean I saw her in the intensive care with the tubes, and the, and everything [ooh] else, and [mm-mm] I mean, that was so bad. And seeing her laying there with ah just sleeping, and so I don't know. She looked peaceful.

Providing backgrounds on two different narrative styles, then, I compare the above American storytelling features to those exhibited in the stories told by the women of North India. The following oral narratives come from the corpus of stories and conversations I collected. The Indian women's narratives I look at contain many of the same features of the American women's stories: they are structured atemporally and non-sequentially; they are not always reports of the events in the sequence that they take place; and their purpose is primarily to assert group cultural identity. Unfortunately, I cannot capture in writing the non-verbal behavior exhibited by these women when they talk: the frequent nodding, locked-eye gazes, tilted heads, facial expressions, hand gestures, touching, and paralinguistic features of laughter, encouraging minimal responses, variations in intonation, pitch, volume, tempo, articulation--features which are known and used by the women in these groups, but which are not used as commonly or as actively by men in groups.

### Story One: Mrs. Lal

The first Indian narrative is told by Champidevi, "although people call her Mrs. Lal after her husband's name." She is a 76-year-old Hindu widow with "a very good memory", who lives alone in a house in Meerut. She once lived a very "famous" life when her husband, who was a servant of the government, was alive. Present at the interview are a close Indian female friend of Mrs. Lal, my Indian assistant, and I. In this particular episode Mrs. Lal relates the story of the abduction of two Muslim women by British soldiers before India's independence. The development of Mrs. Lal's story portrays an episodic narrative with a series of topics loosely held together by theme rather than by time. Her ordering of the extensive use of details and non-narrative elements is

non-linear and atemporal. Her gender-specific references provide insight into her constructing of a personal and female cultural identity.

Mrs. Lal's narrative is divided into four block units narrated in the continuous order that she tells the story: the background of the story (I), the abduction (II), the soldier's behavior (III), and finally, the storyteller's courage (IV). Each block represents a coherent whole, interpreted as a major component or sub-event of the main story line.

Mrs. Lal's full Hindi narrative is given first, followed by the English translation. In order to assist the non-Hindi user, I refer throughout the paper to the English translations (informally rendered). The bracketted items are efforts at back- channelling by the audience members present.

Mrs. Lal, 76 years old, widow, Meerut, India

Part I: ham muzaffarpur mē the bihaar mē [hm] to hamaarii bagal mē ek jaanvar aspitaal ka DakTar thaa jaanvarō. [hm] uskii koThii thii. to usmē vo khaalii thii. DakTar nahīī thaa. to *saahab inhōne* (loudly) pachattar soljar usmē laa ke Daal die. aur baRaa julm karnewaalaa thaa. unko koi saram nahīī. [British soldiers was a terrible thing.] *beTaa* nāngaa rahtaa thaa bilkul. nāngaa khaRaa ho jaaegaa o gunDa ekdam nāngaa. leDiiz log ko rupiyaa dekhaa ke kahegaa (softly) idhar aao idhar aao aise kartaa thaa o log. *hāā?* [hm] *acchaa*. to ab kyaa karegaa aise diiwaar phāād phāād ke aaegaa hamaarii taraf. do us peR ke niice baiThee hāī. to ham to piiche kii barāāndaa māī piiche ki barāāndaa se; phir thoRaa haataa thaa. aage bhi haataa thoRaa thaa phir uske piiche bahut baRaa haataa thaa. khetii hotaa thaa puuraa [hm] bāTvaare ko de dete the. vo anaaj botaa thaa usmē arhar botaa thaa kyaa kyaa botaa thaa [hm]. to...kuud kuud ke aa jaataa thaa sab. baRaa o log aaphat macaa rakkhaa thaa.

Part II: *sunte the* ye log kaa aurat ko. do aurat (ko) isTesan jaa rahaa thaa [hm] shaam kaa saat bajaa aur burhiyaa thii pacaas pacaas baavan baavan kii [hm] musalmaanii. unko mūh pe haath rakhaa. jahāā zaraa akelaa paRaa. aur zyaadaa duur isTesan nahīī thaa [hm] begampur to yahāā se duur hai [hm]. begampur dekhaa nahīī hogaa. dekhaa nahīī naa...achaa to usse bhii paas hii thaa isTesan [hm] to bicaarii se i aa rahii thīī bicaarii maamuulii ghar kii auratē thīī donō aa rahii thīī apnii bahan ko isTesan rel mē biThaa ke. jab aa rahii thīī to unko mūh mē haath dekar pakaR ke aur rikhsaa mē daboc ke aur baiTh ke do aadmii apnaa godii mē u log ko Daal liyaa. aur le aae aur mūh dabaa rakhaa hai unkaa sirf naak khulaa hotaa hai. [hm]

Part III: aur laa ke apnaa koThi kaa geT se nahīī [hāā] to hamaarii tii kaa haataa bahut baRaa thaa. to udhar se vo laa ke. aur picche le jaa ke. ek ko to phādaa diyaa. taar phādaa taar bhii lagaa huaa thaa kāāTe kaa. aur thoRaa diwaal toR liyaa thaa un logō ne [hm] to ek ko to phādaa ke le gayaa [hm]. aur hamaaraa vo maalii gaay ko saanii kar rahaa thaa vahīī peR ke nice. *hamaaraa himmat* bhii bahut thaa *beTii* [hm] *himmat hamaaraa marad* se kam nahīī thaa to u jo hai aur *ham* baccaa log ko aise kamraa thaa Dainīng ruum to khaanaa khaa rahe the vo log. *ham* nahīī khaa rahe the *saahab* aae the tab tak [hm] to vo log khaana khaa rahe the baccaa log to u bolaa ki bairaa ko aawaaz diyaa ki (loudly) bairaa dauRo. to *ham* ko lagaa ki koi baat hai khatraa [hm]. uTha ke torc phaTaa phaT bhaage hāī [*dhiire dhiire bolo*] hāā aur bhaage uske baad jo hai dekhaa vo maalii Torc leke bhaage to vo log ek aurat ko to leke phāād ke cale gae [hāā hāā]. aur ek kuud ke. maali ke paas cali aai thii chuuT ke. baccaa to usne vahīī bāās ki ek puraa jhunD khaaRaa thaa; itnaa duur usmē chup jaao usne usii mē chupaakar ke aavaaz diyaa thaa. vahīī ham ek avaaaz pe bhaage cale gae the ham kaha khatare kii avaaaz hai. to bhaage to dekhaa. *ham kahāā kyaa hai?* (softly) aurat ghusaa rakhii aurat aur nikaal ke *ham Dare nahīī*. sab bole ki golii mar de [hm] *ham bhaage* aur usko isii palaa uThaake phaTaa phaT

aur leke bhaage hãĩ us aurat ko koThi mẽ ghusgae aur ek waale Dal ke taalaa band kar diyaa. [hm]

Part IV: aur saahab in log jo hãĩ phaTaa phaT caar pããc the aur baRe baRe jute pahne hue phaT phaT phaT phaT karte aae [hm] aur us aurat ko bhii abhii tak shaayad udhar ii le gae the ki nahĩĩ apne ahaate mẽ [hm] taaR kaa peR baRaa baRa thaa. unhĩĩ ke nice...rakkhaa thaa usko. ab vo cillaatii to vo bhii cillaate the. bagal mẽ idhar ki taraf ofis thii inkaa to hamne ofis mẽ khabar bhejaa sab aadmii aakar khaRaa ho gayaa to us aurat ko le gae kudaa ke udhar a koThi mẽ apnii. aa koThi mẽ le gae thoRaa der to vo ciikhataa rahaa aur ye be cillaate rahe jisse koi aavaaz naa sune [hm] phir uskaa aavaaz band ho gayaa. tab hamne caT fon uThaa ke fon kiyaa karnal mejar sab cale aae dhaaR dhaaR [hm]...[samne se] hãã. to saahab...ofisar the vo log bhii Darte hãĩ [hm] ham kahaa aise do leDiis thaa aise aise ek to bacaa hai ek ko...mẽ bahut der se ro rahaa hai ab aavaaz nahĩĩ aataa hai [hm] u log...kiyaa hogaa kuch bhii kiyaa hogaa ye uparwaalaa jaantaa hai to phaTaaphaT...ki ham jaraa cek kari jaae wahãã. to khujaa hai vahãã pe. pataa nahĩĩ u log to...[hãã] the na millii bhii ho to bataayaa nii hogaa ki wahãã to kuch milaa nahĩĩ hai aur do kam thaa wahãã pe soljar log. to puchaa ki do kahãã gayaa hai. peT mẽ darad uThaa thaa aspital gayaa hai....

Part I: We were in Muzaffarpur in Bihar. There was a veterinarian, animals; his residence [hm] was next to our house. It was empty, the doctor wasn't there. [address to audience] (loudly) 75 soldiers were kept there. They were big oppressors (there was going to be cruelty) They were not at all ashamed. Shameless. [British soldiers was a terrible thing.] They used to stand stark naked. They will stand naked; they were rogues! They will show money to ladies and say (softly) come here, come here. This is what they used to do. Oh these people! What do they do? Yes? [hm] Good. They jump the boundary wall



and come to the other side. Two are sitting under one tree, two are sitting under another. I was in the back verandah, from the back verandah. There was an open space and in front of the small open space was a very big space. There we used to grow things like grain, corn--What all we used to grow! They (soldiers) used to jump and come to this side. These people created lots of problems.

Part II: *It was heard* these people...two women were going to the station. [hm] It was seven in the evening, both were old, 50-52, [hm] Muslim women. The soldiers put their hands on their (women's) mouths. The station was not that far. [hm] Begampur is far from here. It was near to Begampur. You might not have seen. It was right near that; the poor things (the women) were coming from the station. [hm] They were from ordinary families. Both were coming from leaving their sister on the train. When they were coming back, they (the soldiers) caught them and put their hands on their mouths, pounced on them and made them sit on their laps, then put them in a rikshaa. They took them and covered their mouths; only their noses were left open. [hm]

Part III: And they brought them, not through the gate, to the back side of our residence. There were big trees. From there they (the soldiers) took them (the women) to the back. Then they made one of them (the women) jump to the other side. They had broken up the wall. These people made one of the women jump over. And our gardener was giving food to the cow under the tree. *I* was very courageous. *My courage* was not less than a man's courage. And the children were eating food in the dining room. I was standing behind. *I* was not having food because *the saahab* had not come home yet. [hm] The children were eating and then the gardener told the servant (loudly) "Bearer run". I guessed that there is some danger. I got up, picked up the torch and ran. [speaks slowly]

Yes. After that I saw the gardener with the torch running. The people (the soldiers) took one woman with them and one (woman) freed herself and jumped and came to the gardener. There stood stored bamboos. He (the gardener) said go and hide there in the bamboos. He hid her there, I said what is it? (He said) they caught a woman. I said (softly) take the woman out, I was not frightened. Everybody said they (the soldiers) will shoot her. I ran and hid the woman under my veil, I ran towards home and got into the house and locked the door.

Part IV: And [*audience*] then all the others (soldiers) came. Quickly four or five of them came with big big boots--doing phat phat phat. And the other woman was perhaps taken to the other side or she was still on our side under the tree. She was put under the tree. When she used to shout, they (the soldiers) all also used to shout. On one side was my husband's office. I sent him a message. All the men came and stood there. They took the other woman into their house. After taking her into the house she cried for some time. When she used to cry, they (the soldiers) also used to cry so that no one could hear her voice. After some time she stopped crying. I immediately phoned everyone. Colonel, Major, all everyone. Colonel, Major, all of them came. [hm]...[in front] Yes. Even though they were also officers; they also were frightened. I told them there were two ladies, I saved one and one is with them (the soldiers). She was crying for a long time but now there is no sound. What'll happen? Something. I don't know what they did to her, god knows that immediately they said we will go and check there. They searched there but I don't know those people could not find anything. There were two soldiers missing. So I asked where have those two soldiers gone. They had a pain in the stomach so were taken to the hospital.

The above story told by Mrs. Lal is part of a larger narrative segment. She had been talking for over a half-hour before she introduced this particular event. Previous to this topic she was reminiscing about her life in India after World War II. Her previous topics included discussion about her husband's profession, an incident when she was lost as a child, and an anecdote about her relatives. Immediately prior to this story, Mrs. Lal remembered that she had seen much turmoil in 1947. She did not hint that she was going to talk about a particular incident from that time frame, but she later involves her audience in a tale of abduction.

Mrs. Lal's story begins with her providing a sizeable amount of background information, setting up the physical and psychological time and place, and describing the major participants. In Part I, the narrator first gives the location of her residence in the city of Muzaffarpur in the state of Bihar in an old residence of a veterinarian, where seventy-five British soldiers are stationed. She then makes moral judgments and critical evaluations, portraying these British as unclothed, shameless, lustful oppressors, emphasizing their bad character and confirming their potential ill-behavior soon to come. She describes their uncouth conduct, such as their jumps over the boundary wall, with further details, before she returns to the activities of the soldiers at the end of Part I. She remains accurate and faithful to small matters. From the traditional, Western point of view, at this moment the listener has no idea of the direction the narrative will take.

In Part II, Mrs. Lal prefaces the major event of the abduction with "It was heard", not taking any responsibility for knowledge of the incident, although she plays a major role later in this scenario. Afterwards, she offers personal information about the two abductees: women, 50-52 years old, Muslim, their destination to the train station at 7 P.M. Then suddenly, she states that the soldiers (of Part I) put their hands over these Muslim women's mouths. The storyteller quickly shifts to the location of the station where this occurrence

happened: Begampur. She, then, corrects herself--the women were coming from, not going to, the station--before introducing more information on the ordinary family backgrounds of these women. She repeats that the women were coming from the station after taking leave of their sister. She re-emphasizes the errant actions of the British soldiers, then adds further information about the abduction: only the women's noses were left open.

In Part III, Mrs. Lal shifts to a different location, that of her and the soldier's residence area, where the soldiers bring the women after the abduction. Again her story is filled with numerous details: the gate, the trees, the gardener feeding the cow, her children eating dinner, her presence nearby, her intense anticipatory waiting. At the end of Part III, the storyteller notes that she involves herself in the action of picking up a torch and hiding one of the women under her veil.

In Part IV, Mrs. Lal relates the desperate state of the abductee on the soldiers' grounds and her own desperate attempt to save the second Muslim woman by calling in high-ranking military officials. Although the officials search the soldiers' grounds, Mrs. Lal says that they did not find the woman, but that two soldiers were missing due to their having stomach pains.

## Analysis

In this particular story, the storyteller, Mrs. Lal, structures a particular incident in a non-sequential, non-temporal manner. She presents her information moving not from distant to most recent incident, but by preceding each sub-incident with details which lead up to the main event. For example, in Part II she makes a statement about the abduction, then digresses providing details of the location (Begampur) and background information on the Muslim women, then returns to the abduction incident. Her narrative strategy develops

in a cyclical fashion. She digresses and introduces new information all along the way--a Western observer may say, presenting trivial details and accuracies irrelevant and confusing to the point of the story. For example, in Part I, Mrs. Lal details the types of cereals she grew in her garden; in Part II, the age, religion and family backgrounds of the abducted women; in Part III, the actions of the soldiers, the gardener, her children and herself immediately after the abduction; and in Part IV, her courageous efforts to free the abducted Muslim woman.

At times these fine details do not directly relate to the preceding or subsequent points. For example in Part III, after relating the information about her gardener giving food to the cow, she inserts information about her own courage: "I was very courageous. . . my courage was not less than a man's courage"; she then continues relating information about her children, self, and husband. Much later, she returns to her fearlessness.

This non-sequential, non-temporal, digressive strategy is a typical tendency in the North Indian women's narratives that I have examined. Where time and linear sequencing are critical within the Western cultural context, other meaningful elements help to reconstruct the accounts of Indian female storytellers. For example, in another oral interview, an elderly woman structures her story in such a way that the details and events are always in relation to one significant point of reference in her life, that of the placements of coldstores her husband set up throughout India. The oral narrative of Shakuntaladevi which follows, also exhibits the structuring of the story around the significant event of the death of the storyteller's brother.

Indian scholars have suggested that this aspect of narrative is similar to that in the Sanskrit drama, in that the ends of the narrative are a tying together of the diverse threads (Kachru 1982). However, in these women's narratives, many of these threads are left unattended. In fact, in this particular narrative it is questionable whether Mrs. Lal finishes her story: the listeners do not know what becomes of the abducted Muslim woman. She simply ends on the note that no

one knows what happened to the abducted woman and to the two soldiers who were taken to the hospital for stomach pains. To illustrate further, I refer to the oral interview of a young woman who recounts an episode in her childhood when a man follows her home from school. The listener never knows how she circumvented the harassment nor what happens to the pursuer. After relating the incident, she easily moves into a new topic: her father ordering her to wear a head covering to school.

What the point of a story is and how that point is shown is a function of cultural convention (Polanyi 1979). In other words, narrative style is associated with the speaker's cultural identity and the presentation of herself. First, it is important to consider the relationships among the people present, their interest in each other, and the understanding of each other's position and personality, in order to understand the degree of involvement of the interlocutors. When telling this story, Mrs. Lal is in the company of friends who share something of a common worldview. She feels comfortable telling stories, and to her it is irrelevant that only she knows the story event and the characters involved, or whether she organizes the development of this story in a linear, chronological fashion, or whether the story line is necessarily complete. Instead, the development of this particular story and other Indian female narratives, as well, can be explained in terms of what is socially and personally relevant and interesting. The real point of Mrs. Lal's story is not the soldiers, the Muslim abductees, or the storyteller's courage, but the connection Mrs. Lal, the storyteller, makes with her audience.

One culturally significant inference Mrs. Lal makes is that about being a woman. When Mrs. Lal departs from the major points (the soldier's behavior (Part I), the abduction (Part II), her courage (Part III)), she is actually drawing attention to the material which surrounds them. She includes details, accurate information, and completeness to reveal personally relevant information: how she and this event fit into the South Asian society. Because the family and



social orders supersede the individual order or personal gain in Indian society, she minimizes any attention drawn to her, and magnifies her role/duty within the society. She makes subtle references to Indian cultural norms particular to her gender and relies on the listeners to interpret the story and put the pieces together within this perspective. For example, Mrs. Lal reminds her audience throughout the telling of her story that she is a traditional Indian woman/wife, for Indian women are harshly judged for behavior which drifts from the cultural norm. She does not appreciate viewing naked men; she is Hindu not Muslim; she fulfills the duty of marriage and children; and she represents the traditional devoted mother and wife: she feeds her children and does not eat before her husband does, wears the traditional dress and head covering, and so on. She makes it particularly clear that she exhibits the exemplary role of a Hindu wife and mother, a motivating, guiding force for many Indian women. In general, the female interlocutors rely on the sharing of such values as cultural attitudes, social identity, and genderhood. Throughout the telling of the story, not only do the listeners gain the appropriate meaning and impact of the story, but the teller also recreates a sense of the full experience for herself.

Mrs. Lal maintains this aspect of formality and traditionality by other means as well. In most parts of the world, women's achievements are described in terms of their role in the domestic sphere as mother, wife, and daughter. To reflect this aspect of Indian society, speakers use kinship markers to address and to refer to family and non-family members. This notion of group welfare is reinforced in the women's extensive use of kinship terms and relational markers in many of the oral narratives. Family members, neighbors, coworkers, and strangers are rarely named by female speakers; instead they are referred to by kinship terms, by occupation, or by other defining characteristics, features, or activities, i.e., Mrs. Lal even embeds familial characteristics about the Muslim women in this framework. Traditional Indian women refrain from referring to their husbands and elder male family members by name, but make reference to

them with terms such as *hamaare aadmi* "my man", *rehnewaale* "the one who remains", or even nowadays *hamaare hasbānD* "our/my husband". Mrs. Lal never refers to her husband by name, but instead uses honorifics such as *saahab* 'honorific sir' and the Hindi third person plural pronoun *ve* 'they' and possessive pronoun *in* 'their'.

Social group identity and individual reduction is further strengthened by Mrs. Lal's use of the inclusive first person plural pronoun *ham* "we" to refer to herself (e.g., *hamaaraa himmat* "our courage", *ham kahaa* "we said", *ham bhaage* "we ran" to convey the first person singular sense of "I," "me," or "my"). Moreover, to avoid risking losing her identity as a good wife and mother, Mrs. Lal presents numerous details relying on the same social, ethnic, and gender backgrounds of her audience, for, at the same time, she portrays herself as unconventional. She exhibits courageousness, a sign of independence, a value not expected in Indian society, especially in women. In fact, she had the courage of a man, not of a woman, to carry the torch into the night to help the Muslim women to escape.

The storyteller exhibits personal involvement with the subject matter as well as with her audience by making verbal contact with the audience. Mrs. Lal addresses her audience members with Hindi kinship forms such as *saahab* "sir", *beTaa* 'son', *saahab inhōne* "evocative", or directly answers questions from the audience. This verbal strategy, too, conforms with the social notion that exceptional individual ability, especially among females, is rarely encouraged in Indian society. This aspect of Indian female storytelling appears to be similar to the cooperative style found in American women's speech.

It seems, then, that Indian female narrators use storytelling as a social act, to share events and experiences with each other. These women tell their stories not necessarily to express remarkable events, but to make connections with their audience for their emotional and cultural interest, and for the audience and teller to "feel" her past experience.

## Story Two: Shakuntaladevi

In the second short Indian narrative, Shakuntaladevi, a 40-45-year-old worker in a household in Meerut, talks about her brother's death. She, too, structures her narrative in a non-sequential, cyclical manner. For her, the true point of the story is not necessarily her brother or his death, but the cultural significance of her role as sister in the Indian society.

Shakuntaladevi, 40-45 years old, household servant, employer's house

Q: aapke bhaai bahan hãĩ?

hãã. mere bhaai hãĩge. ek bhaai meraa. in dinõ mẽ aaj ke din maraa thaa. [ho] kabaaRiyõ kii sevaa kartaa kartaa mar gayaa tha. [acchaa] uskaa laRkaa vo lene gayaa thaa. kabaaR bharne gayaa thaa [hãã] to vo kahan lagaa ghar pe....thoRe duur TenT gaRe hãĩge jisjine kabaaRiyẽ rahuẽ hãĩ [hm] unkaa khaanaa piinaa bane. [hm] ek din to unkii sevaa kariyaayaa. [hm] dusre ke din ken lagaa aaj mẽ aur calaa jaaũ unkii sevaa kariyaãũ. [hm] nahaa ke dho ke, roTii oTii khaa ke. apne Dhor DhaNga dekh ke ek bagal mẽ katta dabaa liyaa aur cal diyaa. yahãã se jaise rel kaa phaaTak hogaa baRii duur. [hm] inii duur the to calaa gayaa jaake usne ek baalTii paanii bharaa thoRe se aaluu kaaTe. [hm] thoRe se aaluu kaaTe to kabaaRiyõ yũũ kahan lage ki mujhe paanii pilaa do. [hm] bas bole mujhe paanii pilaa do bas. meraa bhaai jo thaa paanii pilaan lagaa. [hm] yũũ ke mẽ to unjarii se piyungaa. [hm] unne nal ki hatti calaai aur unjarii se paanii bhar ke pilaayaa bas piiche ko yũũ gir paRaa [hm] nikal girtii praaN nikal gae nahĩ sei gaii thii mẽ apne bhaai ke aajkal hii maraa thaa vo.

Q: Do you have brothers and sisters?

Yes. I have brothers. One of my brothers died at this time. [ho] He died when he was serving kabariyas. [okay] His son went to fill the kabar. [hãã] He told us that at a distance the kabariyas have set up tents. [hm] So one day more I will serve them at that place. [hm] Next day he told us that he is going to serve them. [hm] He bathed and had food. He finished his household job looking after the animals and he left for the tent. It was very far--as far as the rail station is from here. It was that far he went and [hm] filled a bucket with water. He had cut some potatoes. [hm] When he was cutting potatoes one of the kabariyas said that I want to drink water. Please give me water. [hm] My brother started serving the water. [hm] He said I will drink from the small tap. [hm] He fixed the tap and starting pouring the water. At that time he just fell down [hm] on his back and died instantly.

Shakuntaladevi states that her brother dies when he gives water to a pilgrim en route to a holy city, then details the event. Some non-narrative elements and unrelated information are interlaced in the narration of the event. In the end, however, she circles back to his death. Although the question asked of her was "do you have brothers and sisters?", she does not directly answer this question. Instead, she chooses to relate an incident concerning her brother.

What is most striking about this story is that the listener plays as active a role in the storytelling as the storyteller herself. Throughout the discourse, the listeners accord Shakuntaladevi the right to establish a new topic, and volunteer supportive comments throughout her talk, in the form of *hãã* 'yes', *hm*, *achaa* 'okay', and other discourse particles (which Schiffrin (1987) shows to be a complex pragmatic issue in English). The storyteller too maintains contact with her audience by asking the listener if she understands (*hãã?* 'yes?'), pointedly addressing the listeners with kinship terms (*beTaa* 'child',

*bhaaii* 'brother', *saahab inhōne*), and introducing other non-story parentheticals, exclamations, hesitations, etc. Although not apparent in the written text, long moments of silence, wordless looks at audience members, and dramatic whispers are acceptable behaviors in the Indian discourse. These signs of involvement and cooperation between speaker and listener are exhibited in many of the narratives, including Mrs. Lal's narrative above.

By using these direct appeals, the storyteller is making contact with her listeners, and the listeners with the storyteller. The storyteller, in particular, is moving the interlocutors from the past when the event occurred, to the immediate present. In other words, the teller projects active listening. This, too, appears to be similar to the collaborative strategies used by American women in storytelling (Kalčik 1975; Hall and Langellier 1988).

That Shakuntaladevi is asserting more about her cultural group identity than the story surface allows is clear if we look at the cultural significance of the lifelong bond between the brother and the sister in Indian society. A sister's relationship with her brother is a very special one of love and adoration. A brother provides protection and concern for his sister from early childhood to widowhood. Because of such brotherly reverence, Shakuntaladevi details the positive attributes of her brother which lead up to his death, not his death itself. No act is more worthy or rewarding than serving pilgrims, those who make the arduous trek to the holy waters of the Himalayas. By relating her brother's good deeds, Shakuntaladevi reveals her love and adoration for her brother--the dutiful role a sister plays in the Indian culture.

## Topic

As a final comment, to show the influence of culture on these women's stories, let me describe the topics covered by most of the Indian storytellers. Although significant stories are expected to be about deviations from the

expected norm, for these women, they are not. The major subjects talked about by these women are not extraordinary. Characteristic descriptions by women include retellings of religious ceremonies, marriage rites, rituals, childhood experiences, family happenings, and other themes socially significant only to Indian women.<sup>5</sup> The most common characters in these personal talks are their children, for whom they have high aspirations, and their birth family, with whom they have fond childhood memories. In particular, many stories involve their father and brother, those who prove to be security, safety, and status in their lives. No woman that I interviewed freely talked about her husband or the elder males in their households. Many women, when asked about their husbands, responded "do I have to talk about Him?" The male family members usually are held in high regard by the women, and generally it is considered a social taboo for them to talk about their husbands. Throughout the interviews, the women often covered their heads with the tails of their saris when in public or in the presence of a male. In other words, both linguistically and behaviorally, the Indian woman tells her story to confirm the correctness of her behavior and actions as a woman in India. She is confirming the way the world is for her.<sup>6</sup>

## Conclusion

In conclusion, then, it appears that the style of storytelling by Indian women in Hindi shares similar characteristics with the narrative style of American women in English. Indian women's stories are structured in a non-sequential and atemporal manner. Women tend to talk their way through the story. Female narrators develop their stories by providing specific details, accurate information, and cooperative talk, and by using reported speech, repetition of key elements, and suspension of action. The purpose of their stories is to share



female experiences with the audience and to assert group identity and solidarity--however ordinary the event may seem.

Such an approach to language raises a number of issues and questions about language and gender. First, there is no doubt that biological sex and social gender are important categories in all societies; the correlation of linguistic variation with sex as a social variable is a universal feature of all speech communities. But are there common life experiences or gender-specific circumstances particular to women which affect the language in both form and function similarly across cultures of the world? Is it that male and female language differences are directly related to the universal oppression felt by all women and girls of the world? Or are language styles a reflection of subcultural differences?

Second, such an approach has a threefold purpose: it elevates the importance of language in every society in every way; it raises social consciousness concerning the preconceptions and prejudices which surround women and their style of speech; and it introduces a non-Western perspective to a Eurocentric belief system. What this means, then, is that scholars need to carefully examine the critical role language plays in the struggle for gender equity.

And third, such an approach emphasizes the importance of how language is used differently, not only with regard to the participants, but in terms of the assumptions that speakers hold in discourse. Such assumptions vary not only from culture to culture, but from gender to gender. Hence, misunderstandings and misjudgments between ethnic groups and gender groups are none too uncommon.

Until we realize that studies have oversimplified the descriptions of speech communities, and unless researchers look at women's talk within a new perspective, the common linguistic stereotypes which have survived from the English folk-linguistic heritage of Jonathan Swift and later Otto Jespersen, will

continue: women ramble and never get to the point; women don't know what they're talking about; women talk too much and say so little; or women don't know how to tell a joke. There is an obligation for us to understand and appreciate the diverse ways of organizing experiences in narrative, and to look beyond our own cultural style. Unless we analyze storytelling strategies within the cultural context of gender, women's speech will continue to be devalued and deemed less worthy of examination. The stories told by Indian, American, and all women on the globe, then, are important not in terms of the content necessarily, but in terms of their function and what they tell us about how women around the world talk, how they relate their life experiences, and how they develop the significance of their storytalk.

## Notes

The research for this study was carried out in the summer of 1989 when I was a Senior Fellow on an American Institute of Indian Studies Faculty Fellowship in India. I am grateful to my research assistant, Poonam, for assisting me in collecting and transcribing my data. I am also thankful to those women of North India who cooperated with me and made my stay in India a story worth telling.

1 See the volume *Feminist Critique of Language* edited by Deborah Cameron (1990) for a collection of writings on language, gender, and feminist thought.

2 The linguistic heterogeneity of India is vast. Within India there are more than 1,000 mother-tongue varieties; the Indian constitution recognizes fifteen languages, a figure which reflects about ninety percent of the population. Hindi is an Indo-Aryan language spoken predominantly in North India by as many as 300 million native speakers. Some eighty-six percent of the inhabitants of this area are Hindi speakers. India's so-called 'three-language formula' includes a given speaker's mother tongue, Hindi, and English. Hindi and English are used for pan-Indian and interstate correspondence and communication.

3 See the volume *Women's Words*, edited by Sherna Berger Gluck and Daphne Patai (1991), for an excellent collection of writings devoted to problems feminist researchers encounter when collecting women's oral histories, and relevant issues in research methods and models, especially for women who conduct interviews differently from the male oral historian norm (Minister 1991).

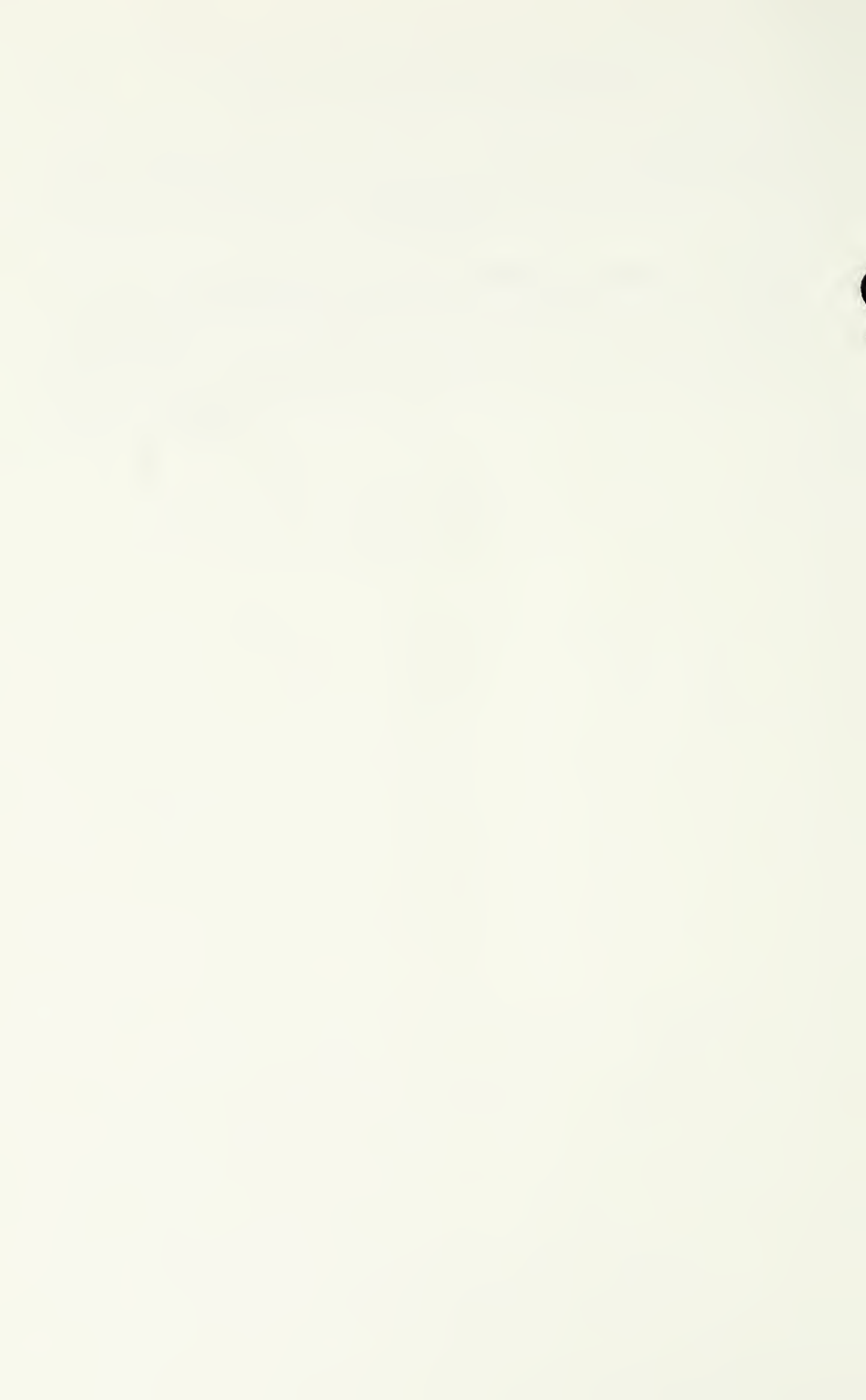
4 I must thank Susan Levitan, a student at Michigan State University, East Lansing, for collecting this data in the spring of 1987.

5 See Edwards and Katbamna (1988), Jacobson (1986), and Wadley (1986), among others, for perspectives on the role of women in North India.

6 It would be interesting to confirm that male narratives, too, relate to the male experience. Derne (1991) has examined conversations among Hindu Brahman men in India and states that "Hindu men's talk about women is designed to bolster male power."

## SECTION 3

### Gender and Power in Classroom Interaction





## Joining in Academic Conversation: Gender, Power, and the Apportionment of Turns at Talk

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Learning the appropriate use of the voice in academic conversation requires extensive training in the modes of conversation sanctioned by academic discourse communities. Participants in the academy must learn the approved styles, vocabularies, citation formats, organizational conventions and patterns, and length of turns or text. The classroom is one place where students begin to make the transition between the two different styles, the largely oral dialogic voice and the largely written monologic voice. Many teachers and theorists seeking to activate and enliven student participation in college classrooms, by changing students' roles from passive receivers to active producers of knowledge, have called for more class discussion that reflects what students will eventually begin to write. As Bruffee (1984:642) notes, "we should contrive to ensure that students' conversation about what they read and write is similar in as many ways as possible to the way we would like them eventually to read and write. The way they talk with each other determines the way they will think and the way they will write."

While the intent of Bruffee's work is to celebrate and recommend classroom interaction, his ideas, if taken too literally, could stifle the very conversation they set out to foster. We cannot ignore the significant differences between speaking and writing; a successful "conversational classroom" may have several features

quite antithetical to the monologic form that a student's paper will eventually take.

Engagement in a conversation means turn-taking, sharing the process of constructing the dialogue, with turns as simple as nodding one's head or as complex as a carefully reasoned proof. Many classrooms are largely monologic: the professor lectures, while the students listen, perhaps asking short questions of clarification at the end. What would real conversation in the classroom sound like? What goals would it serve? What problems prevent conversation in the classroom, and how can we surmount them?

One goal of classroom conversation is the exchange of knowledge through the spoken medium. The breath pauses and turn-lengths of speech allow for quick updates if the hearer doesn't understand the speaker. This immediate opportunity to talk back, to question, to participate actively in the transfer—and in some cases, the construction—of knowledge can create a lively environment quite distinct from writing.

I will argue in this paper that another appropriate goal for a dialogic classroom is equal access to the floor, and that the teacher must pay attention to the proportionate use of the floor space, accommodating as many voices as possible. The long, monologic turns required for writing are unsuited for classrooms where conversation among many participants is desired. Extended or numerous turns taken by one member of the class may occupy too much floor space and thus close out others who wish to join in the conversation.

One purpose of getting students to talk in class is to make them active partners in their education. But several problems make that participation difficult; these can be grouped into three areas:

- 1) Problems may arise from the structure of the class itself. Often, a huge physical, social, and intellectual gap exists between teacher and student, and all talk is carefully mediated by the teacher, often through a fairly rigid pattern of

Initiation of the question by the teacher, Response by the student, and Evaluation by the teacher (IRE) (see, e.g., McHoul 1978).

The class is established as a setting for talk based not only on the goals and individual style of the professor, but also upon the physical setting of the class: Are the seats fixed or moveable? Is the room too warm? Is the hour optimal? Is the class large? (Of course, not every class can be truly conversational; constraints of size, time, and intention limit extended conversational interaction to smaller classes of, say, up to thirty students);

2) Problems may arise from the structure of the society. Here, such issues as gender differences in style, and power imbalances are created, reflected, and reinforced in the classroom; these will be discussed in greater detail below;

3) Problems may arise from the structure of one's personal style. This is actually an amalgam of the two previous factors plus familial and ethnic/cultural characteristics. Relevant here are the students' interest in the subject, their desire to be in the class, and their preparation for the class. These are counted as personal here, because they are constituted and instantiated somewhat differently in each student in the classroom.

In this paper, I first consider some previous work on the construction of conversation both inside and outside the classroom, and on the influence of gender upon that discourse. This research documents a historic pattern of unequal access to the conversational floor. Seeking to change these patterns and move towards equal access, I experimented with turn-taking in one of my classes. I present the results of an experiment in which I modified the class conversational patterns in an attempt to create an evenly apportioned conversational floor. The key word here is *apportionment*: the attempt to give a proportionate access to the floor to each member of the class by monitoring the number of turns taken.

This study raises important issues of how gender affects access to talk, and calls into question several of the goals of class conversation that our present

classes and educational theories embody. The results of this experiment apparently contradict previous findings (e.g., Sadker and Sadker 1990, 1994; Sarah 1980; Spender 1980a, 1980b; Swann 1988) that women talk less in class. But this can be attributed to a set of hospitable conditions that created a more equitable apportionment of turns among the class participants. Many of these conditions can be replicated in other classrooms in order to create an atmosphere which welcomes more diverse participation.

## Previous Research

### Theories of the Construction of Conversation

In the traditional sense, "conversation" is seen as an oral behavior. The ground-breaking model for turn-taking was formulated by Sacks, Schegloff, and Jefferson (1974), who provide a schema for how turn-taking works. However, subsequent studies (e.g., Edelsky 1981; Edmondson 1981; Woods 1988) have critiqued the Sacks, Schegloff, and Jefferson model as highly idealized; Edelsky and Woods point out that gender creates an uneven "floor," so that turn-taking becomes a tool in the hand of the powerful—frequently, men. But Edelsky underlines how the floor may also be collaboratively constructed (her "F2" setting) where the speakers are "on the same wavelength," or are engaged in a free-for-all where many voices contribute; this is analogous to the dialogic mode mentioned above. This disrupts the more traditionally described one-at-a-time turn-taking that creates a singly-developed floor (her "F1" setting); this pattern may develop into the monologic mode.

Another problem with the idealized conception of the floor that may affect turn-taking behavior is that women are perceived as talking too much, occupying the floor disproportionately, even when they, in fact, are saying less

(Kramarae 1981; Spender 1985; Swacker 1975, 1976). Cutler and Scott (1990) provide new evidence from psycholinguistics that the amount of talk by women is still misperceived in proportion to its actual amount. This demands that we monitor more closely and accurately actual speech as it unfolds, in order to counter the development of false assumptions.

In recent years, the analysis of discourse has led to the understanding that it is, in some sense, all conversational (e.g., Bruffee 1984; Nystrand 1986, 1989). Biber (1988), Chafe (1985), Chafe and Danielwicz (1987), O'Keefe (1981), Schafer (1981), and Tannen (1985) have shown how discourse ranges across a continuum from informal oral talk to formal written texts. Chafe and Danielwicz (1987), for example, illustrate the range of modes from informal speech and informal letters to formal academic lectures and academic papers; many of the differences between oral and written communication can be constructed by shifting the weight of variables such as ego involvement, formality, syntactic complexity, or lexical choice.

### Theories of Classroom Interaction

Other researchers have focused on the uses of language in the classroom, examining issues of engagement and power as well as gender. Some begin from the theoretical level: how should our classrooms operate to provide forums for the best education of students? Bruffee (1984) urged a "collaborative learning" model, claiming that the conversation of students in class profoundly affects their conceptions and writing: "The way they talk with each other determines the way they will think and the way they will write" (p. 642).

Many educators advocate the "active engagement" model, where students' participation in class is assumed to be essential (e.g., Tompkins 1990; Wertsch and Toma 1990). Others defend the "lecture" model as still having a worthy

place for the transmission of certain forms of knowledge (e.g., Corder 1991). Some, such as Bleich (1988) find the traditionally respected Socratic method problematic. Indeed, the Socratic method can be coercive, manipulating students into a position predetermined by the teacher.

This talk of engagement within the class is closely allied with questions of who holds power in the classroom. The very common IRE (Initiation—Response—Evaluation) pattern clearly demonstrates the power of the teacher. Cazden (1986), McHoul (1978), Mehan (1985), Stubbs (1983, 1986), and Wertsch and Toma (1990) point out the ubiquity of the IRE, which is used by teachers to test information that students know or to draw out students' thoughts. However, it is also an influential organizer of the classroom conversation pattern, wherein the teacher gets twice as many turns as the student. Any classroom where the teacher chooses the topic and books and sets the syllabus cannot avoid questions of power. Though we may never be able to fundamentally change the educational process and its inherent power differential between those who know and those who are learning, the point of educational reform (e.g., Freire 1983) is to share this power by encouraging students to participate in the creation of discourse in the class. In any case, the assessment of what "counts" as participation in class is itself a difficult and subjective art, not a science.

### The Influence of Gender on Conversation in the Classroom

Power may be played out in another way: gender may often contribute to imbalances in the classroom between those who feel empowered to speak and those who feel marginalized. Kramarae and Treichler (1990) report from their study of a graduate seminar at the University of Illinois that men, more than women,



express more interest in teachers who organize most of the class content through lectures and who encourage questions and comments from individual students. . . . [T]he men's focus on the importance of debates about ideas suggests a priority on interaction based on individual expertise and presentation and elaboration of abstract comments. The valuing of this kind of knowledge acquisition is compatible with a commitment to relatively nonpersonal, hierarchical classroom interaction. (p. 55)

Kramarae and Treichler compare this attitude with that of the women in this class who "are more likely to report enjoyment of classes in which students and teacher talk in a collaborative manner, rather than in student-to-teacher and teacher-to-student monologues" (p. 54). The women in this study often felt excluded from the conversations in this class, which was led by three male professors.

Evidence certainly indicates that in many other ways, the classroom is not a welcoming environment for women (e.g., Krupnick 1985a, 1985b; Maher 1985; Sadker and Sadker 1990; Sarah 1980; Spender 1980a, 1980b; Swann 1988). This reflects the general problem of women's access to an equal conversational floor (Fishman 1983; West and Zimmerman 1983; Zimmerman and West 1975).

Thus, classroom talk reflects the external world's conversational patterns. Tannen (1990b) reports that women are often much more comfortable with mutually constructed exchanges and "rapport" talk (dialogic discourse), while men enjoy holding forth in "report" talk (monologic discourse).

But voices are muted or lost when classrooms are monologic, or where only a few students engage with the professor. From her experience with videotaping and analyzing many classroom interactions, Catherine Krupnick warns that if students are not engaged in some active, vocal way in the first three days of a new school term, they will learn that they can get away with

silence; thereafter they continue in silence throughout the rest of the term (Krupnick, personal communication). If women do not feel part of the conversation, they may feel more and more disenfranchised from their education as time goes on.

### Why Should Students Talk?

Many students, unaware of these issues, ask why they have to talk in the class at all. Students report that they view class as a "loading zone," the place for the direct transfer of knowledge from teacher to student, where a student can get the gist of what an expert (the professor) thinks is most significant within an overwhelming mass of material (Morgenstern 1991; Remlinger 1991). They feel that the teacher should not be interrupted by stupid questions or comments from those who are not fully prepared to challenge her on the highest levels. Not every student comes to class equally interested or prepared, or with something useful to say or ask; some merely attend a class because it is a requirement in their major. So why encourage class talk? Why waste time on students with little interest in the topic?

However, it is not only those who are conscripted or unprepared who do not speak. The ranks of the silent frequently include the brightest students in class or those who are closed out of the conversation by other students with different social backgrounds. Some students have quicker response times. These "hares" may override the "tortoises" who, for a variety of reasons, may take longer to respond to questions. These relative speeds are not coextensive with intelligence or interest, but may reflect socialization for longer pauses between comments (e.g., shorter for some urban North easterners, slower for some rural Midwesterners or Southerners; cf. Tannen 1984.)

Thus, the conversation in a class may exclude not only the voices of the unready but also those whom we want to hear from and encourage. How do we know if these students are unprepared in the first place unless we talk with them? Many of the quiet students turn in wonderful, insightful papers, but their conversation is only with the teacher; it is lost to the rest of the class. Sometimes the freshest ideas come from those who have, for several reasons, been muted, not for lack of things to say, but more because of socialized exclusion. Other students are very sensitive to the level of expectation; if we expect or allow them to say nothing, that will be their contribution. If we expect discussion and ask them to produce their best work, they often will surprise themselves by doing so.

#### Experiments in Modifying Classroom Conversation

To better facilitate classroom conversation, many academics have been experimenting with ways to challenge inequities in the classroom. Some work to empower students generally, while some work to improve the lot of women in particular. These efforts seek to de-emphasize the leadership role of the teacher (Culley 1985; Freire 1983; Friedman 1985); to set up alternative forums (freewriting, electronic bulletin boards) where gender may be less visible, and perhaps thus less influential, and where turns may be as long as one wishes (e.g., Cooper and Selfe 1990); to encourage collaborative creation (Bruffee 1984; LeFevre 1987; Lunsford and Ede 1990; Reither and Vipond 1989; however see Trimbur 1989); to create new forms of non-combative discourse (Lamb 1991); or to encourage different values in the written forms that break down monologic barriers (Bridwell-Bowles, in press). The following sections detail another experiment in changing the patterns of classroom discourse, in order to bring out silenced voices.

## A Conversational Classroom: Some Assumptions and Goal

How do we make the classroom truly conversational? One method of opening the floor up to diverse voices is to distribute access to the floor so that many have space to respond, rather than just turning to the habitual turn-takers who raise their hands or call out comments.

Apportioning access can mean counting the number of turns, setting limits on the number of turns or total time used by any one member of the class, or otherwise monitoring the students to control the volume and encourage the quiet. For instance, students may be asked to contribute (at least) one good comment per week, keeping track of their contributions by marking a card and turning it in every week to the teacher when they feel they have made a substantive contribution to the class discussion. In contrast to the Socratic method, the students themselves choose the timing of their remarks for when they are most prepared or comfortable.

The point is not that we make every class discussion equally apportioned so that each member of the class gets all and only her strictly proportional percentage of the discussion time each week, but that we try to find ways to get both students and teachers accustomed to hearing the perspectives of various voices raised in the most constructive ways we can imagine.

Perhaps the very unnaturalness of a timed or counted apportionment can be useful as an illustrative experiment. This paper discusses one such experiment in this sharing of the classroom floor. I present it here not as a model which anyone should follow, but as a test case for empowering different voices on the academic conversational floor, to help our students, as Adrienne Rich (1979) suggests, to "claim an education" by actively creating class talk with us.

## Towards the Proportional Use of the Floor: An Experiment

### Setting

In the fall of 1986, I offered a class entitled "Language and Gender" at a Northeastern university specializing in engineering and science, where there were 4 males to every female. This particular class was unusual in its proportions; it had 16 females and 5 males, mostly upper-class undergraduates, a few graduate students, and some auditors, who were required to keep up with the readings and engage as active members of the class. The students and I sat in a large circle of desks so that we all could see each other's faces.

Many of the students had recently taken a class with an outspoken feminist professor who had already directed their attention to critical issues of women's and men's differing behaviors in our society. Though my class was conducted according to certain feminist principles as well, I expressed a strong desire that a variety of viewpoints be heard and respected, with all students held to high standards of factual support and careful reasoning for their claims and opinions. I would often play devil's advocate if I felt that contrasting views were not represented by the members of the class.

This study focuses on two of the weekly 3-hour class sessions from the third and fourth weeks of the term. In the first session, I alternately lectured and posed questions to the students, based on the readings for the week. They joined in with their answers, raised their own questions, and challenged me or other students. A week later, the second session started out with my brief introduction of the topic, but then I sat down and said nothing to direct the class for the rest of this 3-hour session.

In both classes, I was aided by a previously organized "observation group" which, as part of a term project, kept track of who talked in this class. The

numbers presented here and in the Appendix combine my tallies with those kept by this group.

#### Observation 1 (Week 3, Part 1)

For the first class session, the readings centered on the assumptions, recommendations, and studies of gendered speech styles and included, Lakoff's *Language and Woman's Place* (1975), Morgan's *The Total Woman* (1973), O'Barr and Atkins' "'Women's Language' or 'Powerless Language?'" (1980), Spender's *Man Made Language* (1985), and Taubman's *How to Become an Assertive Woman* (1976). I began the class with some recommendations about how class members might consider controlling the amount of their speech, suggesting that students make 5 comments by the half-time break or 10 comments for the whole class period. In support of this, I mentioned the 'muting' of women reported in Kramarae's book, *Women and Men Speaking* (1981). However, I did not overtly encourage or restrict the flow of conversation to accomplish that end through the first 1-1/2 hours of conversation.

During the break, I conferred with the observation group who had noted that up to that point, the comments in class had been proportionate by gender: the 16 females (76%) and 5 males (24%) had made 75% and 25% of the comments respectively. However, there was disproportionate turn-taking by some individuals. Six students had already taken a large number of turns (8-23) while 10 others were totally silent or had only made 1 or 2 comments. (See the Appendix for precise figures on each student's turns.)

The 6 students who had spoken 8 or more times included 4 women (Jody, Jessica, Katrina, and Mandy) and 2 men (Carter and Marc). They had held the



floor in student talk for 62% of the turns, leaving the other 15 students to share only 38% among them.

#### Experiment: Floor Reapportionment by Muting (Week 3, Part 2)

After the class break, the observation group reported the uneven apportionment of turns-at-talk to the other students. I requested that the 6 voluble students not speak for the next part of the class (about 1 hour), so that the quiet might have the space to speak out. I announced that class would close with a discussion of the experiment.

Over the course of the next hour, there were only 36 student comments as compared to the first 1-1/2 hour's 130 comments. These were again gender-balanced, apportioned in numbers equivalent to the numbers of females and males in the class: 12 females (80% of the non-muted students) and 3 males (20%) gave 29 comments (81%) and 7 comments (19%), respectively. The pace in this part of the class felt much slower. The pauses and responses were longer, and students sometimes took more time to formulate their comments.

At the close of this hour, the floor was once again opened for the final 20 minutes of the class period to include the 6 muted students. During this time, the students reported their reactions to the experiment. Many of the previously quiet students, as well as some of the muted, found the experiment instructive in what it revealed about response time, and constructive in allowing them floor space to speak. They applauded the slower pace of the class, which facilitated the formulation of remarks by the more reticent students or those who needed more time to formulate a complex idea. These students spoke of how the slower pace allowed them time to react to what was said before the topic changed and their comment lost its context and urgency.

But not everyone agreed with the constructiveness of the experiment. Two of the 6 muted students, Jessica and Mandy, were outraged. Jessica claimed that the very essence of muting flew in the face of everything she had been taught. Her lessons in classroom exchange, she claimed, taught her that talking was to be rewarded, not punished, and that after all their repression, women especially should not be muted if they were saying important things and furthering the discussion in significant ways. She said nothing about reciprocity or allowing others access to the floor, except to claim that if anyone wanted to talk, all they had to do was to talk; she saw no barriers to their speaking out.

#### Observation 2 (Week 4)

One week later, I began the next class with some initial remarks about the topic for discussion: the interpretation of and problems with the experimental designs in the research on interruptions and amount of speech, with articles by Fishman (1983), Swacker (1975, 1976), West and Zimmerman (1983), and Zimmerman and West (1975). I then announced that I would be silent for the rest of the class, but that I would sit in the circle and observe; the students would manage the discussion and turn-apportionment.

In this session, quite a different picture of turn-taking emerged. Although the most talkative speaker remained the same—Jody, taking a disproportionate share of turns (up 7 instances to a total of 30 in this session), every speaker made at least 1 comment, and several of the previously quiet students (e.g., Rosanne, Meg, and Kay) made many more contributions. However, the 2 angry muted speakers were much quieter this time, Jessica now ranking almost at the bottom of the class in number of turns with 11 fewer comments, and Mandy with 2 fewer. The most talkative woman, Jody, still hadn't learned to monitor the number of her contributions to allow floor space to others, but many of the quiet

students did speak up. The space to make comments at the end of the previous class had, by their own later analysis, given them license to speak and, perhaps more importantly, established the habit of claiming a space on the classroom floor.

## Discussion

The primary issue here is *apportionment*: how were the actual turns distributed in comparison with a hypothetical equal sharing of turns across all the speakers? To facilitate the discussion of this apportionment across classes of different lengths and with different members, the turns-at-talk have been converted into a ratio of apportionment, or "A-Ratio". This number is achieved by dividing a student's percentage of the class's total turns by the equal share that 1 student out of 21 would theoretically be "entitled" to occupy in the class ( $1/21=4.8\%$ ). Thus, Jody, with 23 turns in the first session, occupied 20% of the total floor space; this number divided by the 4.8% figure yields 4.1. Therefore she took 4.1 times her entitled share of turns. Compare that to Regina's total silence in the first session. Clearly, Jody's great number of turns contributed to the lack of floor space available to the other students in the class, ten of whom were virtually silent (with 0-2 remarks).

It is clear here that men alone were not excluding the women from the conversation in this class. This is unexpected in the face of the previous studies by Fishman (1983), Spender (1985), and others, which gave evidence that women are silenced or muted in other conversations. Both class sessions showed women and men distributed throughout the turn-taking spectrum, with neither gender skewing the turn-taking balance. As might be expected in a class where women outnumbered men 16 to 5, women occupied both ends of the spectrum in each class session: most talkative and most quiet. The person

who garnered the most disproportionate use of turns in both class sessions was a woman.

The A-Ratio reveals that the number of students using the mid-range of their apportioned turns (from an A-ratio of .5 to 1.5 times their "entitlement") went from six students in the first class to fourteen in the second class. This indicates that more students participated more equally in the discussion, though the numbers still fall into a broad range rather than congregating around the average.

However, we must consider why this different result might have occurred: why did women speak out proportionately, and why was the most talkative person in the class a woman (who, with 23 turns, might be considered to be the most aggressive "muter," having taken over 4 times her "share" of turns)?

First, the majority in the class was female, and I am a female professor. Krupnick (1985a) cites this as the situation that correlates most highly with increased female participation (though in her Harvard study, women were still outtalked by the men.)

Second, the very topic of the class sessions drew attention to the problems of women's muting in a way that strongly motivated change. The perspective of these books and articles (with the exception of Morgan's *Total Woman*) was that women should not accept their muted fate, but that they should fight for equal representation. Thus the attention of the class was directly and indirectly focused on the very behaviors under study. The men were also sensitized to their talk, and they reacted by controlling the number of their contributions.

Third, the approach to the material was feminist, and many of the students had come to the class on the recommendation of another feminist. Most of the class members were specifically self-selected and susceptible to the changes advocated.

Fourth, the women may have seen themselves as stronger because they were usually so greatly outnumbered in this technological university as a whole: if they had survived within this university, they already had strong coping tactics.

Thus, while the results here appear to contradict the previous claims about women's talk, perhaps it is more surprising that the women merely spoke in proportion to their numbers and not to a greater extent.

Two serious concerns arise from the continued garrulousness of Jody and the anger expressed by two of the muted women, Jessica and Mandy, for they illustrate two covert lessons about talk in the classroom. Some students, such as Jody, apparently see class talk as rewarded primarily for quantity more than quality: they see a class participation requirement on the syllabus as a mandate to say something, anything, to get their voices heard by the professor. Thus, they may feel that "more is better," restricted only by the time available and perhaps by peer pressure not to say too much. Many of Jody's comments were good, but a great deal was chaff that interfered with others' turns on the floor.

On the other hand, Jessica, whose comments were generally excellent and insightful, saw competition for the floor as healthy and felt that the battle should go to the strong and quick; she showed little concern for those who might not get a word in edgewise. This might be considered an example of co-optation into male hierarchical behavior—valuing an assertive, monologic style at the expense of the conversation of the class—a style adopted by some of these women in order to succeed at a male-dominated science and engineering school.

These attitudes must be countered by any teacher seeking to provide egalitarian, proportionate access. Certainly, not all talk should be valued, and fast starters should not be allowed to dominate the floor. Yet the floor should not be so rigidly controlled that it frustrates those who have something important to say. There are significant lessons here for others who wish to foster talk and reward dialogic conversation.

## Building Conversational Classrooms: Some Suggestions

Not every class has the time or need to focus on such explicitly feminist texts or perspectives. Yet teachers can extract several of the features of this class and apply them to their own classes where they wish to encourage free and proportional access to the conversational floor. The following suggestions may help:

1) Spend at least part of one class session discussing the role and significance of conversation in class. Engage the class in the cooperative task by explicit discussion and readings on this topic.

2) Discuss with the students the distinction between useful, insightful commentary and mere talk for talk's sake. Encourage depth as well as breadth of distribution of conversation across all the class participants.

3) Build a class ethic that values equal access to the floor by rewarding talk in real ways, for example, by assigning to discussion a significant portion of the grade. But value *listening* as well.

4) Resist the tendency to let quiet but bright students remain quiet in the conversation. By rewarding them more for their writing than for joining in the class discussions, we give them covert—but erroneous—messages about the significance of conversation.

5) Arrange the class in a circle so students can see and respond to each other. The teacher need not always stand at the front of the class.

6) Help each other (students and teacher) monitor the amount of speech and the access to turns by employing observers. Discuss these observations and their consequences.

7) Impress upon the voluble the benefits of allowing all to have access to develop their ideas. You need not mute them totally, but enlist their help in



controlling their turns. If necessary, discuss this with them outside of class. Don't punish them for talking.

8) Provide low-risk opportunities for the reticent to develop and test their ideas before presenting them to the whole class (e.g., in journals or in-class free writing).

9) Allow access for everyone to say something at least once very early in the class; participation habits form and harden fast. Then continue throughout the term encouraging the participation of the quiet and hesitant.

10) Don't assume that everyone has equally valuable things to say, but don't assume that silence means that they don't.

11) Encourage the quiet to talk by allowing sufficient time for them to formulate their ideas; ensure that they can develop their ideas without fear of being cut off by a student responding more quickly.

## Problems for Future Research

This study has some inherent limits. The numbers presented here must be taken as a general illustration and not as precise, generalizable percentages; the sample size is small, and the particular conditions of this class may not be explicitly replicable in other environments. Still this experiment points out directions for future work in other areas.

While this discussion of the principle of the equally apportioned floor has focussed largely on monitoring turns, two other significant issues demand attention: monitoring the total amount of talk by individuals in the class and judging the quality of the comments. In part because these two issues are harder to monitor and discuss immediately in the classroom, the observation group and I set them aside. They both require significant attention. The amount of talk can be measured by carefully taping and timing with a stopwatch.

However, the question of the quality of the comments is more difficult to gauge. By what yardstick do we measure quality?

This paper aims at finding ways to broaden the base of the conversation, yet this should not be at the expense of the depth of discussion. Students must be rewarded for high-quality thinking and speaking; how to accomplish and judge this is the topic for future studies.

We must also recognize another inherent limitation: the goal of a truly egalitarian conversational classroom becomes more and more remote as the class size gets larger. Either the turn allocations become more limited, or many get cut out of the conversation altogether. Yet conversation remains an important way for students to develop their ideas. While students may need to make their writing more conversational, they should not expect to do much more than start the thread of an idea in an open full-class discussion. If a small subset of students takes too much of the class time to develop their ideas, others may be muted. In fact, one point raised by Bruffee (1984) is that small working groups are more appropriate for making more floor space available for discussion of ideas in a class. Yet in both smaller and larger groups, early patterns in the class may strengthen throughout the term, and those who are quiet early may lapse into total silence. These disenfranchised speakers may then come to class less well prepared, and hence, even less able to present their ideas in the future.

## Conclusion

In the enculturation process of education, teachers work to bring students into the academic conversation. We try to teach not merely "facts" (if such things exist), but ways of looking at the world, and the means for challenging the very knowledge we offer them. The classroom is a primary site for this process, and

we should strive to make it as open as possible, in order to facilitate inclusive conversation. To this end, the monitoring and apportionment of turns in class may be one way of examining student participation, in order to hear more accurately just whose voices we are engaging.

In the class described, the role of gender in this enculturation process may appear to have been overshadowed by individual differences. But these women felt empowered to speak, in part, because the readings and discussion reflected on the very process in which they engaged. Feminism informed both the topic and the approach to it. However, even with all the feminist support, the women did not dominate the class.

Although gender may not always be the most salient variable, it is an overarching influence, affecting the way that the students leap forward to answer questions or remain silent in their chairs. The women and men in this class responded in socialized ways to the issues addressed. The change from previous years and previous studies, perhaps, is that empowered women have now made room for themselves in the culture.

If, in fact, gender is not an overtly salient characteristic, perhaps this experiment shows evidence of success: what I sought was gender equality, not gender dominance. Thus the proportionality of access in this class is a noteworthy example of gender balance.

While equal access to conversational exchange is an important goal, we must not think that the dialogic voice is the only one to practice. If, according to Kramarae and Treichler (1990) and Tannen (1990b), women students are more accustomed to collaboratively constructed conversation, they might have problems with the use of the monologic voice; some may lack the essential self-assurance it takes to hold the floor for an extended turn.

Sometimes we must employ longer, uninterrupted turns in order to develop our points. Thus, we must encourage women to practice both dialogues and

monologues, to claim the floor and be heard, and likewise we must encourage men to listen and learn from these voices.

Our students need to learn and command many genres of discourse, ranging from fast-paced oral dialogues to longer written and spoken monologues. We have not taught well if we have failed to convey to our students the significance of this continuum of conversation. We must train student voices for the range of genres on this continuum, and create an open and comfortable forum that accommodates the styles of both women and men in the conversation of the academy.

## Notes

This paper is based on the paper entitled "Monologue vs. Conversation: Gendered Modes of Discourse in Classrooms and Texts," presented at the Parasession on Language and Gender, at the Fifth Annual Conference on Pragmatics and Language Learning, Urbana, IL, April 4, 1991.

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## Appendix: Turns at Talk

## Observation 1 (Week 3, Part 1)

Length of observation = 1-1/2 hours

Total turns taken = 116

| Rank <sup>1</sup> | # of turns taken | Students: |        | % of total turns taken | A-Ratio <sup>2</sup> | status <sup>3</sup> |
|-------------------|------------------|-----------|--------|------------------------|----------------------|---------------------|
|                   |                  | Female    | Male   |                        |                      |                     |
| 1                 | 23               | Jody      |        | 20                     | 4.1                  | muted               |
| 2                 | 15               | Jessica   |        | 13                     | 2.7                  | muted               |
| 3                 | 12               |           | Carter | 10                     | 2.1                  | muted               |
| 4                 | 9                | Katrina   |        | 8                      | 1.7                  | muted               |
| 4                 | 9                | Mandy     |        | 8                      | 1.7                  | muted               |
| 6                 | 8                |           | Marc   | 7                      | 1.5                  | muted               |
| 7                 | 6                | Kelly     |        | 5                      | 1.0                  |                     |
| 7                 | 6                |           | Aaron  | 5                      | 1.0                  |                     |
| 7                 | 6                | Cassandra |        | 5                      | 1.0                  |                     |
| 10                | 5                | Dena      |        | 4                      | 0.8                  |                     |
| 11                | 4                | Barb      |        | 3                      | 0.6                  |                     |
| 12                | 2                | Meg       |        | 2                      | 0.4                  | quiet               |
| 12                | 2                |           | Sam    | 2                      | 0.4                  | quiet               |
| 12                | 2                | Kay       |        | 2                      | 0.4                  | quiet               |
| 12                | 2                | Amy       |        | 2                      | 0.4                  | quiet               |
| 16                | 1                | Rona      |        | 1                      | 0.2                  | quiet               |
| 16                | 1                | Linda     |        | 1                      | 0.2                  | quiet               |
| 16                | 1                |           | Jack   | 1                      | 0.2                  | quiet               |
| 16                | 1                | Rosanne   |        | 1                      | 0.2                  | quiet               |
| 16                | 1                | Karen     |        | 1                      | 0.2                  | quiet               |
| 21                | 0                | Regina    |        | 0                      | 0.0                  | silent              |

<sup>1</sup> Rank: The students here are ranked according to the number of turns they took in the class, from most to least. Note that the repeated numbers signify "ties," for those who took equivalent numbers of turns.

<sup>2</sup> A-Ratio: This number denotes the degree to which a person uses, overuses, or underuses his/her apportioned share of turns. One apportioned share equals the total number of turns taken by all students in one class session, divided by the number of students in the class: here, 116 divided by 21, or 4.8%. Thus, each student had a theoretical claim to 4.8% of the turns at talk. The A-ratio then takes the actual number of turns taken by a student, divided by the equal apportionment number, to obtain a relative score of differential usage. For example, Jody's 23 turns represent 20% of the total of 116 turns taken by the whole class. That 20% divided by the equally shared apportionment of 4.8% yields an A-Ratio of 4.1. Hence, Jody used 4.1 times her proportional share of turns at talk. (Numbers are rounded off.)

<sup>3</sup> The status labels refer to the level of comments during the first 1-1/2 hours of the observed class during the third week. "Muted" characterizes the 6 most voluble class members who were asked to remain silent after the first half of the class period. "Quiet" refers to those students who made one or two comments, and "silent" is the appropriate label for the one member of the class who said nothing during the observed time period of the Week 3 class.



## Observation 2 (Week 4)

Length of observation = 3 hours

Total turns taken = 200

| Rank <sup>1</sup> | # of turns taken | Students: | Female | Male   | % of total turns taken | A-Ratio <sup>2</sup> | # change Obs 1->2 | status in last class <sup>3</sup> |
|-------------------|------------------|-----------|--------|--------|------------------------|----------------------|-------------------|-----------------------------------|
| 1                 | 30               | Jody      |        |        | 15                     | 3.1                  | +7                | muted                             |
| 2                 | 16               | Katrina   |        |        | 8                      | 1.7                  | +7                | muted                             |
| 2                 | 16               | Barb      |        |        | 8                      | 1.7                  | +12               |                                   |
| 4                 | 15               |           |        | Carter | 7.5                    | 1.6                  | +3                | muted                             |
| 5                 | 12               | Rosanne   |        |        | 6                      | 1.3                  | +11               | quiet                             |
| 5                 | 12               | Meg       |        |        | 6                      | 1.3                  | +12               | quiet                             |
| 7                 | 11               | Kay       |        |        | 5.5                    | 1.1                  | +9                | quiet                             |
| 7                 | 11               | Kelly     |        |        | 5.5                    | 1.1                  | +5                |                                   |
| 9                 | 9                |           |        | Aaron  | 4.5                    | 0.9                  | +3                |                                   |
| 10                | 8                |           |        | Jack   | 4                      | 0.8                  | +7                | quiet                             |
| 10                | 8                |           |        | Marc   | 4                      | 0.8                  | none              | muted                             |
| 12                | 7                | Dena      |        |        | 3.5                    | 0.7                  | +2                |                                   |
| 12                | 7                | Cassandra |        |        | 3.5                    | 0.7                  | +1                |                                   |
| 12                | 7                | Mandy     |        |        | 3.5                    | 0.7                  | -2                | muted                             |
| 15                | 6                | Linda     |        |        | 3                      | 0.6                  | +5                | quiet                             |
| 15                | 6                | Amy       |        |        | 3                      | 0.6                  | +4                | quiet                             |
| 17                | 5                | Regina    |        |        | 2.5                    | 0.5                  | +5                | silent                            |
| 17                | 5                |           |        | Sam    | 2.5                    | 0.5                  | +3                | quiet                             |
| 19                | 4                | Rona      |        |        | 2                      | 0.4                  | +3                | quiet                             |
| 19                | 4                | Jessica   |        |        | 2                      | 0.4                  | -11               | muted                             |
| 21                | 1                | Karen     |        |        | 0.5                    | 0.1                  | none              | quiet                             |

<sup>1</sup> Rank: The students here are ranked according to the number of turns they took in the class, from most to least. Note that the repeated numbers signify "ties," for those who took equivalent numbers of turns.

<sup>2</sup> A-Ratio: This number denotes the degree to which a person uses, overuses, or underuses his/her apportioned share of turns. One apportioned share equals the total number of turns taken by all students in one class session, divided by the number of students in the class: here, 200 divided by 21, or 4.8%. Thus, each student had a theoretical claim to 4.8% of the turns at talk. The A-ratio then takes the actual number of turns taken by a student, divided by the equal apportionment number, to obtain a relative score of differential usage. For example, Jody's 30 turns represent 20% of the total of 200 turns taken by the whole class. That 15% divided by the equally shared apportionment of 4.8% yields an A-Ratio of 3.1. Hence, Jody used 3.1 times her proportional share of turns at talk. (Numbers are rounded off.)

<sup>3</sup> Quiet members of the class made one or two comments in the previous class; the silent member made none.



## Sociolinguistic Construction of Power in Two Classroom Peer Groups

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Important contributions to collaborative learning in writing pedagogy are emerging in the work of Bruffee (1984), Bleich (1988), Cooper (1989), Trimbur (1989), and others. Theorists of collaborative learning, as it has come to be applied in English composition classrooms, have the ideological goal, as Trimbur (1989) has claimed, "to replace the traditional hierarchical relations of teaching and learning with the practices of participatory democracy" (p. 611). A central focus of such theoretical argument is upon the importance of conversation as the medium for most collaborative activity. Bruffee (1984: 642) has insisted "that our task must involve engaging students in conversation among themselves at as many points in both the writing and the reading process as possible. . . . The way they talk with each other determines the way they will think and the way they will write."

It would seem that the essential role of conversation in collaborative learning would make writing-class peer groups obvious sites for sociolinguistic studies of writing as a social process. Yet, while studies of collaborative and rhetorical processes have been done in writing classrooms (e.g., Bleich 1988; Gere and Abbott 1985), none appear to have specifically addressed the processes and features of conversation. Such studies have focused instead on group motivation (Fraser, Beaman, Diener, and Kelem 1977), group structuring and task design (Brogan n.d.; George 1984), task design and evaluation

(Weiner 1986), and instructor interaction and behavior modeling (George 1984; Thomas and Thomas 1989).

A number of sociolinguistic studies of conversation have emphasized conversation in informal social dyads (Fishman 1978; Kollock, Blumstein, and Schwartz 1985; Lamb 1981; Natale, Jaffe, and Entin 1979; Palmer 1989; West and Zimmerman 1983; Zimmerman and West 1975) and triads (Lamb 1981). Other studies have examined larger groups such as courtrooms (O'Barr and Atkins 1980) and faculty committee meetings (Edelsky 1981). The focus of a considerable part of the sociolinguistic work has been feminist, resulting in the development of a body of argument suggesting that cultural norms of patriarchal dominance and hierarchical relationships are reproduced and reinforced in cross-sex conversations. Although none of these results are conclusive, such empirical findings at least suggest that actual conversational processes may contradict the assumptions of composition theorists that collaborative peer groups will be likely to function as egalitarian learning communities.

My own research addresses the lack of sociolinguistic studies of conversation in writing-classroom groups, bringing together perspectives from sociolinguistics, composition theory, and feminist theory. The present study focuses primarily on turn-taking and interruptions in peer-group conversations as aspects of the construction of power in classroom group social interactions. This study is part of a larger, ongoing case study in which I am exploring, in terms of a number of linguistic and social factors, the meanings and manifestations of power in classroom peer groups. In this study, I followed two cross-sex collaborative peer groups in a first-year English composition class throughout the Fall 1990 quarter at a university in which the majority of students are male engineering majors. The questions I have attempted to address with this study include: How are the hierarchically imposed goals of the writing course translated into a collaborative learning model? How do the theories of conversational interaction inform the idea of democratic empowerment for

students in collaborative groups? More specifically, what can a study of conversational features tell us about the forms and styles of power in collaborative classroom groups?<sup>1</sup>

## Methods

The instructor of the English composition class in which I conducted this study was a female graduate teaching assistant. She divided the class into 5 groups of 4 or 5 members each. In the class of 24 students there were only 4 women, all of whom were members of the 2 groups I studied. One group included 2 women and 2 men; the second group included 2 women and 3 men.

I observed the groups during collaborative sessions as well as during whole-class activities. Group discussions were recorded on audio-tape using a directional microphone placed on a desk in the middle of the group. Segments of the recorded discussions were transcribed later for coding and analysis. Selection of segments for transcribing was determined by audibility for continuous periods of approximately 5 minutes. In each recording, 5 group discussions were always going on in the classroom simultaneously. Audibility was, therefore, a serious difficulty.

At the end of the course I interviewed the 9 students who participated in the study. I also obtained written responses to interview questions from the course instructor.

## Results

Group 1 included 2 women, Amy and Brenda, and 2 men, Art and Ben. All were in their first term at this university. Amy was 17 years old; Art and Ben were 18; Brenda was 23.

Transcriptions of group conversational interactions were analyzed for number of words spoken by each participant and number of turns at talking by each participant. The average number of words per turn was computed from these data. Table 1 shows the totals for all transcribed segments of conversation for Group 1.

TABLE 1

|        | <u>WORDS AND TURNS IN GROUP 1</u> |              |                   |
|--------|-----------------------------------|--------------|-------------------|
|        | total of all transcribed segments |              |                   |
|        | ( 16 minutes, 16 seconds )        |              |                   |
|        | <u>URNS</u>                       | <u>WORDS</u> | <u>WORDS/TURN</u> |
| AMY    | 113                               | 1117         | 9.9               |
| ART    | 51                                | 353          | 6.9               |
| BRENDA | 61                                | 517          | 8.5               |
| BEN    | 36                                | 197          | 3.5               |

In terms of group organization and interactions, Amy quickly emerged as the group leader. This was my own intuitive assessment of her role, but it was confirmed in the transcription data: she exceeded all other group members in number of words spoken and number of turns at talk. Brenda talked second most, although still less than half as much as Amy. Ben and Art spoke very little.



In addition, Ben and Brenda often talked about things that were not relevant to the assigned task.

Art appeared to act as sidekick or lieutenant to Amy. Amy described him as *good* and willing to compromise. Art would consistently return to topics that had been initiated by Amy when Brenda and Ben would digress. A member of the football team, Art was the most physically imposing member of the group and among the biggest of the men in the class.

The transcripts were also coded for interruptions. I defined 4 categories of interruptions: 1. Supportive, 2. Taking over the topic, 3. Disruptive or changing the topic, 4. Failed interruption. Table 2 on the next page shows the total of all interruptions in the transcribed segments of conversation for Group 1. In each pair of numerals in the table, the first numeral indicates the number of times that student interrupted another group member and the second numeral indicates the number of times that student was interrupted by another group member. For example, Amy interrupted to take over the topic from another group member twice, and she was interrupted by other group members for the purpose of taking over the topic from her on 13 occasions.

While some previous studies of interruptions suggest that interruptions are a feature of dominance, Amy's power in her group (which seemed so evident in terms of number of words and turns) is not evident in terms of interruptions. Amy seldom interrupted other speakers in the group, and when she attempted to interrupt she was seldom successful. Brenda frequently interrupted other group members, especially Amy. Attempts by the others to interrupt Brenda nearly always failed.

TABLE 2

INTERRUPTIONS IN GROUP 1

total of all transcribed segments

(16 minutes, 16 seconds)

|        | <u>SUPPORTIVE</u> | <u>TAKE</u><br><u>OVERS</u> | <u>DISRUPTIVE</u> | <u>FAILED</u> | <u>TOTAL</u> |
|--------|-------------------|-----------------------------|-------------------|---------------|--------------|
| AMY    | 1,2               | 2,13                        | 1,0               | 8,1           | 12,16        |
| BRENDA | 2,0               | 9,2                         | 1,0               | 1,3           | 13,5         |
| ART    | 0,1               | 6,2                         | 0,0               | 0,5           | 6,8          |
| BEN    | 1,0               | 0,1                         | 1,1               | 3,1           | 5,3          |

Art, Brenda, and Ben usually oriented themselves in relation to Amy by turning their seats or their bodies to face her, although Brenda did not acknowledge Amy as group leader. When the group members spoke, most of the time they spoke to Amy rather than to any other group member.

Amy confirmed in her interview that she saw herself as the group leader. This view was shared by Art and Ben; however, Brenda described the leadership as a continual contest between herself and Amy throughout the term. Brenda said that she felt leadership went to Art by default, because neither of the 2 women would allow the other one to assume the leader's role.

In group activities, Amy always led off the discussion. She and others in the group described her leadership as *getting things started, talking the most, taking initiative*. Amy also assumed all other specific tasks that needed to be done in the group: she wrote things down, kept track of assignment schedules, made sure she understood the task the group was expected to complete. The others asked her about such things frequently. When asked how the leadership

of her group was determined, she said, *that's the way it had to be*. She believed that a group could not function without a leader.

Group 2 included 2 women, Dawn and Flo, and 3 men, Sol, Monty and Craig. Dawn and Craig were 17 years old; Flo and Monty were 18; and Sol was 19. All 5 were in their first term at this university.

Table 3 shows number of words spoken, number of turns at talk, and average number of words per turn in all transcribed segments of conversation for Group 2. The question marks pertaining to Flo in the columns for words and words/turn indicate that most of her words were inaudible on the tape (although she spoke very little) and could not be counted.

TABLE 3

WORDS AND TURNS IN GROUP 2

total of all transcribed segments

( 14 minutes, 36 seconds )

|       | <u>TURNS</u> | <u>WORDS</u> | <u>WORDS/TURN</u> |
|-------|--------------|--------------|-------------------|
| DAWN  | 45           | 1107         | 24.6              |
| SOL   | 36           | 598          | 16.6              |
| MONTY | 2            | 7            | 3.5               |
| CRAIG | 2            | 7            | 3.5               |
| FLO   | 3            | ?            | ?                 |

Dawn appeared to me to be the group leader, and this was supported by transcript data. She exceeded all other group members in number of words and number of turns. With the exception of Monty, who often held back from group participation, the group members oriented themselves in relation to Dawn in the same way as Group 1 oriented to Amy. Dawn saw herself as the group leader, describing herself much as Amy self-described her leadership. Dawn

explained that she *tried to start things off, got things rolling*. She said group leadership was determined by who started the discussion. She felt responsible and believed that if she hadn't taken the role, nobody else would have. Dawn described herself as a natural leader, observing that she has always liked to be in control. She had held a number of leadership positions in high school and attended numerous leadership seminars and workshops. She talked about leadership in terms of power, control, and dominance and said that she would do anything necessary to gain the upper hand in a struggle for leadership: *I think a lot of the times I'd try to make a person feel inferior to me any way that I could. I mean I'd hit on their shoes they were wearing, you know, or something, just to make them feel worse*. Dawn believed that leadership for a group is necessary because without a leader nobody would have talked in the group.

Both Monty and Craig saw the group leadership as being divided between Dawn and Sol, the second highest turn-taker, but Monty seemed to think that Sol was the primary leader. In their interviews, both Monty and Craig, but especially Monty, expressed resistance to Dawn's efforts to lead the group. In contrast, Sol and Flo both saw Dawn as the group leader. Sol, Flo, and Dawn all saw Sol as the sidekick, or lieutenant. Flo and Dawn used the same words in describing Sol's part in the interactions, saying that he *followed along* in the discussions. My own observations support the idea of Sol as lieutenant to Dawn. In his interview he was modest about his own contributions to the group and repeatedly described Dawn as the group leader.

In group activities, Dawn and Sol did virtually all of the talking. In fact, most of the time the activity consisted of a conversation between Dawn and Sol with an audience of Monty, Craig and Flo. The latter three seemed naturally quiet, even shy, and that is how they came across when I interviewed them. When they were invited by Dawn or Sol to speak, they usually responded in just a few words and so quietly that the tape recorder barely picked them up<sup>2</sup>.

Sometimes they had nothing at all to say. Very seldom did they contribute to the discussion without being asked to do so.

Table 4 shows interruptions for all transcribed segments of conversation in Group 2.

TABLE 4

INTERRUPTIONS IN GROUP 2

total of all transcribed segments

(14 minutes, 36 seconds)

|       | <u>SUPPORTIVE</u> | <u>TAKE</u><br><u>OVERS</u> | <u>DISRUPTIVE</u> | <u>FAILED</u> | <u>TOTAL</u> |
|-------|-------------------|-----------------------------|-------------------|---------------|--------------|
| DAWN  | 0,2               | 10,9                        | 0,0               | 1,4           | 11,15        |
| SOL   | 2,0               | 9,9                         | 0,0               | 4,1           | 15,10        |
| MONTY | 0,0               | 0,0                         | 0,0               | 0,0           | 0,0          |
| CRAIG | 0,0               | 0,0                         | 0,0               | 0,0           | 0,0          |
| FLO   | 0,0               | 0,1                         | 0,0               | 0,0           | 0,1          |

Because Dawn and Sol did nearly all of the talking in Group 2, it is not surprising that most of the interruptions in the Group were made by the two of them, interrupting each other. Although Monty, Craig and Flo did speak at times, they were not often interrupted. Most of the occasions of speaking by these three were specifically invited by the other two group members, usually by Dawn, and their comments, as Table 3 indicates, were brief. Dawn and Sol appeared to be what Tannen (1990b) has described as *high involvement* speakers (p. 196). They regularly take turns by enthusiastically overlapping the previous speaker, keeping the topic moving back and forth between them, picking up the other speaker's words and completing their sentences or elaborating on them. Their frequent interruptions of each other, or

overlappings, as Tannen prefers to call such events, did not appear to bother either of them. Both of them spoke positively of each other when they were interviewed. Most of their interruptions involved taking over the topic, not disrupting or changing the topic.

My own observation, and the view expressed by Dawn and Sol, was that, like Art, Sol was Dawn's sidekick or lieutenant in the group discussions. Sol, a weightlifter, was physically the biggest member of his group. Flo also saw Dawn as the group leader with Sol as her lieutenant, but Monty thought Sol was the group leader, and Craig thought leadership was shared equally by Dawn and Sol.

## Discussion

Leadership, of course, implies power. However, the terms and meanings of leadership in each group situation are not simple; neither are they unequivocal.

Linguistic indicators that may be linked with power include number of words spoken, number of turns taken, and success in making interruptions, initiation of talk, and topic shifts. However, these factors alone do not help us understand adequately the complex social and cultural assumptions and processes that converge in the particular group situation. In fact, Groups 1 and 2 functioned in very different ways. Power seemed to mean very different things for various members of each group and for the particular web of relationships that prevailed in each group. In both groups, leadership was not simply assumed by the leader, but was also, to varying degrees, consented to by the other members. The leaders both saw leadership as important for group functioning, and both women expressed ideas about a leader's role more clearly than the other group members did. Some of the students did not seem to



see the ideas of control or power as relevant to their particular group situation—in some respects they described their group activities as if they were collaborative, with equal participation and voice by all members. Having an equal voice did not seem to mean the same as equal amount of talk; each group member had a clear sense of how much the other members actually spoke (although not necessarily a clear sense of his or her own participation). This sense of their peers' amount of talk was not perceived by the group members to be a direct measure of each one's contribution to the group or of the value of what anyone had to say.

In order to understand more fully how power was acquired and maintained in each group, I found it necessary to explore some theoretical definitions of power. I looked at two perspectives: first, I looked at power structure at the group level; second, I looked at the forms of power exercised by the individual leaders.

To interpret group power structure, I used terms defined by Lunsford and Ede (1990:235) in their study of collaborative writing. They describe 2 "modes" of collaboration: the hierarchical mode and the dialogic mode. The hierarchical mode "is linearly structured, driven by highly specific goals, and carried out by people who play clearly assigned roles." Goals are established, in most cases, by "someone outside of and hierarchically superior to the immediate collaborative group or by a senior member or 'leader' of the group." The dialogic mode of collaboration is "loosely structured, and the roles enacted within it are fluid." Dialogic collaborators value the collaborative process as much as the accomplishment of goals.

With respect to these definitions, Group 1 and Group 2 both appear to have functioned hierarchically. In the interviews at the end of the course all of the students described the group interactions in hierarchical terms—even Brenda, who did not acknowledge that anyone clearly held a leadership

position, described the organization of the group as hierarchical, indicating that it involved an ongoing struggle for leadership.

Graddol and Swann (1989) identify three "components" of power which they suggest "may be linked with different linguistic mechanisms." The three components—"expertise," "status," and "dominance" (p. 94)—suggest some useful ways of looking at the forms of power exercised by Amy and Dawn.

In terms of expertise, a common notion is that female students are supposed to do better than male students in English courses. It is possible that by the time they reach college, male students accept this stereotype and that they automatically attribute expertise in English to their female peers. Sol expressed this stereotype in his interview when discussing his high school English classes. He said that *it seemed like the guys weren't expected to write as well as the girls and the girls seemed to always get the better grades*. The only apparent exception to this perception was expressed by Monty, who said that he thought he was a better writer than the others in his group. It may be significant that Monty came from a family with a stronger academic background than any of the other students' families in this study. Possibly for him such stereotypes about academic skills did not seem relevant.

Regarding the role of status in constructing individual power, it may be significant that women are a distinct minority in this predominantly engineering university. This fact was reflected by the small number of women in the composition class observed in the present study. Women students in this university may be perceived as an elite group of students and accorded high status automatically. Moreover, the female instructor may have provided status to the women in the class by her emphasis on feminist concerns and her employment of classroom practices consistent with feminist pedagogical theory.

Dominance as an aspect of power often seems to involve an element of potential physical force, at least in traditional male ideologies. It is significant, therefore, that the women leaders were backed up by a male group member,

and that these males—one of them a football player, the other a weightlifter—were physically the biggest men in the group. Both women had clearly articulated ideas about leadership which appeared to include typically patriarchal notions about power as dominance. What is striking about these women's success in leading their groups is that they evidently were not thwarted by the prevailing social system which might be expected to have conditioned them to take passive roles in their groups and to defer to one of the men. Moreover, they did not claim to doubt the validity of patriarchal values. Dawn, in fact, claimed to believe *that the man was superior* although she said she was beginning to change her views about male superiority. But, she said, *I expect the man to be more dominant most of the time. Sometimes I feel like I can't exactly compete with a man.* Nevertheless, both Dawn and Amy seem to have used their understanding of patriarchal social norms to reinforce their leadership of their groups.

Another aspect of dominance is a social aspect, which seems to be manifested particularly by linguistic means. As we have seen in the analysis of the group discussions, Amy and Dawn were both successful in dominating the group conversations by means of number and length of turns at talk. The fact that they both often gave up the floor in response to interruptions by another group member may actually indicate their confidence that they would be able to regain the floor at will. This view is supported by Natale et al. (1979), who found that the longer a person talks, the more likely it is that he or she will be interrupted, and that confident speakers are more likely to be interrupted than high-anxiety speakers.

However, the dominance model of individual power may involve some interesting contradictions as well. With the exception of Sol, all of the men in the two groups tended to be silent. Monty and Craig closely fit what Sattel (1976) has called "the style of almost total inarticulateness" exemplified by John Wayne (p. 469). Sattel argues that "silence and inexpression are the ways men

learn to *consolidate* power. . . . [O]ne maintains control over a situation by revealing only strategic proportions of oneself" (p. 475).

If this is the case, then it may be that Amy and Dawn are simply doing a job that the men in their groups do not want to do. Indeed, we may be able to couple Sattel's argument with Miller's (1976) contention that, in effect, women—in this case Amy and Dawn—are attending to the aspects of experience—in this case writing and reading in the humanities—that are not easily managed by the patriarchal tools of science and engineering.

## Conclusions

That women can have power in humanities classrooms—because such courses are not considered characteristic of the male dominion—argues that leadership by Amy and Dawn in their groups actually maintains the patriarchal world view; it is appropriate for women to be authoritative in an English class, just as it is appropriate for them to be authoritative in other roles (mothers, nurses, teachers, executive secretaries, etc.), where they will not threaten masculine authority.

On the other hand, we can interpret our evidence to argue that women can have power in a mixed-sex group conversation because they are learning to see power as not exclusively a male prerogative and to manipulate for their own purposes the modes of power by means of which patriarchal society is organized. This kind of argument suggests that, at least in the academic environment, gender equality is gaining some acceptance and that feminist thinking has pervaded a significant portion of the larger culture. These are quite different ways of looking at the significance of the power exercised by Amy and Dawn in their peer groups.

We need to recognize that power does, in fact, take many forms and that it works in contradictory ways. It is not that our ideological goals and our theories of knowledge are unrealistic, but that the methods we use to implement them need to address more accurately the realities of language and culture. We cannot, simply by formulating utopian ideals, expect to create utopian microcosms in our classrooms. Our students bring with them the complex and often contradictory values and practices of a culture that is in many respects opposed to the social values of participatory democracy implicit in collaborative learning theory.

If our students' peer group interactions simply reproduce the dynamics of the prevailing culture, we only deceive ourselves and achieve little in calling our methods "collaborative." If such methods serve only to reinforce our students' present assumptions about the nature and meaning of knowledge, we deceive ourselves in calling the results of our methods "learning."

My study should not be taken as a point from which to generalize about how all students interact in peer groups. I offer this research first, simply as a test of collaborative learning theory, and then as a preliminary model for further empirical explorations. I believe the present study shows that we need to do much more in the way of ethnographic approaches to understanding the social and linguistic dynamics that take place in our classrooms.

## Notes

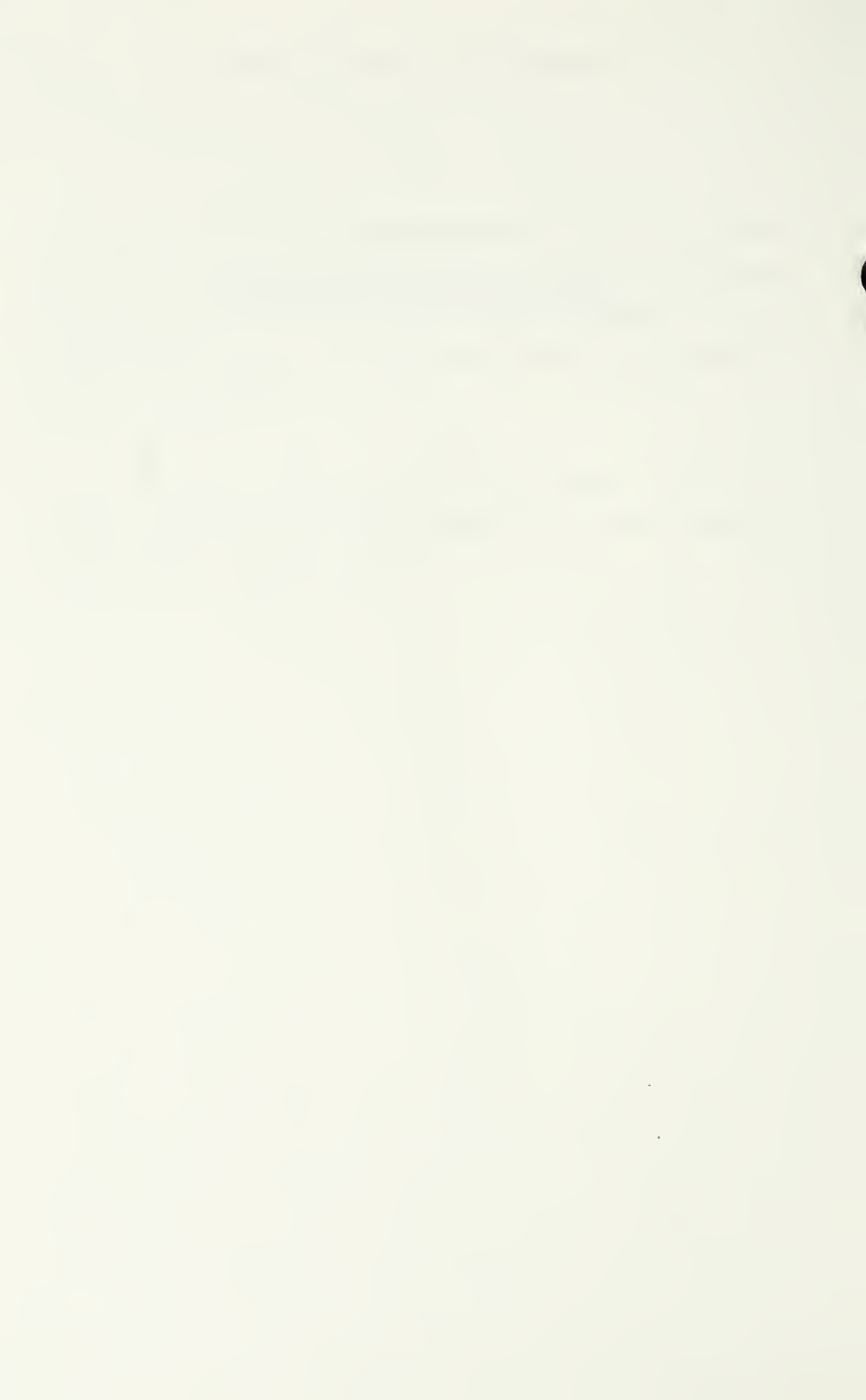
1 For critical comments and suggestions on drafts of this article, I am indebted to Victoria Bergvall, Denise Heikenen, and Kathryn A. Remlinger of Michigan Technological University, and to Jennifer Hartog of Universität Ulm for her comments and discussion of my panel presentation in the parasession on Gender and Language.

2 I was present as an observer in each session of Group 2 that was tape-recorded. My field notes are consistent with the tape record concerning the amount of talk by Monty, Craig, and Flo.



## SECTION 4

### Gender and Language in the Professions



## Gender, Language, and the Professions: Recognition of Wide-Verbal-Repertoire Speech\*

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Because of their gender, women and men have had different life experiences and participated in different activities growing up. Thus, it should not be surprising that they would have different perceptions, beliefs, and categories for describing experiences (Alderfer 1977; Alderfer and Smith 1982; Miller 1983). Much managerial behavior occurs through linguistic activity. Kanter (1977: 56) found that managers spent anywhere from one-third to one-half of their weekday consumed by meetings with other organizational members, not including "time with secretaries, on the telephone, or in routine communication around the office." Inclusion of telephone calls accounted for another 20% of the manager's day. Kanter's review of related research suggested that between 50% and 93% of a manager's total time was spent in social intercourse. Yet organizational analysis of behavior has paid almost no attention to how people actually speak (Gronn 1983; Levine, Donnelson, Gioia, and Sims 1984; Mintzberg 1973). Linguistic activity is key to understanding managerial behavior. Since the language that people use and the associations they make reveal how they see and interact with their world, the experiences of women and their increasing presence in the workforce mandate understanding their cultural perspective and respecting their differences where they exist.

In our research we were interested in how men and women managers talked when they interacted with one another. We suspected that some gender

differences would be revealed in the language used in problem-solving and decision-making settings that involved leadership and influence. This work is one piece in a larger body of studies about language use within which diversity of speech repertoires, ways of speaking, and choices among them find a natural place (Case 1988, 1990, 1993a, 1993b; Case and Thompson 1994). Specifically, this paper explores the idea of a wide-verbal-repertoire speech style used by both men and women, one that combines masculine and feminine speech characteristics in differing frequencies and proportions. Within this speech style, each speaker uses linguistic features in different ways--choosing and combining differing patterns of usage, and speaking in a comprehensive, versatile style that combines the abstract with the concrete, feeling with logic, and tenderness with strength, in a way that is neither weak nor tough and opinionated. In this work, we explore gender-based similarities in speech through an analysis of three different verbal repertoires. Our presentation suggests that certain men and women may have more similarities in their speech than research on differences would suggest.

Research on language styles has been primarily based on two types of studies. One approach measures "perceptions" of the kinds of language men and women use (Baird 1976; Bonanno 1982; Fisher 1980; Key 1975; Kramarae 1980, 1981, 1982; Kramer 1977; Lakoff 1973, 1975; Rubin 1976; Thorne and Henley 1975b). Most of this research has been done through informants, anecdotes, and structured observation, all methods highly susceptible to influence by preconceptions.

For example, in work situations, women are often expected to be nurturant, emotional, and expressive, just as they are responsible for providing emotional support to family members, whereas men are expected to be rational and ignore feelings (Rubin 1976). Perceptions of the language of the sexes seem shaped to be consistent with generalized sex-role images. Since women are thought to be emotional, indecisive, submissive, supportive, and interpersonally oriented

(Baird 1976; Key 1975), their speech is rated likewise. Similarly, since men are seen as behaving aggressively, instrumentally, bluntly, and decisively (Baird 1976; Key 1975), their speech is also rated consistently with that role image.

Conclusions based on these studies contain all of the problems of subjectivity and selectivity inherent in any investigation of people's opinions of a topic. In some cases, empirical findings actually invert the stereotypes. For example, women are said to be more talkative than men, but when men and women talk together in groups, the finding has consistently been reversed: men talk more than women (Aries 1976; Case 1985, 1990; Doherty 1974; Frances 1979; Henley and Kramarae 1991; Hilpert, Kramer, and Clark 1975; Mulac 1989; Spender 1980c; Strodbeck, James, and Hawkins, 1957; Tannen 1990b; Treichler and Kramarae 1983).

A second class of studies addressing gender differences in language involved empirical linguistic description of certain isolated speech elements in actual conversations (Aries 1976, 1982; Barron 1971; Bodine 1975; Bonanno 1982; Dindia and Allen 1991; Fasold 1968; P. M. Fishman 1978, 1983; Gilbert 1976a, 1976b; Kollock, Blumstein, and Schwartz, 1985; Kramer 1974; Labov 1972a; Mitchell-Kernan 1972; Mulac 1989; Shuy, Wolfram, and Riley 1967; Spender 1980c, 1989; Swacker 1975; Swartz 1991; Trudgill 1972). The following generalizations of sex-based language are most consistently validated (Case 1993a).

1. When communicating, men more often assume task roles, giving opinions, suggestions, and task information (Bales 1953; Strodbeck and Mann 1956; Tannen 1990b; Treichler and Kramarae 1983); women more often assume expressive socio-emotional roles reacting to contributions of others by explicitly agreeing or disagreeing (Aries 1982; Bales 1953; Robinson and Smith-Lovin 1990; Treichler and Kramarae 1983).
2. The speech of women is more likely to be correct in terms of pronunciation (Case 1988; Labov 1972a; Levine and Crockett 1966; Shuy 1969; Shuy, Wolfram, and Riley 1967; Thorne and Henley 1975b; Trudgill 1972; Wolfram 1969).

3. In mixed-sex interactions, men take more frequent and longer speaking turns, talking more than women do (Argyle, Lalljee, and Cook 1968; Bernard 1972; Case 1985, 1988; Frances 1979; Hilpert, Kramer, and Clark 1975; Mulac 1989; Rosenfeld 1966; Soskin and John 1963; Spender 1980c; Strodbeck 1951; Swacker 1975; Treichler and Kramarae 1983). They also talk more than men and women in same-sex dyads, and they in turn talk more than women in mixed-gender dyads (Mulac 1989; Tannen 1990b).
4. Men are more likely than women to demonstrate turn-taking violations by interrupting a conversation in a mixed-sex group in order to take over the floor, change the topic, or put down others' ideas (Argyle et al. 1968; Case 1985, 1988; Eakins and Eakins 1978; Octigan and Niederman 1979; Robinson and Smith-Lovin 1990; Tannen 1990b; West 1982; Zimmerman and West 1975, 1978). Men interrupt women more than they do other men (Case 1985, 1988; Eakins and Eakins 1976; Treichler and Kramarae 1983; Zimmerman and West, 1975, 1978); whereas, when women interrupt, they are most likely to be in same-sex female groups and are either building rapport by elaborating on the other's theme, or using overlap speech in a supportive way which builds on another's utterance (Kollock et al. 1985; Orcutt and Harvey 1985; Treichler and Kramarae 1983) or asking for clarification, rather than disrupting what the speaker is saying (Case 1985, 1988; Tannen 1990b; Treichler and Kramarae 1983). The more powerful person in an interaction, regardless of sex, interrupts more (Courtright, Millar, and Rogers-Millar 1979; Eakins and Eakins 1978; Kollock, et al. 1985; Rogers, Jones and Stanley 1975; West and Zimmerman 1979).
5. Men initiate more topics than women in mixed-sex interactions, and have more success with their topics being developed in the group (Aries 1982; Case 1985, 1988; Crawford and Chaffin 1987; Heiss 1962; Kalčik 1975; Spender 1980c; Strodbeck, James and Hawkins, 1957; Strodbeck and Mann 1956; Treichler and Kramarae 1983).
6. Men are not as inclined toward self-revelation of personal information about their own thoughts, feelings, and experiences (Dindia and Allen 1991; Kramarae 1981; Morgan 1976; Tannen 1990b). Women are not only higher on self-disclosure than men (Case 1988, 1990, 1991; Cozby 1973; Derlega and Chaikin 1976; Dindia and Allen 1991; Jourard 1971a, 1971b; Rosener 1990; Tannen 1990b), but value it more than men do (Chaikin and Derlega 1974; Derlega and Chaikin 1976; Komarovskiy 1967).
7. Men tend toward humor "of a fixed sort--zingers" with most jokes against or at the expense of women, while women are more likely to tell funny stories about real things that reduce tensions and are playful (Case 1985, 1988, 1990; Swartz 1991; Tannen 1990b).
8. Women provide conversational support to keep conversations going, serving to support the other speaker (De Francisco 1991; J. Fishman 1972; P. M. Fishman, 1978, 1980; Kollock, et al. 1985; Kramarae 1981; Maltz and Borker 1982; Schegloff 1972; Spender 1980c, 1989; Tannen 1990b). They do this through the use of questions (P.M. Fishman, 1978,



1980; Hirschman 1974; Kollock, et al. 1985; Tannen 1990b; Treichler and Kramarae 1983); minimal listening responses for reinforcement like *mm hmm* and *uh huh* given in response to another's talk (Case 1985, 1988, 1991; J. Fishman 1972; P. M. Fishman, 1978, 1980; Kollock, et al. 1985; Schegloff 1972; Tannen 1990b; Treichler and Kramarae 1983; West and Zimmerman 1979); and raising topics geared to what men want to talk about in the way they want to talk about them (De Francisco 1991; J. Fishman 1972; P. M. Fishman, 1978, 1980; Kramarae 1981; Tannen 1990b).

9. Men engage in open argumentation and conflict within public settings with other males (Gayle and Preiss 1991; Goodwin 1980; Maltz and Borker 1982; Tannen 1990b; Treichler and Kramarae 1983), whereas, women use "collaborative" conflict-avoidance strategies as peacemakers in relationships. They voice objections, seeking compromises and talking out problems (Belk, Garcia-Falconi, Hernandez-Sanchez, and Snell 1988; De Francisco 1992; Gayle and Preiss 1991; Kramarae 1981). In cross-gender conflict situations men use "unilateral conflict avoidance strategies" of withdrawal, efforts to get women to be less emotional, as well as the avoidance of sensitive topics (Barnes and Buss 1985; Belk et al. 1988; De Francisco 1991; Kramarae 1981).

The results from many studies of gender and language contradict one another. For example, Lakoff (1975) conjectured that women used more tag questions ("We should decide, don't you think?") which make their language sound uncertain. Both McMillan, Clifton, McGrath and Gale (1977), studying mixed-sex discussion groups of college students, and P. M. Fishman (1980), studying heterosexual couples talking at home, found evidence for Lakoff's conjecture that women used more tags in their speech to elicit responses from uncommunicative male conversational partners. Kollock et al. (1985) found tag-question use linked to power. The more powerful person in an interaction used them less, regardless of sex. Conversely, Baumann (1976) found no differences in tag use by gender in a classroom setting. In contrast to both of the previously discussed findings, men have been found to use more tags in at least three situations: informal conversation (Lapadat and Seesahai 1977), at a professional conference among participants (Dubois and Crouch 1977), and, when in a leadership role, as a device to sustain interaction (Johnson 1980). In these examples, the same feature is used differently depending on the situation

and gender composition of the group, leading to questions about language function and use (McConnell-Ginet 1980).

The results of empirical studies encourage caution before making generalizations about extensive gender differences in speech. Descriptions of linguistic gender differentiation are uneven and incomplete. Methodological problems include the fact that only small segments of conversation have been analyzed, that only a few traits have been examined, and that the groups and contexts selected vary from study to study. Moreover, conversation usually has taken place in contrived situations rather than natural settings. In the latter, one can examine the flow of actual conversation between men and women in formal or informal organizational groups and simultaneously think about the effects that the setting, topic, or roles might have as they interact with gender. There was a need for descriptive, systematic, exploratory studies of language differences within the context of the give-and-take of actual talk (Berryman and Eman 1980; P. M. Fishman, 1978, 1980), measuring many variables of speech with the same speakers in a comprehensive and thorough way (Thorne, personal communication).

A study I conducted (Case 1985, 1988) improves on previous methodology by using a natural setting, lengthy conversational interactions with the same speakers examined across 34 speech variables and 9 influence measures,<sup>1</sup> and comprehensive analysis of the language interaction in a managerial context. The question examined involved identifying the characteristics of typical male and female speech. The natural conversation of women and men as they worked together in a group over 15 weeks was analyzed and quantified. A speech profile for each gender was developed, enabling women and men to be compared on the frequency of use of speech traits grouped phonologically, morphologically, semantically, and structurally. Two predominant styles of speech were identified, with differences in the frequency of use of linguistic categories in speech found across gender lines. A predominantly feminine style

was found which used a 7:1 ratio of female to male traits which had been frequently identified in previous research as female or male, and a predominantly masculine style which used a 3:1 ratio of male to female traits. The style used mostly by women was a facilitative/personal style, which appeared to be relational, self-disclosing, and integrative; the other style, used mostly by men, was an assertive/authoritative style which appeared to be directive, depersonalized, and commanding.

Characteristics of the female style that were found to be statistically significant ( $p \leq .05$ ) included use of intensifiers, conjunctions rather than interjections to introduce topic shifts, passive agreement like *mm hmm*, and tag questions ("The idea is good, don't you think?"). These could all be interpreted as socially facilitative forms of speech. Females were also significantly more self-disclosing, almost exclusively using personal experiences rather than authority as proof to convince others of their point of view. In general, the female style was an accommodative style.

Male speech included statistically significant differences from female speech ( $p \leq .05$ ) on such traits as informal pronunciation, imperative construction, interjections for topic shifts, and active agreement like *right* or *yeah*, all assertive, direct, authoritative forms of speaking. Semantically, there were significant differences in male use of slang, depersonalization and third-person usage, and competitive/aggressive talk. They used proof from authoritative sources, appealing to objectivity.<sup>2</sup> Men also changed the topics of conversation and interrupted women when they talked. The male style was an inexpressive, take-charge, detached, depersonalized style.

A major contrast centered around semantic variables, with a different set of themes and styles of speaking utilized by each group. Female themes included responsibility, affiliation, fairness, understanding, and commitment to the group, with use of words implying feeling, emotion, and personal references to their own experiences. Their talk involved extensive self-disclosures, supporting

Gilligan's (1982) notions of different voices for women and men. Male themes were frequently about competition, control, aggression, violence ("I'm waiting for a leader to establish himself so I can go for his throat."), superior status, or fear of self-disclosure ("If I stick my neck out, someone will take out a razor blade and knock my head off."), with significant differences between male and female speech in use of slang and depersonalization (Case 1991).

In conversation, it was clear that males attempted to assert status and establish dominance. They were more direct, informational, action-oriented, and hierarchical. This included extensive use of the imperative form in making demands, commands, and requests. The male speech style was assertive and authoritative, proposing, opposing, competing, and using proof from other sources. It was a style that pressed compliance on a listener or led to an argument. In general, the male style, with verbal gestures of dominance and patterns of conversational assertiveness, was action-oriented in its use of imperative construction, and exploitive in its themes of competition and aggression, with little personal information revealed. Men in conversation appeared to engage the world in a one-up, one-down hierarchical way. Conversations seemed viewed as negotiations in which people tried to achieve and maintain the upper hand, and to protect themselves from others' attempts to put them down and push them around (Tannen 1990b: 24).

It was also clear that the female style was more accommodative, with conversation heavily revolving around intimacy through self-revelation, and concern with internal states and behavior. Female talk seemed to attempt to manage relations with others. Through their speech style, information was provided to the listener about how the speaker thought and felt, including emotional needs, hopes, wishes, likes, and dislikes. By providing such proof from personal experience, the female speaker seemed to hope the listener would respond with the desired behavior. As a style, female speech was more polite and indirect, employing many softening devices, such as tags and modal

construction, to avoid imposing beliefs or agreement on others through strong statements or commands. Women's conversations appeared more democratic, including more people in a discussion. They appeared to engage the world as a network of connections. Conversations seemed viewed as negotiations of hierarchies of friendship (not power) for closeness in which they tried to seek and give comfort, support, and to reach consensus (Tannen 1990b:25), with a special concern about how people would be affected by a decision, and social responsibility.<sup>3</sup>

## Problem

It was clear from this work that the different sexes used certain characteristics of speech more frequently and in sharply distinctive ways, although the speech of all women and all men was not homogeneous. There were gender-based distributions with variably occurring differences and similarities in the frequency with which women and men used specific features of a shared language, depending on the context of linguistic interactions. For example, variation in speech by men and women would be expected, depending on their role in a group and the issues being discussed, and their participation in single-sex work groups vs. mixed-sex work groups, and as they work in a group over time. Nevertheless, in general, there was a more feminine and a more masculine style. Building on this work, a hypothetical model of possible occurring speech styles by gender is proposed (see Figure 1).

Women would tend to have feminine speech, and men would tend to have masculine speech. These speech styles would be on opposite ends of a continuum. It is suspected that cross-sex-typed speech, a woman speaking only male-style speech or a man speaking only female-style speech, would not be a naturally occurring phenomenon.

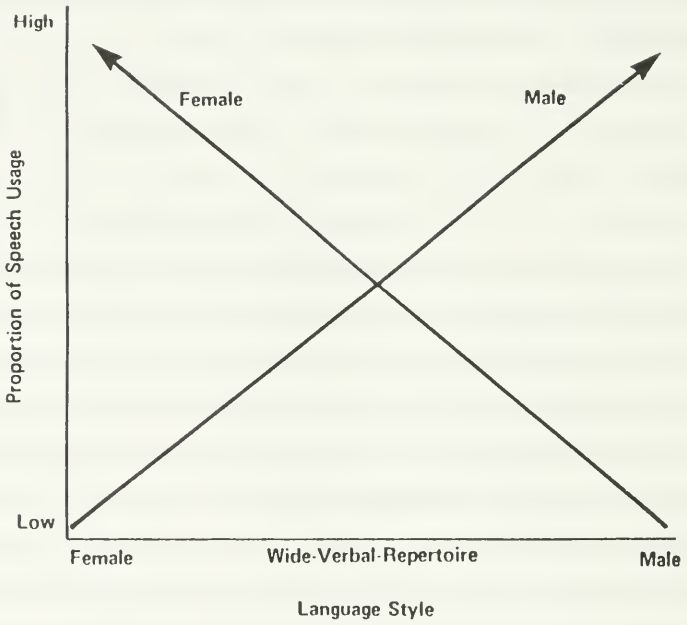


Figure 1



This paper explores the concept of wide-verbal-repertoire speech, spoken by some men and women, which combines masculine and feminine characteristics of speech in differing frequencies and proportions. Speakers of this style would fall near the center of the model of language distribution and have more similarities in their speech than research on differences would suggest. The study described herein provides in-depth data on smaller numbers, drawing attention to men and women demonstrating wide-verbal-repertoire, a new speech-style conception<sup>4</sup>. These particular speakers were ones who fell near the center of the language distribution of our model.

## Method

The study was conducted in two 10-person groups (5 women and 5 men in each) at a leading Eastern management school. The group of managers worked together in an unstructured setting, observing and attempting to understand their own leadership and influencing behavior as it occurred, and coming face to face with issues of power, uncertainty, and normlessness. Group members were of comparable age (29-41), status (high, middle management), social class (upper middle), and ethnicity (Caucasian), factors which should decrease most linguistic variation except that predominantly due to gender differences.<sup>5</sup>

Audiotaped, 45-minute sessions completed over 15 weeks were made from the time of initial group formation until termination. Twenty-two hours of taped conversation were transcribed by the experimenter, who recorded as accurately as possible everything that was said, without altering the grammar or verbal form of speech. False starts, fragments of words and phrases, filled pauses (*um* and *ah*), nonlexical expressions, and interruptions were recorded, as well as information relating to the text of the speech, such as chuckling or

unintelligible speech. Two group members, a man and a woman, were used to fill in sections of transcripts for reasons of confidentiality. Reliabilities for the transcript process were 96% agreement for words and 93% for utterance boundaries (where one speaker began and ended). Numbers were substituted for names so that data analysis could be done without regard to participant sex. Observation of group sessions occurred simultaneously, supplementing verbatim transcripts and empirical scoring schemas, to record language interactions and comments on the social life of the group.

### Analysis of Transcripts

From an initial 22 hours of taped conversation, 10 hours from one group were used because of the speech-style diversity of some of its members, which was unlike that of the members in the other group, who were completely gender-split in their speech. For analysis and codification of each member's speech, 4 randomly selected tapes were analyzed. Each was drawn from a different 4-week calendar block to eliminate differences in speech that might have occurred as the result of group development over time (Alderfer 1980; Bales 1953; Bennis and Shepard 1956; Bion 1961; Schutz 1958). All 10 hours of tape were used to draw dialogue samples illustrating the relationship between gender-related speech patterns and influence.

Phonological, morphological, semantic, and structural analyses of each member's speech were completed. Overall, 34 different language traits were examined. Phonological variables included differences in pronunciation, intensifiers (such as *so* used in an expressive way), and discourse length. Morphological variables included the smallest meaningful units of language, and syntactic usage (conjunctions; interjections; tags; qualification; passive or active agreement; exact words; and type of sentence construction, such as

modal, imperative, compound, compound-complex, and incomplete). Semantic variables related to the meaning of what was said, including pronoun choices, slang, swearing, joking, proof strategies referring to outside experts or personal experiences, and conversational topics and themes. Structural variables included communication patterns of language organization and arrangement in interaction, such as turn-taking, question asking and answering, patterns of interruption, topic changes, issues of "who talked how much to whom about what in what way?" and messages of inclusion and exclusion.<sup>6</sup>

### Measures of Influence

Nine indicators of influence were employed, which basically correspond to 5 general measures: who talks, how much, to whom, about what, and in what way (Bales 1950, 1968; Bales and Cohen 1979; Borgatta and Bales 1953; Hare 1972) (see Table 1). A ranking and weighting schema for establishing influence behavior at each stage and for influence in the group as a whole was used (Case 1985) (see Appendix).

### Procedure for Establishing Speech Styles

Frequency of occurrence for each of the 34 traits was counted for each person, as well as proportion of trait usage. Individual language profiles were then drawn. The extent to which an individual consistently employed certain linguistic features and patterns determined his or her predominant communication style. Reliability was obtained independently by a colleague who did not know the purpose of the study. Reliability on influence measures ranged from 93 to 100% and from 88 to 100% on each speech-style

**Table 1: Influence Measures**

| Area        | Indicator                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------|
| Who talks   | Frequency of initiation                                                                                             |
| How much    | Mean utterance length<br>Percentage of total words spoken                                                           |
| To whom     | Frequency of being talked to<br>Number of persons talked to per session<br>Frequency of talking to group as a whole |
| About what  | Frequency of being talked about<br>Frequency of ideas being talked about                                            |
| In what way | Proportion of fillers and qualifiers                                                                                |

scoring category for each individual.

Based on the empirical evidence presented in the literature review and on the theoretical rationale, the direction of the outcome of each measure could be predicted. It was important to determine inferentially whether the mean performance of the two groups significantly differed from one another.<sup>7</sup>

The use of frequency counts alone is an invalid method for determining style as described across gender groups. There are not equal chances of occurrence for all categories of speech within normal conversation. Language traits within groups are not equally distributed in use, although equal distribution across gender by trait would be expected if there are no language-style differences in use by men and women. Proportions were used first to describe one style of speech that is more characteristic of men than of women, and another, more characteristic of women than of men, and then to look for areas of overlap.

## Profile Categorization

A short experiment was developed to verify patterns in the profiles and ascertain whether grouping of patterns corresponded to gender.<sup>8</sup> Individuals from another university sorted the profiles and put them into categories based on their perception of similarities or differences in the language patterns graphically displayed on the profiles. They were instructed to "sort these profiles into two groups according to similar patterns you see in them." The groups did not have to be equal. We expected that the more overlap the profiles had, the more certain people would be of the similarities of the profiles.

Five men and 5 women sorted 20 profiles, with no gender-identifying characteristics on them, which had been randomly ordered. Two distinct groupings emerged from these examinations, with a 95% correct identification rate. Three profiles did not quite fit the pattern, yet in spite of uncertainty, when the sorters had to choose a group for each of these ("If you had to put them into a group, where would each go?"), women were placed with women, and men with men. In all other cases, upon questioning, individuals were completely certain that the profiles they had placed together belonged in the groups where they had placed them.

## Results

Three speech styles were thus identified: a predominantly feminine style (N=9); a predominantly masculine style (N=8); and a wide-verbal-repertoire style (N=3), used by 2 men and 1 woman, which still maintained gender-appropriate patterns although it mixed elements of each more proportionately.

The fact that 17 individual speech profiles were correctly matched to gender groupings 100% of the time with 100% certainty points to a clearly differentiated gender-based speech pattern. It is the 3 profiles which caused problems in both classification and uncertainty that we describe in this paper as patterns of wide-verbal-repertoire speaking. All 3 profiles came from the same group. In the other, all individuals maintained gender-expected patterns. Gender speech congruity for these individuals was close to a 1:1 ratio. This was in contrast to the men who used traits which had been more frequently identified by previous research as male traits in a 3:1 ratio to those which had been more frequently thought to be female traits. Women had even less variation in their speech with a more extreme 7:1 ratio of female to male traits (see Figure 2).

### Wide-Verbal-Repertoire Profiles

Although a wide-verbal-repertoire speech style was hypothesized, it was not expected that it would take three different forms in its co-occurrent use of certain linguistic features. The three forms found were (1) predominantly balanced across gender traits; (2) unbalanced, characterized by extremely high use of both some male traits and some female traits in all linguistic categories; and (3) linguistic area shifts, with female-style phonological and semantic areas, in contrast to more male-style morphological and structural areas. We call these profiles *balanced*, *extreme*, and *mixed*.

In general, persons who used wide-verbal-repertoire speech combined masculine and feminine characteristics in differing frequencies and proportions. The study presents evidence that persons using the wide-verbal-repertoire speech style were able to be simultaneously assertive and supportive in language behavior, although not at the same time, with the same words. This



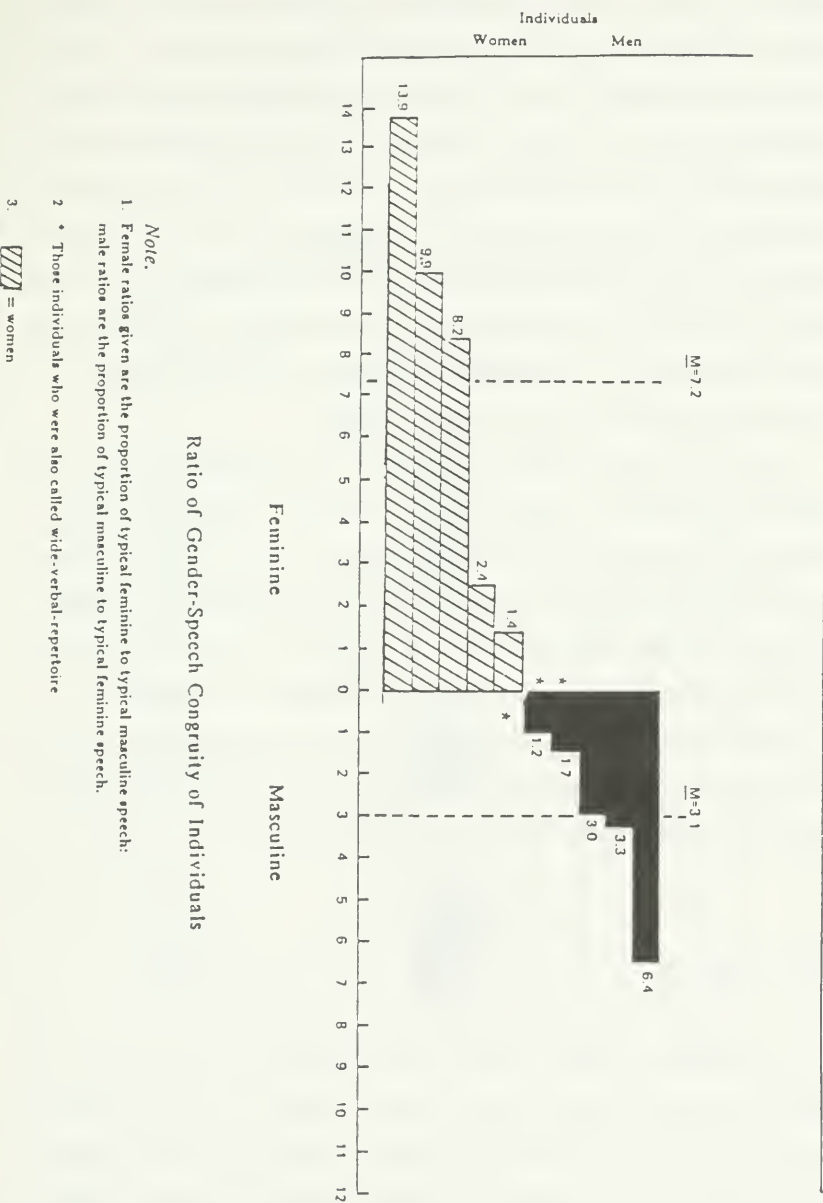


Figure 2

contradicts the literature that suggests that it is not possible for the same person to be simultaneously assertive and supportive in language behavior in a group (Fisher 1980; Hirschman 1974). The wide-verbal-repertoire individuals were highest in the group in both areas.<sup>9</sup> The diversity of speech repertoires used by these individuals, which included action and ambition, as well as gentleness and sensitivity, was not in opposition to their leadership activities. Influence was exerted in the group by these individuals without adopting stereotypical male speech styles alone. Language flexibility and adaptability to situational needs and task demands was shown. Thus, neither masculine-style traits nor feminine-style traits hindered their leadership activity.

The woman used the following traits from the male prototype with extremely high frequency: compound/complex sentences, slang, third person, disallowing interruptions, and talking to the group as a whole. The males used the following traits from the female prototype with extremely high frequency: conjunctions for topic shifts, hesitating and questioning patterns in declarative sentences, tag questions, qualifiers, expressed feelings, and self-disclosure.

Each profile is described to illustrate similarities and diversity of language-style possibilities, with particular emphasis on the female profile because there were no hints in the literature that differences like this might occur.

#### Profile 1: Balanced

The man with the balanced profile (M4; see Figure 3) was closest in speech to what the literature might mean if speech were described as androgynous (Bem, 1974, 1978, 1981; Bazin and Freeman, 1974; Heilbrun, 1973). The end product was close to gender-neutral language, a male-to-female proportion of 1.2:1. He had the highest proportion of female speech-

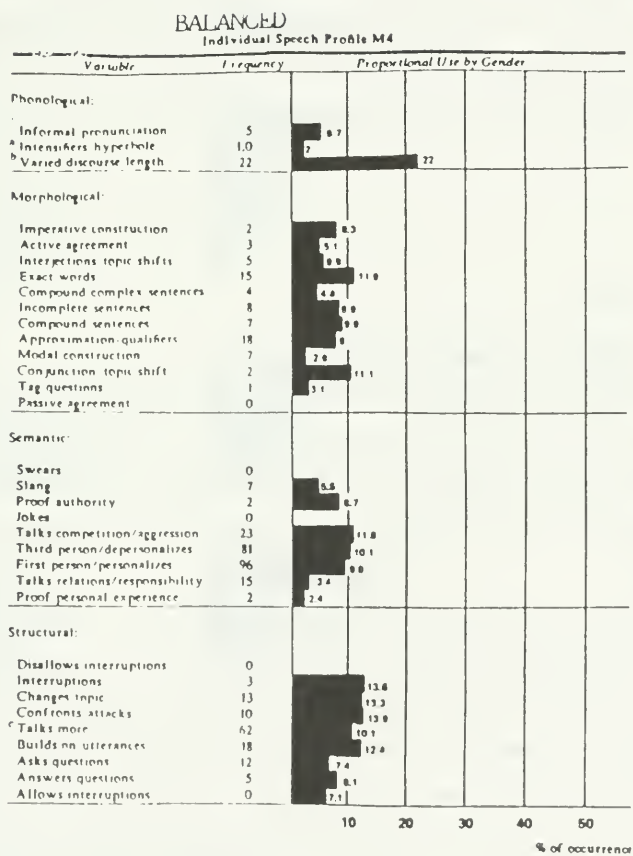


Figure 3

characteristics of any other man in the group, yet all of the respondents correctly placed his profile with those of other male speakers. Nevertheless, 50% of them indicated uncertainty about the placement, the highest uncertainty rate for any one profile.

Androgynous speech might be presumed to be better, but on measures of influence, he was in the middle of the group, and the least influential of the men. Perhaps group members had problems knowing if he was "male" or "female" from his speech. Perhaps he just was not very good at using the balance in his speech.

#### Profile 2: Extreme

The second type of wide-verbal-repertoire speech profile was a man, M5 (see Figure 4), in whom extremes predominated, with selective high use of some male and some female traits. The ratio of male to female speech was 1.7:1, balanced because of the effect of extreme scores on means when averaged.

Since he showed extreme contrasts in speech, traits illustrating the extremes are discussed. As can be seen in Figure 4, 75% of swearing came from this man, as did 1/3 of the interruptions, the highest frequency in the group. In contrast to his cutting off of others, he had the highest overall pattern of building on others' utterances, contributing more than 40% of all such behavior by males. These extremes present an interesting contrast between aggressive and facilitative behavior.

In the phonological area, he contributed 1/5 of informal pronunciation in the group. This extreme male trait was in contrast to his varied discourse length, the most varied of the males in the group, yet less varied than that of female members.

## EXTREME

## Individual Speech Profile M5

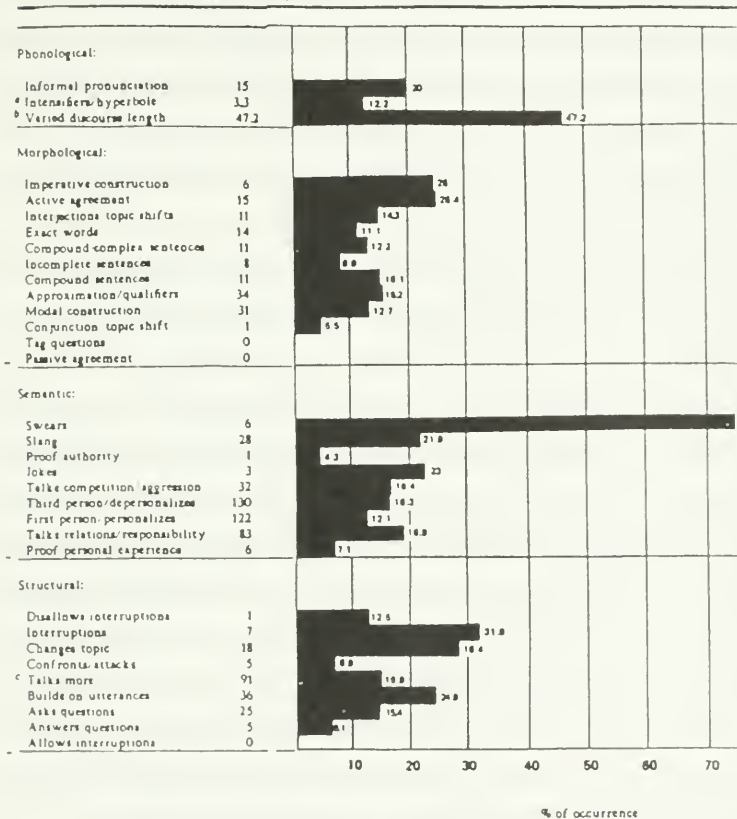


Figure 4

In the morphological area, there was a contrast in use of imperative and modal construction. One-fourth of imperative construction forms came from him, ranking him second in this category behind another male. Yet in the qualified modal construction form, although he was highest of men, two women used this form more frequently. Similar second-place rankings occurred for use of compound sentences, a conjectured female characteristic, where he was the highest-ranking man, and for active agreement, a conjectured male trait. His use of approximations and qualifiers, conjectured female traits, was highest for men.

Use of third- and first-person forms provided an extreme contrast in the semantic area. He was the second highest man in his use of third-person form, but the highest in usage of first-person form, contrasting male-female traits. Connected to his use of the first person was a willingness to accept personal experience as proof, something the women did readily. Sixty-six percent of the male incidents of this were his. In terms of the content of his speech, he used both themes of competition and aggression, as well as themes of responsibility and relations. In the male domain of competition and aggression, he followed one of the men in rank order. In the more female domain of relations and responsibility, he contributed 64% of male comments. Only one woman ranked higher in use of this form. He used clearly masculine traits like swearing and joking to compensate and balance his more feminine speech tendencies, such as use of modal construction, qualifiers, personalization, and intensifiers.

In the structural area, he was one of the more talkative of the group members. He also interrupted and changed the topic more than any other male. These male traits, making him the most assertive man in the group, contrasted with his socially-facilitative speech forms of building on others' utterances and asking questions. Perhaps this contrast in speech use helped him remain "male" in other people's minds.



### Profile 3: Mixed

The third pattern came from a woman, F5 (see Figure 5). Her mixed linguistic profile consisted of two female style categories (phonological and semantic) and two male categories (morphological and structural).

Her discourse was structured like that of the more influential men. Yet as a woman, the semantic content of her utterances reflected a perspective of relations and responsibility, and a personal, context-bound orientation. This woman was the most supportive member of the group in her language behavior, as well as the second most assertive individual, following M5.

Most of the women's use of imperative construction, informal pronunciation, jokes, proof from authority, slang, active agreement, interrupting, changing topics, and interjections for topic shifts—all thought to be male traits—was hers. She was second highest in the group, after a man, in her typically male-like use of the third-person form. In contrast, she was highest in her use of both modal construction and the first-person forms, typically thought to be traits used by women.

Phonologically, her speech was feminine. Although she contributed 86% of women's use of informal pronunciation, a trait used mostly by men, her use constituted only 8% of total usage.

In the morphological area her speech was masculine, averaging 88% of the total women's usage of conjectured male characteristics (compound/complex sentences; interjections for topic shifts; imperative construction; active agreement; and exact words for space, time, and quantity), whereas she was responsible for 28% of the female constructions spoken by women. Her use of compound/complex sentences accounted for 40% of all such utterances and 90% of all women's utterances of this form. Her language had a lot of complex embedded constructions, which are considered

## MIXED

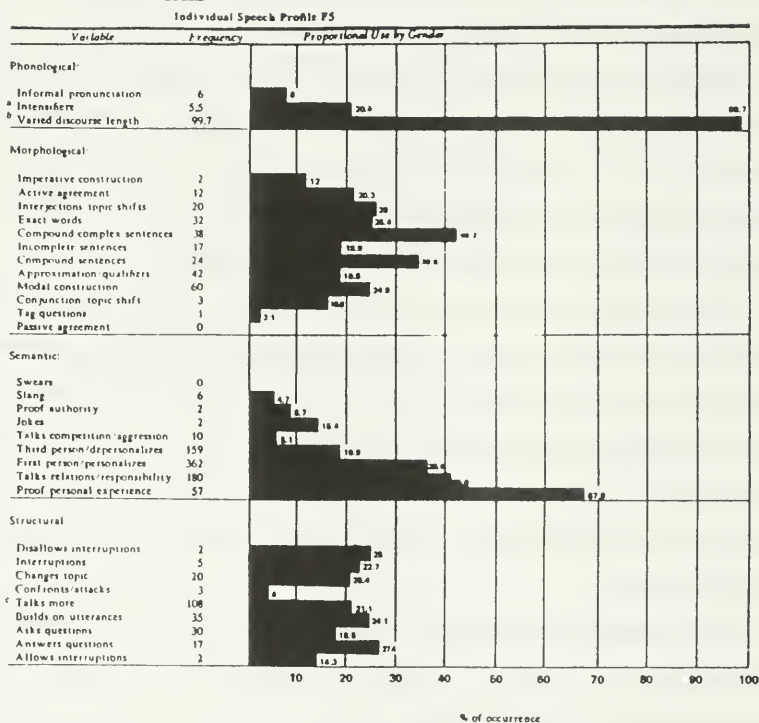


Figure 5

authoritative (Kaplan 1976). She ranked second in group use of interjections as topic shifts (26%) and third in active agreement (20%), both considered male traits. On the other hand, although her use of imperative constructions constituted 100% of the total women's usage, she was responsible for only 12% of the group's total use, ranking her fourth. She was, however, the most frequent user of modal constructions, a female form, using 1/4 of all such constructions. Two traits which women frequently used on which she ranked very low were tag questions (3% of female utterances) and passive agreement (no incidents). She was the only woman who, like the men, never said *mm* *hmm*.

Just as the morphological area was unbalanced in the male direction, the semantic area was unbalanced in the female direction by a ratio of 5.4:1. Her use of slang was less than that of any of the men, but constituted 75% of women's use. All women's incidents of proof from authoritative sources were hers, tying for second place with a man. Her use of the third person and of depersonalization was second highest, after a man, and contributed 2/3 of women's third-person use. In contrast, she had the highest use of the first person, employing the most *we*'s, *us*'s, and *I*'s (30%), talk about relations, affiliation, commitment, and responsibility (41%); and proof from personal experience (68%). Overall, 61% of all male semantic traits spoken by a woman were hers. But there were 2 male traits in which she was low: swearing, which none of the women ever did; and talking about competition, aggression, taking charge, and one-upmanship--contributing only 5% of these utterances.

Although structure was the most balanced of her linguistic areas, she was responsible for 2/3 of all women's use of male speech traits. Her highest male speech characteristics included answering questions (53%) and changing the topic (69%). She contributed 83% of all women's use of interruptions and all the incidents of disallowing interruption. That is not to say that she always disallowed interruptions. But the times she allowed interruptions accounted for

only 18% of the women's total. Although very assertive, her style was not confrontative, thus placing her in the bottom quartile in arguing, confronting, and attacking. She stated her own ideas, but also built on others' utterances and asked questions to elicit ideas—both female traits.<sup>10</sup>

The split in her speech hints at real differences in male and female speech styles. That is, I suspect that some traits are learned so early in life that they cannot be altered. For example, phonological differences in speech are the most commonly cited distinctions in speech between genders, and are most likely unconsciously produced. Semantic differences are more likely to reflect value orientation and are more likely learned through early socialization. Gilligan's ideas (1979, 1982, 1984) are very likely reflected in the semantic area of women's discourse. The wide-verbal-repertoire woman was feminine in her use of these two speech forms. On the other hand, her speech was morphologically and structurally male. It is possible that one could consciously work to change these two areas. Both could be altered through education and/or assertiveness training.

## Discussion

Three different forms of wide-verbal-repertoire speech were presented within the context of an overall pattern of male and female speech styles, with co-occurrence of certain linguistic features, such as less frequent use of male traits by women.

Two of the most influential members of the group studied were a man and a woman, both wide-verbal-repertoire speakers (M5, F5). We had expected that masculine-style speech would correspond with influence in the groups, yet in the case of these influential members, both used speech combining masculine and feminine characteristics in differing frequencies and proportions, and used

them well. They had the lowest proportions of masculine to feminine speech traits (M5 1.2:1, and F5 1:1.4). Nevertheless, the woman's speech was predominantly feminine (particularly in the semantic area, where the perspective of relations and responsibility lies). She was the most supportive member of the group, and second in assertiveness only to the wide-verbal-repertoire man. The man's speech was predominantly masculine in its morphological form and in how the process of interaction was structured.

It is a pitfall to believe that a given speech form is intrinsically strong or weak, and that for people in management to be effective, they must talk and act like a man (Bennis 1984). In fact, there may be organizational and personal costs to attempts to shape all managers into imitators of traditional organizational males, honing in on the rational, analytic, and competitive, at the expense of traditional female relation-oriented skills such as understanding, listening, awareness of others' feelings, and collaboration (Case 1988).

Images of competence need to be expanded so that effectiveness in management no longer means talking and acting like the stereotypical male. The workplace is being radically altered. The managerial abilities that are becoming increasingly important include a range of interpersonal people skills which have replaced bureaucratic, formal structures emphasizing chain-of-command, with leaner organizations which focus on innovation and fast-paced information exchange (American Management Association 1989; Naisbitt and Aburdene 1986, 1990). The skills badly needed by managers include the ability to build effective relations laterally and with superiors and subordinates, to work in groups as both a team member and team leader, to interpret work group values, and to influence without formal authority, both interpersonally and in groups (Boyatzis 1982; Louis 1990; Porter and McKibbin 1988).

The reinvented corporation is "an environment for nurturing personal growth", a place in which "top-down authoritarianism is yielding to a networking style, where everyone is a resource for everyone else" (Naisbitt and Aburdene

1986:72). Since female values of inclusion and connection are emerging as valued leadership qualities (Case 1993a), language becomes one of the greatest motivating forces available for management, and the wide-verbal-repertoire language style seems particularly well-suited for this task.

## Implications for Future Research

Nonetheless, since attitudes toward group members are formed partly as a function of assuming appropriate sex-role differentiation in group interaction, we conjecture that individuals using wide-verbal-repertoire speech might have problems, since their language style is at odds with the ideas people in organizations carry around about how male and female leaders or nonleaders are supposed to act and talk. Sex-role differentiation is signaled by use of appropriate gender-based speech. Many studies indicate that approval from others is given to the extent that male and female behavior is in line with gender-role expectations for what is feminine and masculine (Deaux 1976; Eakins and Eakins 1978; Epstein 1981; Franzwa 1974; Merton 1972; Nieva and Gutek 1981). It is also suspected that individuals whose language style frequently crosses sex boundaries would be constrained by the group to keep on their respective sides of the sex barrier, and that free movement between the two styles would subject the individuals to stigma from the group. While speech is but one way in which men and women are expected to differ, appropriate speech carries with it positive sanctions for role conformity and negative sanctions if violated. Thus, it is expected that attitudes toward group members form partly as a function of the degree of masculinity or femininity of speech, with group members having particular problems with self-disclosure by males, and with verbal assertiveness by females.



It is also expected that not only would such individuals affect the group, but they would also be affected by their inability to express a range of thoughts, beliefs, and feelings in their own language style, because of attempts to make them fit into stereotypes held by the group (Fisher 1980). Very little is known about the rules and restrictions inherent in sex differences in speech. Attitudes toward males and females as a function of the degree of masculinity or femininity in their speech have not been studied. Hence the question: "With what consequences do women and men use speech style traits associated with the opposite sex (i.e., have a wide-verbal-repertoire)?"

Preliminary evidence from the transcripts provides examples of problems connecting wide-verbal-repertoire speech with gender. Both M5 and F5, though influential, experienced feelings of rejection by some members of their group. Indicators of the influence of these individuals on group members included:

"You help us understand what's going on;" and

"Do you have a master plan for the group, because if you do, I resent it."

Indicators of uncomfortable feelings include:

"Can I be both female and male in this group? Can I be intelligent and soft and tender?" (F5); and

"I feel trapped. I can't be myself in this group. Makes me feel stopped up. I can't be what I am ... I'm damn uncomfortable." (M5)

Indicators that F5 was pushed outside the group include strongly aggressive, negative-sanctioning comments made by the male group members with prototypical male-style speech. The salience of gender is clear in their comments:

"What you putting on airs being like one of those men?"

"You're a woman who takes a man's role;"

"You're playing the role of a man in the group. There's an issue of competition;" and

"Castrating bitch."<sup>11</sup>

Female group members also recognized the pushing out of F5. But their language was of concern and care:

"I think we pushed ---- outside. We're going to lose her"; and

"Please, stop it, we're ganging up on her."

M5 commented on his place in the group:

"This group is like the Heart of Darkness. Like you don't know how to use your own powers. You cause pain;" and

"I give everything I have emotionally. It's the best I can do. It's very demeaning. Like making love to someone, then getting a rating on a 10-point scale when you walk out of the bedroom."

Research is needed to make clearer the consequences of gender-speech incongruity and conditions under which gender becomes salient in groups. Further questions include what impact a person's sex-role identity would have on speech patterns, how speech styles affect success as a manager, and whether gender-related speech styles vary significantly in different contexts. For example, would women and men speak the same way in their own organizations with their actual peers or when their jobs were at stake?

## Implications for Women

Since the male model of behavior has been the business standard, women often felt complimented if told, "You think like a man." Many feminists believed that women's language reflected too much uncertainty and non assertiveness (Eakins and Eakins 1978; Kramarae 1982; Lakoff 1973, 1975; Miller 1983). They argued that professional women should adopt "the stronger" forms of the male communication style and consciously work at eliminating their more female-like speech characteristics through assertiveness training, so that

they would not be perceived as lacking confidence and unable to take on leadership positions.

But women encountered two language barriers in organizations: the words they spoke, and the words spoken or written about them. Some women did adopt the "stronger" masculine take-charge style, believing that if they spoke the language of power, they too would be powerful. But women who adopted this strategy were not treated equally. Similar behavior was reacted to differently, depending on whether these behaviors were exhibited by men or women (Bradley 1981; Case 1991; Condry and Condry 1976; Eichler 1980; Kelly, Kern, Kirkley, Patterson, and Keane 1980; Macke et al. 1980; Morley 1976; Morrison, White, and Van Velsor 1987; Nieva and Gutek 1981). When women did attempt to transcend traditional gender categorization in their speech, displaying self-confidence and assertiveness, they were confronted with the double bind, often being perceived as overly aggressive or overbearing (Astin and Leland 1991; Cantor and Bernay 1992; Fulmer 1977; Johnson and Goodchild 1976).

In the Vice-presidential debates of 1984, Geraldine Ferraro was "feisty", whereas George Bush was "forceful". Republican staffers on Capitol Hill refer to Rep. Patricia Schroder, D-Colorado as "weepy, whiny, and tiresome", and Rep. Barbara Boxer, D-California as "shrill, rhymes with rich". In Congress outspoken men are assertive; outspoken women, pushy (Cantor and Bernay 1992). The double bind for males is if they behave non aggressively, they are "wimps."

Men also judged women who were passive and emotional as unsuited to management (Kanter 1977). Unfortunately, the double standard can give rise to the double bind that women who practice politeness may get as negative a reception (lacking authority), as women who are "rude and disagreeable" (Trudgill 1972).

There is also a double standard for disclosure, recognized and accepted by both males and females, which perceives expressive males and non expressive females as less well adjusted than males who are silent and women

who disclose (Case 1993a; Derlega and Chaikin 1976). There is no evidence that this standard has changed.

Others disagree with the notion that the speech characteristics more frequently used by many men should be taken as the norm of desirable organizational speech. Bennis (1984: 330) states:

There's a mythology of competence going around that says the way for a woman to succeed is to act like a man ... What we see today are all kinds of workshops and seminars where women undergo a metaphorical sex change, where they acquire a tough-talking, no-nonsense, sink-or-swim macho philosophy. They're told to take on traits just the opposite of those Harvard psychoanalyst Dr. Helen H. Tartakoff assigns to women: "endowments which include the capacity for mutuality as well as maternity... for creativity as well as receptivity." In short, she sums up, "women's feminine heritage, as caretaker and peacemaker, contains the potential for improving the human condition.

The wide-verbal-repertoire woman was more direct and authoritative in her style of speaking than other women in the group, although none were unassertive in their speech. They spoke up, but did not monopolize conversation or frequently interrupt others. The wide-verbal-repertoire woman was able to hold the floor, disallow interruptions, and get her voice heard; yet the substance of her messages was still different from the men's. It was participative and democratic, both considered appropriate management behavior today for all managers. But what was particularly interesting was that becoming assertive did not alter the semantic content of speech. The major difference in the semantic area of female speech was continually reflected in the values expressed through their themes, which showed different perceptions, beliefs, and categories for how they saw and interacted with their world.

Becoming assertive did not alter the semantic content of the speech of the wide-verbal-repertoire woman.

The speech of wide-verbal-repertoire individuals has strengths that organizational members might benefit from sharing and that everyone might benefit from valuing (Aries 1976; Astin and Leland 1991; Case 1988, 1993a; Goodwin 1980; Helgesen 1990; Kalčík 1975; Thorne, Kramarae and Henley 1983). For example, the more feminine portion of wide-verbal-repertoire speech was relative, descriptive, indirect, and more structured by the desire to include others in the solicitation of ideas than to assert ideas. This speech style paid attention to process; it listened for how action affected other people; it eschewed hierarchy through its use of symbols of inclusion. Based on current organizational realities such as multi-cultural organizations, global competition, deregulation, and the heavy legal context in which businesses must operate, it is very plausible that these features of speech (indirection, mitigation of criticism, solicitation of others' ideas) are useful organizational functions.

We certainly found in our results a personal, context-bound orientation in how the wide-verbal-repertoire people talked, with abundant use of softening devices in speech, like tags or qualifiers, which allowed alternative ideas to be easily expressed. This could be especially helpful in the management of conflict or potential conflict among groups that influence the performance and goal attainment of the organization as a whole, as well as in developing complex and novel decisions which require pulling together perspectives and information from many different groups. This style was in contrast to the impersonal, authority-oriented speech style used by most men, with its use of competitive and confrontative devices like imperative construction, proof from authority, and interruptions to get one's point heard (Case 1988:56, 1991).

Beliefs about differences in language use and its perceived impact are so important that how groups react to these differences becomes an important part of organizational life. Intergroup theory helps focus our attention on the many

factors that color our interpretation of language use. An awareness of how our group memberships affect what we see, hear, and know can help us consider and incorporate alternative points of view.

## Implications for Management

A major function of management is to sense what is going on so the manager can detect potential problems and respond before they become major problems. Good listening is an active process of making sense out of what is heard, although to many people it is an unrecognized process. Listening plays an important role both in gathering information about managerial decisions and in making people feel that their ideas and beliefs are of value.

Wide-verbal-repertoire speakers were better active listeners than their male counterparts. They were the ones to rephrase ideas, ask for clarification, and use qualifiers and modal constructions in idea generation. Their listening was intense, thoughtful, and attentive. It is far more common in an interaction to let one's mind wander, to think about what to say next and when to jump in with an idea, thus missing what is being said. Most men in the group showed the latter characteristics by cutting off others to make their points and by changing the topic of conversation.

In our group, wide-verbal-repertoire speech and women's speech permitted the examination of differing value positions through supportive listening, sensitivity to others' needs, and mutual sharing of emotions and personal knowledge. They seemed to be styles driven by a vision of end values, not by a particular method and means to get there. These would appear to be appropriate styles when response to change is needed, when coping with ambiguous situations, when problems require a long-range perspective, and when a variety of values need to be understood or goals may be needed. This



speech style helped in the reaching of a consensus by competing groups, increased the interaction and the empowerment of others, and was generally a cooperative style which fostered participation and communication rather than domination.

The results of this study also suggest that such behavior is compatible with leadership activity. The wide-verbal-repertoire style also, to some degree, blended in an impersonal, authority-oriented portion that made the user sound sure, authoritative, and in charge. When necessary, the softer language of caring that comes through (with its focus on attachment, fairness, understanding, and response) was combined with a stronger language of rights, using imperative construction and proof from authority, and focusing more on justice, detachment, impartiality, and objectivity. Unlike Gilligan's ideas of women using a "different voice" of care which is in tension with the male focus on justice,<sup>12</sup> the wide-verbal-repertoire speech seemed to combine both voices at different times in different ways. The style is in contrast to the more impersonal, authority-oriented, dominating, and combative style used by most of our male group members (Case 1988).

Gardner and McClelland have identified the major components of influencing ability as empathy, self-understanding, self-confidence, and a desire for power (Goleman 1986). The language used by wide-verbal-repertoire people may be full of previously unrecognized elements that are essential for influencing other people persuasively to undertake new ideas or activities. Their language seems to combine perceptivity through empathy with self-understanding, a blend which allows individuals to read other people and not let their own feelings get in the way. It also includes words that show social self-confidence, which involves a sense of presence and security about themselves.

These elements of wide-verbal-repertoire speech may constitute the language people use to reconcile their own motives with those of others, and to move toward a solution to a problem that has never been stated. These are

certainly the kinds of talents necessary in our modern-day, multi-cultural organizations.

The two influential persons using wide-verbal-repertoire style were not androgynous in any sense. The male used extreme characteristics over all linguistic areas, but definitely showed empathy, self-awareness, and a sense of presence. The female, on the other hand, split linguistic areas; in her speech, her confidence was shown both structurally and phonologically, and her empathy and self-awareness was shown both morphologically and semantically.

Women currently in leadership positions may be helping to perpetuate the stigma attached to use of any feminine-style speech. Yet few women can develop enough of the qualities valued by the dominant male culture in a way that eliminates the effect of their gender. For example, assertiveness training may help a woman learn to hold the floor, disallow interruptions, and actively agree in decision-making groups--traits utilized by the wide-verbal-repertoire woman. But it does not focus on the substantive semantic content of feminine speech, which is the area that most reflects the different voice. The type of value orientations that women have learned in our culture are most reflected in this area of speech (Case 1988, 1990). It is especially important to women's careers that they recognize and value the diversity of speech repertoires used by people, and essential for women, whose speech may be different from the more typical organizational speech style, to value precisely their own differences and what these differences can contribute to organizational effectiveness.

We are not suggesting that any speech style is a "better voice", but the wide-verbal-repertoire voice is a very needed voice. It is much better to have many represented than any omitted. If many voices are included in organizational decision-making, conversation is transformed and problems can be seen in different ways. Different styles of speech are likely to be effective for

resolution of different kinds of issues. Organizations are too complicated to have only one set of rules, behavior, and skills that apply to women and men in their attempts to succeed. This research is important in making clear the powerful masking effects of style. For example, we still carry with us ideas about how leaders and non-leaders act and talk. If leadership in an organizational culture is perceived as a male-role stereotype and the male leader's language viewed as the language of leadership, then females in this male role may seem out of place because of our subconscious notion of how females ought to behave. Thus, no matter how they talk, they will be seen as either weak and ineffective, or opinionated and inappropriately aggressive, because of a double standard applied to similar behaviors. Similarly, males whose speech is not perceived as male enough--always strong and authoritative--may not match up to ingrained stereotyped images of the competent, intelligent leader. It is not uncommon for many men to reach a plateau in organizations because their behavior is perceived as "wimpy."

Individual language styles themselves each have unique and positive attributes which can contribute to organizational effectiveness. The growth of information in our society involves increased interaction and communication. By understanding differences in speech styles, not focusing on perceptions of deficiencies, and allowing for flexibility, we may be able to transcend them, so that individuals can be judged on their organizational contributions, rather than through the "veil of style" that they use.

## Notes

\* Another paper by this author focusing on the concept of wide-verbal-repertoire speech, as used by some managers who combine masculine and feminine speech characteristics in differing proportions, is Case (1993b). That paper provides a more developed and in-depth treatment, including empirical data and supporting analysis, of the ideas first presented in this present paper at the Fifth Annual International Conference on Pragmatics and Language Learning: Parasession on Gender and Language, University of Illinois at Urbana-Champaign, April 1991.

<sup>1</sup> Two 10-person groups were studied with similar gender-specific profiles (Case 1991). Case (1988) reports the data from one 10-person group (5 women, 5 men). The sample was of comparable age (29-40), status (high, middle management), social class (upper middle), and ethnicity (Caucasian), which decreased linguistic variation.

<sup>2</sup> Andrews (1987) found that men used criterion-based arguments in persuasive communication.

<sup>3</sup> This observation has been supported by Andrews (1987), who found that women in persuasive communication would reframe problems and invent their own criteria focusing especially on a concern for people affected.

<sup>4</sup> Verbal repertoires (J. Fishman 1972; Hymes 1972) are language varieties from which an individual may choose, and language alternatives present in a community of speakers. They imply the possibility of choice among forms of speech.

<sup>5</sup> Because an all-Caucasian sample from the United States is used to decrease linguistic variation, it can only be concluded that the findings are applicable to a similar population, and may not be representative of all speech communities.

<sup>6</sup> The semantic and structural variables have alternatively been described as discourse conversational and pragmatic variables of language.

<sup>7</sup> For this purpose, a one-tailed *t* test was used, as well as the Mann-Whitney U, a nonparametric technique that can be used with extremely small samples such as this one. Significance was ( $p \leq 0.05$ ).

<sup>8</sup> This study was somewhat similar to one conducted by Fried and Holyoak (1984) on category formation. They conjectured that people get better at sorting examples of things into categories from a recognition of patterns of similarities and differences. Thus, in abstract diagrams, the more overlapping features there are between diagrams, the easier it is for people to classify them together. When subjects were presented with permutations of two different prototypes, without the prototypes being identified, they were able to group the permutations into two clusters appropriately.

<sup>9</sup> Assertiveness was measured by (1) patterns of obtaining and holding the floor, (2) relative absence of qualifiers in speech, (3) fluency of speech, (4) use of imperative construction, (5) use of an argumentative, competitive style, (6) proof from authoritative sources, and (7) changing the topic of conversation. Supportiveness was measured by (1) frequency of affirmative words indicating a positive response to others' statements, (2) building on others' statements, (3) asking questions to draw out the other speaker, (4) indirectly phrasing one's opinion through use of tag questions, (5) not imposing views on others through use of modal construction and, (6) talking about relations, responsibility,

affiliation, and commitment. Each individual's proportion of use of each measure in the group as a whole was obtained. Proportional indicators of assertiveness were added and then divided by the number of indicators to obtain an individual's average assertiveness measure in the group. A male and a female average were then obtained. A similar procedure was followed for the supportiveness indicators.

<sup>10</sup> When looking at individual patterns, it was noticed that the most influential male answered twice as many questions as the other males, although all males in the group answered questions. The most influential female answered fifty percent of all female-given answers. The pattern of question-answering for females was more unbalanced than for the males. In general, the more dominant people both answered and asked the most questions. Thus, it might be conjectured that if, in fact, men are usually more dominant in groups, one could expect men to have higher proportions of both question-asking and question-answering. Both of these categories appear affected in the data by the high proportion of occurrences for each by a single female. Question-asking also could easily be seen as a powerful behavioral strategy to get influence, rather than a more passive behavior. The power comes from the effect question-asking has on controlling the content and direction of interactions (Case 1985). The extent to which questions posed in the group are answered is a measure of influence (Bales 1950).

<sup>11</sup> Research on roles supports the notion that a female not behaving in an expected female role is perceived negatively (Case 1991; Eagly 1978; Epstein 1981; Goldberg 1968; Hollander and Julian 1978; McClelland 1975; Merton 1972; Spence 1981). Similarly, identical actions performed by men and women in groups are not perceived the same way (Case 1991; De Francisco 1992; Eichler 1980; Gall, Hobby, and Craik 1969; Morley 1976; Parker 1973).



<sup>12</sup> Gilligan (1984) clarified some of her earlier writing and indicated that most people represent both voices in defining moral problems. But there is a strong tendency to focus on one voice for decision-making to reduce ambiguity. Men focus on justice, minimally representing care; women have a more split voice, with some focusing on justice and some focusing on care.

### Appendix : Ranking System for Influence

1. Each group member is ranked from the most influential to the least influential on each of the nine influence indicators that cover who talks, how often, to whom, about what, and in what way.
2. Each position on the ranking is assigned a weighting of 1 to 10, with a 10 given to the highest person in each category (both for total group session and for each session scored in the four phases).

For example:

| Frequency Initiation | Frequency Being Talked to |
|----------------------|---------------------------|
| M1 = 10              | F1 = 10                   |
| F1 = 9               | M2 = 9                    |
| M2 = 8               | M3 = 8                    |
| .                    | .                         |
| .                    | .                         |
| .                    | .                         |
| F5 = 1               | F5 = 1                    |

3. If two individuals have the same raw score, their weightings will be identical. The weighting of the next lower score is adjusted to reflect the tie.

For example:

$$F1 = 37 \quad 10$$

$$M2 = 37 \quad 10$$

$$M3 = 32 \quad 8$$

4. Each individual will have four total phase ratings and one overall aggregate rating.

For example:

|         |                 |
|---------|-----------------|
| Phase 1 | Total Influence |
|---------|-----------------|

|                          |     |
|--------------------------|-----|
| F1 = 9 + 10 + 10 + ... X | 29+ |
|--------------------------|-----|

Phase 2

$$F1 = 8 + \dots$$

Phase 3

$$F1 = \dots$$

Phase 4

$$F1 = \dots$$

Overall Mean

$$F1 = \dots$$

5. These five measures will be based on adding together ratings of influence for each category to determine rank order based on all measures of influence.

6. One influence was determined for each of the measures (frequency of initiation, frequency of being talked to, frequency of being talked about, frequency of talking to the group as a whole, average number of persons talked to per session, percent of total words spoken, utterance length, proportion of fillers and qualifiers). I then determined which speech style is most influential: male speech style, female speech style, or wide-verbal-repertoire speech style.
  
7. Finally, individuals and their influence scores were matched to one of the three groups in speech style for the overall four sessions scored.

*Note:* M and F refer to male and female, respectively.

## A Case for Examining Professional Voices in Institutional Settings: Nurses in Conversation

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When professional employees participate in the regulation of their own practices, many hierarchical influences impinge on the language that results. Professional nurses, for instance, must locally apply regulations from a variety of institutions, some far removed from the local realities of their clinical practice. Accreditation associations, state governments, and federal agencies require local nursing departments to produce and maintain written documentation intended to standardize and update their nursing practices. Of course, hospitals are also classic bureaucracies which tend to create additional paperwork of their own, so the combined hospital and nursing regulations can become extremely cumbersome for nursing units.

This paper examines oral and written language data collected from a group of five hospital head nurses whose frustration with the confusion in their department's collection of over sixteen hundred individual policy and procedure documents led them to undertake the reorganization, revision, and update of the entire nursing regulation system for their 350-bed hospital. This group of nurses worked in a collaborative team where talking and writing were intertwined as a functional necessity. Analysis suggests that collaborative composition of documents both reflected and challenged existing institutional structures, and offered this writing group some measure of institutional autonomy as well.

## Gender and Collaboration

The special quality of collaborative writing that characterized the project provided the opportunity to look at a professional conversation among a group of women at work in their natural institutional setting. Studies have suggested a collaborative model of conversation at work among women (Bate 1988b; Edelsky 1981; Jenkins 1982). Others have examined the conversation patterns between mothers and daughters (Hall and Langellier 1988), in social groups (Wyatt 1988), in academic research teams (Nelson 1988), and in specifically feminist projects such as film production (Taylor 1988) and reading groups (Seccombe-Eastland 1988). Tannen's work with differences in talk across oral and written cultures (1982) and gender cultures (1990a) suggests young women may be socially adapted to communicating together in different ways from young men. Keroes' (1990) examination of student writing found themes of autonomy in both male- and female-produced essays, while Lunsford and Ede (1990) have pointed to the multivocal nature of much of women's writing, including a style they call "dialogic collaborative work." In a response to the writing of a single woman in different contexts, Jarrett (1991: 117) has reminded us that "any writing situation is dialogic and collaborative--shot through with intertextuality."

This collaborative project in a traditionally female occupation showed that some of the characteristics attributed to women's talk, such as cooperative approaches and shared leadership, contributed to the work of this group as well. Yet group members also saw the project as a way to enhance their professional status in the institution, and to influence the constraints on their own practice. Thus the writing project became a focal point for these nurses' perception of their own power to change the institution through language.



## Methods of Analysis

As an investigation of collaborative writing, this two-year ethnographic project was characterized by a specific effort to collect episodes of talk directly related to group composition of written texts. As a participant observer, I collected tape-recordings and any related texts from group-writing sessions throughout the project. After transcription, episodes related to specific recurring themes were correlated with their written products, with source texts being used by the group, and with field notes of community activity.

Group-writing choices were examined for examples of conflict resolution and persuasive rhetoric leading to specific text decisions. Some of the rhetorical strategies that were observed are discussed elsewhere (see Dautermann, forthcoming), but a close reading of these interconnected texts opened up new possibilities for seeing discourse community values as they were reflected in collaborative writing. This comparative examination of various language sources provided a rich source of information about the nurses' value system and the nature of the culture in which they worked. A similar technique juxtaposing text and conversation was used by Shuy and Robinson (1990) in their investigation of a collaboratively produced letter.

Printed here as Appendices A, B, and C, one set of interrelated texts from this project illustrates how hospital management, professional influences, and written documents served as sources of authority for the writers--specific authorities that regulate nursing practice, and rhetorical authority useful for enhancing institutional credibility. These texts also shed light on the ways these nurses responded to institutional authority as they wrote together. The three topical episodes in Appendix A occurred during a single writing session in which the writers worked on the text reproduced as Appendix B (a guide for

other nurses revising their own unit materials). Appendix C is an excerpt from an important source text from which they had been working for some months.

Because most hospitals are hierarchical organizations, I assumed that direct references to authority figures throughout the transcripts might lead to a better understanding of how nursing fit into this local hierarchy. As the transcripts were analyzed for such references, it became clear that there were several levels of institutional authority at work in this nursing environment. Hospital administration, physicians, regulatory agencies, lawyers, insurance companies, and even patients and their families all seemed to be telling these hospital nurses what to do. Thus, references to these entities provided opportunities to see how the nurses defined their own role in relation to the institution's power structures. These references, seen in coordination with attempts to recast decisions about nursing practice in their own terms, show a consistent pattern of response to the constraints on hospital nursing by these writers. In particular, these examples illustrate how the nurses worked for a change in their role in the hospital through written language. The sections to follow discuss these key points: (a) direct references to authority figures and their influence, (b) the influence of an authoritative source text, and (c) ways that the emerging nursing statement challenged those authorities.

### Direct References to Authority Figures and Their Influence

In the writing session that produced Appendix B, the nurses were working to define certain documents that they and future writers would produce throughout the revision project work. The transcript fragment (Appendix A) has several references to authority figures who are important to nursing activity. Line 17 contains a reference to the primary procedural authority in medicine--physicians' orders.<sup>1</sup> Other authorities mentioned in this fragment are the Joint

Commission on Accreditation of Hospitals (JCAH), the state board of health (45, 47), the division of nursing (45), the hospital administration (156), nursing committees (135, 140), medical staff (152), and hospital lawyers (159). All these groups make up the *they* of lines 67 and 72, whose influence prevents the nursing staff from having *complete control* (79), but who provide the *authority* (111-122) inherent in standing orders. The transcript and emerging text show how the nurses eventually settled on the phrase *administrative and medical staff approval* (152) to sum up these influences.

References to authority such as these appeared throughout the project and pointed to the relatively low hierarchical position of nursing in the hospital. Such references also indicate the extent of authoritative approval that was required of nursing regulations. With so many conflicting voices influencing their work, written authority for specific practices was both difficult to sort out, and contradictory much of the time. Small wonder, then, that the nursing staff members themselves frequently confessed to using oral networks and phone calls to specialists, rather than consulting their own regulations when they needed information.

Such conditions contributed to a sense of ambiguity about written prose. The emphasis on written charts, standards, patient records, and bureaucratic decrees in the hospital suggested that written materials should be highly respected, but the materials particular to nursing seemed only cluttered and confusing. The difficulty of synthesizing conflicting regulatory demands, and a pattern of responding to unusual events with hastily prepared texts had resulted in nursing manuals that were redundant, contradictory, poorly accessed, and generally ignored. The lure of writing to enhance their institutional power was consistently balanced by an awareness that few people were actually reading the nursing documents.

## The Influence of an Authoritative Source Text

Finding themselves at the lower levels of the hospital chain of command, nurses in this hospital worked to build credibility for their own words by borrowing authority from those sources whose influence most affected their work. A common strategy for adding authority to their own voices was to cite important sources from outside the nursing department. Such citations took both the form of referring to texts directly--especially by using the last name of its author, or by assuming its tone of voice and vocabulary. The transcript fragment reprinted here primarily shows the use of the second strategy--appropriating the authoritative vocabulary and tone of voice of an authoritative text.

The citation of the JCAH guidelines in the Marker text models the incorporation of an important medical authority by an independent nursing consultant, whose system the nursing group was attempting to adapt for their own use. The bureaucratic tone of the JCAH standards cited in the Marker excerpt (Appendix C) suggests a sense of finality and a bureaucratic repetitiveness that appeared in most of the source documents used throughout the project. The texts the nurses produced during this session have many of the same qualities. However, after incorporating the authority of the JCAH standards, Marker's own tone of voice can be more familiar. In the last line of our excerpt, she uses direct address and informal diction to urge nursing readers to take responsibility for remaking these standards for their local situation: "JCAH establishes 'the bottom line;' you take it from there."

The nursing group produced a tone of voice somewhere between the JCAH language and Marker's. They seemed to be struggling between an attempt to sound like the standards, and an attempt to be direct like the Marker text is. Even though the text produced here does not have a tone as comfortable or friendly as Marker's, it perhaps moves in that direction from their

previous draft. Compare the elaborate first draft below to the shorter and more direct revision that follows it:

[A policy is] related to regulations specific to the division or individual units. It reflects external standards of the Joint Commission, Indiana health regulations and the philosophy of [Good Hope] Hospital's division of nursing. Policies can be thought of as governing rules of the division which interpret external standards this nursing division expects to honor. Policies will be placed in the administrative section of the manual.

A policy is a tool used to standardize external and internal regulations specific to the division or to individual units. They represent governing rules which interpret external requirements in the [Good Hope] Hospital environment.

In other episodes, similar responses to authoritative texts were observed as the nurses brought textbooks, JCAH guidelines, professional journals, and previous hospital versions of texts into the room to increase the credibility of their work. Sometimes, the mere mention of a legal, state-board, or JCAH requirement was enough to stop vigorous discussion and secure acquiescence among collaborating writers. The *intimate knowledge* of Nursing Service requirements referred to in the Marker quotation (paragraph 1) represents an internalized understanding of outside regulations that was assumed to confer authority on managers.

#### Ways the Emerging Nursing Text Challenged Those Authorities

Given the lack of hierarchical power and the necessity to borrow authority from source texts and others, the collaborative writing sessions provided a

place where resistance to institutional norms could be experimented with and even incorporated into the texts of materials over which the writing group had some measure of control. The transcript fragment illustrates this resistance as it appeared both in the oral and written language of the group.

In the remarks directly preceding the reference to physicians in line 17, there had emerged a need to define whether nursing interventions were performed *in response to* some authority beyond the nurse (12-25). In line 14 one nurse acknowledges that most of their work is actually performed "because we have an order to do it," but the group refined the eventual text to focus on the agency of the nurse rather than on the authority to proceed. By the end of this episode, group members had rejected *patient care plan* (12), *patient condition* (13), *an expected condition* (13), *physicians' orders* (17), *patient care needs* (24), and *peoples' orders* (24) as sources of nursing procedures, and replaced the authority reference of *in response to* (25) with the phrase *by nurses* (29-39).

This adjustment of agency and responsibility in the definition of a procedure suggests a sense of autonomy that was current in the group, whether or not it operated in the larger context of actual practice. Lines 30-34 printed below express group agreement and approval of the text, culminating with a coda-like repeat of the consensus choice to strike the *in response to* language.

- 30 de Yes.  
 31 di That's it.  
 32 jd Okay.  
 33 de I like that. Good. Excellent.  
 34 jk Cross out "in response to."

A more complex resistance to authority in this fragment appears in the second episode (lines 42-64), where the group revised its own previous



definition of policy documents. The original draft cited above had mentioned the Joint Commission, the state board of health, and the division of nursing as sources of the standards expressed in policies. Yet by the end of this segment, the specific agencies have been reduced to *external regulations* and paired with *internal* standards in the first sentence of the definition (64-65). Mentioned a second time in the final sentence, external requirements have become subject to local governing rules which *interpret* (65) them in the local environment.

This opportunity to rewrite or extend even the JCAH standards is directly suggested by the Marker source. In her text, Marker suggests that nurses have control over the *precise content* of local standards, as well as the manner in which they are written. Note that the ten areas that must be covered in local standards consist mainly of ministering to patients, following orders, keeping records, and supervising *volunteers and paid attendants* (see list in Appendix C). In an era of increasing emphasis on professionalism in nursing education, this significant authoritative source continues to confine the practice of nursing to relatively menial activities. The need to accommodate and borrow authority from sources such as these can create the potential for resentment (if not outright defiance) among highly trained professionals such as the writers in this group, all of whom had some post-baccalaureate university education. For a highly trained professional to be held responsible primarily for taking orders and keeping her mouth shut reflects a significant dissonance between the preparation and the experience of professional nurses.

The definition of standing orders addressed in the third episode of this transcript (65-160) illustrates this dissonance. Standing orders must generally be approved by the medical staff, but are frequently drafted by nurses who need hospital authority to administer specialized care to acutely ill patients in the absence of an attending physician. These nurses indicate sources of standing orders as *doctors* in line 79, and *MIC* (the Medical Intensive Care Committee) in line 76. When it is suggested that *other people* (73) are in charge, the group

begins to name nursing as the source of many standing orders. In the end, the group chooses to define what nursing creates, emphasizing the *we* (84) in "what WE create as standing orders." Thereafter, attention is turned to the creation of such a definition. Yet the resulting paragraph on standing orders (see Appendix B) suggests the tentativeness with which this definition has been attempted. The insertion of the qualifier *may* (127) and the lack of directness of the statement suggest that Di is not the only one who is doubtful about their ability to challenge the hierarchy on standing orders. "They'll just find some other way around it if we do," she says, "I suppose we can go ahead and try" (72).

These fragments of group talk illustrate the consistent claim to autonomy that was expressed in the writing group, as well as members' attempts to exert that autonomy through regulatory language. Since the nurses in this hospital are almost exclusively female, investigation of their talk provides insights into the ways members of this traditionally female profession use language as a source of institutional influence. Examining women's language in natural contexts such as this one is essential to an understanding of the relationships between language and power in particular institutional settings. Such relationships can be seen more fully when episodes of conversation and writing can be examined together.

Discourse-analysis strategies, especially those used in ethnographic projects which collect multiple data sources, can and should account for the intersections of transcribed speech with other data sources available in the surrounding context. Given the extent of transcript data collected in field studies that cover many months of observation, the sort of analysis demonstrated here provides a practical way to examine the intersection of voices that inform and reform the institutional discourse of organizational cultures. Such an approach can provide a richer view of institutional discourse than can a mere examination of the interaction order among group members themselves. Even though

transcripts may not always be directly tied to written products, as is the case here, significant benefit can be gained by correlating a variety of language sources found throughout an institutional culture. Seeing these language sources together can lead to a greater understanding of institutional power structures and the ways community members respond to those structures through language.

## Notes

1 Although the transcript consists of three specific composing episodes during which different sections of the text were being created, utterances have been consecutively numbered and referred to as "lines" here for ease of reference.

## Appendices

A--Transcript Fragment

B--Text Produced during Appendix A

C--A Model from Nursing Literature

### Appendix A --Transcript Fragment

#### Transcribing Conventions:

- indicates a short pause
- indicates a pause inviting comment from the others.
- ... indicates more text existing but not read aloud.
- "" indicates text being considered for the draft.
- \ indicates utterance is continued or interrupted by another speaker.
- // indicates an utterance that attaches to someone else's utterance.
- + indicates interruption of previous speaker's idea
- ALLCAPS indicates special emphasis by speaker.
- [ ] indicates unintelligible gaps or comments filled in by researcher
- [...] indicates transcript omissions

#### *Episode #1--Writing the definition of procedures.*

- 1 de Procedures.
- 2 jd Alright. Procedures.
- 3 di "Procedure is the process used to..." not to document technical intervention, but "to---
- 4 jd Standardize?

- 5 di Okay, there's a good one, "standardize the technical steps, the technical---?"
- 6 jd Intervention?
- 7 di mm. hmm. Steps and intervention, the same thing. "Technical intervention".
- 8 jd But nursing intervention? "Technical nursing intervention---?"
- 9 di Nah. Too much.
- 10 jd Okay.
- 11 di "Technical intervention applied---"
- 12 jd Mm. hmm. To---"in response to patient care plan?"
- 13 di Well is it in response to a patient condition? or is it in response to an expected condition? or \
- 14 de //Response to an order. That's what we're doing. A procedure we do because we have an order to do it.
- 15 di "A process used to standardize the technical intervention applied---"
- 16 jd "In response to an order?"
- 17 di "To physician order?" Is it a physician order?
- 18 jd Hummm.
- 19 de "A procedure is a tool that is used---"
- 20 di Here finish this statement. [hands draft to jk]
- 21 jk "Procedure."
- 22 jd "To standardize the technical intervention in response to---"
- 23 di What?
- 24 jd To what? Patient care needs? People's orders?
- 25 jk We have to say what they're in response to?
- 26 de "A procedure is a tool that defines the technical steps\
- 27 jk //involved in nursing intervention. "
- 28 de No.
- 29 jd Okay, hold it. "A procedure is a tool that is used to



standardize technical intervention by nurses."

30 de Yes.

31 di That's it.

32 jd Okay.

33 de I like that. Good. Excellent.

34 jk Cross out "in response to. "

35 di Tool [is a good word to use here]

36 jd "A procedure is a tool that is used to standardize the technical intervention by nurses."

37 jk Technical interventions.

38 jd Right.

39 jk by nurses.

40 de I like that. short and [to the point] -- okay.

*Episode #2 -- Writing the definition of Policy*

42 jk Sounds good.

43 de We have policy. Did we agree about policy?

44 jd Are you happy about policy?

45 de [reads draft from previous meeting] "Related to regulations specific to the division or individual units. It reflects external standards of the Joint Commission, Indiana health regulations and the philosophy of [Good Hope] Hospital's division of nursing. Policies can be thought of as governing rules of the division which interpret external standards this nursing division expects to honor. Policies will be placed in the administrative section of the manual."

46 di Give me the first part of it. "Policy is..." what?

47 de "Documents will be called policies if they relate to regulations specific to the division or individual units. They reflect external

standards of the Joint Commission..."

- 48 di Okay.
- 49 jd You can stop right there. Stop with that sentence because it's down here. "Policies can be thought of as governing rules which interpret external standards in this particular hospital environment."
- 50 di Okay.
- 51 de That's meaning it's specific to us in regard to the external?
- 52 jk Will standards confuse them? When we use standards?
- 53 jd "External standards---?" "external requirements---?"
- 54 de "External requirements."
- 55 jk "External requirements." I just hate to use a word in more than one meaning. Because they're used in so many ways right now.
- 56 di Okay there's policy, there's guideline, there's procedure.
- 57 jd Alright "regulations specific to..."
- 58 de No, no.
- 59 jd "The documents we call policies..." we could say "The policies are tools which standardize the regulations---"
- 60 de Alright. Okay.
- 61 jk The tools to standardize "the regulations---?" or "outside regulations---?"
- 62 de Now think of the internal regulations too.
- 63 jk Right. "Internal or external regulations which may be divisional or unit specific."
- 64 jd Okay. [reads] "Policies are tools which standardize external or internal regulations specific to the division or individual unit. They can be thought of as governing rules of the division. Governing rules which interpret external requirements in the [Good Hope] Hospital nursing environment. "

*Episode #3 -- Writing a definition for Standing Orders*

- 65 jk That sounds good. Do we need to define standing orders?
- 66 jd Lord have mercy!
- 67 di Will they let us define standing orders?
- 68 jk I don't think so.
- 69 jd Why not?
- 70 di I seriously doubt it.
- 71 de Well, why not? Because that's been one of our messes that we've had. Is that we haven't defined a standing order.
- 72 di They'll just find some other way around it if we do. I suppose we can go ahead and try, but---
- 73 jd +You can try but I think that some other people that are in charge of what, of generating standing orders so if you try to define what a standing order is.
- 74 de Yeah, nursing usually writes them. That's---
- 75 jd +Oh, is that right? Well then, that's not good.
- 76 de MIC [writes tons of them]
- 77 jk It depends on what kind of standing orders they are, divisional or unit specific.
- 78 de Standing orders can be intra-departmental, inter-departmental
- 79 jk Right. But [what] we're saying is that doctors are feeding us their own standing orders. That's what makes it more difficult to define what they are. Because we don't have complete control over them.
- 80 de So that, what I'm saying is we generate [most of them].
- 81 jd That's interesting. That should be somewhere in the document approval and document generation section of the administrative.

Somewhere it should be spelled out that nursing will generate standing orders under the following conditions.

- 82 jk That's true.
- 83 di That can help define them.
- 84 jk That's not necessarily making a statement that says what they are.  
-- We can define what WE create as standing orders.
- 85 [...] [standing order definition is composed after several digressions]
- 86 jd Okay -- "Standing orders will be generated by nursing whenever". "Will be initiated?"
- 87 jk "initiated." That way it doesn't say approved. "written---"
- 88 jd "By nursing---personnel---"whenever? what?
- 89 jk "When appropriate." "When appropriate?" [she asks di]
- 90 di Yeah, "when appropriate."
- 91 jd Well, "whenever clinical procedures need approval by med staff?"
- 92 jk "Whenever clinical---"
- 93 di "the need arises." That leaves it wide open.
- 94 jd Yeah.
- 95 jk "Whenever..."
- 96 de "Clinical interactions---"
- 97 jk Or "clinical actions---"
- 98 de "Clinical actions."
- 99 jd Or "intervention actions?"
- 100 de I think it's "actions" at this point.
- 101 jd Okay. "clinical actions."
- 102 jk [that's more general than] "nursing interventions"
- 103 jd Right.
- 104 jk "require physician---"
- 105 de "Require---"

- 106 jd "routine---", "routine---"
- 107 jk Should it be "approval?"
- 108 jd "Routine---"
- 109 jk "authority---?\\
- 110 jd //to proceed."
- 111 de "Nursing authority." And that's really what they give us.
- 112 jk Mmhmm. Because -- it doesn't necessarily have to be doctors.
- 113 jd Right.
- 114 jk "Administrative authority?"
- 115 jd [reading:] "Standing orders will be initiated by nursing personnel whenever clinical actions..."
- 116 di "require"
- 117 jd "routinely require authority before nursing can proceed." or something like that. "Routinely require -- written authority?"
- 118 jk "written authority."
- 119 de "written authority."
- 120 jd Okay. "Standing orders will be initiated by nursing personnel whenever clinical actions routinely require written authority for the protection of the nurses?"
- 121 jk Just "written authority."
- 122 de Just "authority."
- 123 jd Okay, period.
- 124 jk Period.
- 125 [...] (asides while statement is recopied)
- 126 jd "Standing orders will be initiated by nursing personnel only when? [laugh] Only when? "
- 127 di How about "MAY be initiated" instead of "will be initiated?"
- 128 jd Okay. "May." And initiated -- do you want to say that you don't care whether it's med staff or anybody else?

- 129 jk Huh-huh. [no]
- 130 di No.
- 131 de We don't care.
- 132 jd "Standing orders may be initiated by nursing personnel whenever clinical actions routinely require written authority."  
Aaaa, who, who -- you need some kind of a control over where they go first.
- 133 de Aaaa that's what I was trying to say.
- 134 jd You've got a nursing committee that you want to have do that?
- 135 de It comes out of MIC [Medical Intensive Care Committee], it comes out of various\\
- 136 di +Standing orders come from everywhere.
- 137 jd Right.
- 138 di They have to go through [the approval sequence]
- 139 jk Shouldn't we have a document that says how the paper flow goes?
- 140 di All paper flow goes through the standards committee.
- 141 de Standards committee -- So that really doesn't need to be written. That's already written.
- 142 di Yeah. All policies, procedures, standards\\
- 143 de //Standards go to nursing process because that\\
- 144 di But then they go to you.
- 145 de Yeah.
- 146 jd But you don't have -- standing orders is slightly different. Do you want to have -- this, like all other documents this, "the first approval step is the standards committee?" or whatever?
- 147 de Mmm. "The first approval step can be---"
- 148 di No, don't do that. "Like all other documents this form---"



- 149 jk Well, we could say something like "may require administrative  
and medical staff approval."
- 150 de That states it.
- 151 jd "Standing orders---"
- 152 jk "may require both administrative and medical staff approval."
- 153 jd Good.
- 154 de Yeah.
- 155 jd Both nursing administration
- 156 jk It could be hospital administration.
- 157 jd [Any] Administration and\\
- 158 di //medical staff.
- 159 de Because sometimes our lawyers get into it.
- 160 jk Yeah.

Appendix B--Text Produced during Transcript reprinted as Appendix A

A procedure is a tool that is used to standardize technical interventions by nurses. A procedure document includes a goal, personnel and equipment needed, steps of the process, special considerations and references.

A guideline is a tool used to standardize written documentation on approved hospital forms.

A policy is a tool used to standardize external and internal regulations specific to the division or to individual units. They represent governing rules which interpret external requirements in the [Good Hope] Hospital environment.

Standing orders may be initiated by nursing personnel whenever clinical actions routinely require written authority. Standing orders may require both administrative and medical staff approval.

## Appendix C--A Model from Nursing Literature

### Standards and JCAH [Joint Commission on Accreditation of Hospitals]

The accreditation manuals published annually by the JCAH identify those structural characteristics required for survey and accreditation in your facility. An important part of preparing for an accreditation and rating well with the surveyors is being very familiar with the accreditation standards. While it is appropriate to be aware of standards that impact on the Nursing Department such as pharmacy, pulmonary function, medical records, medical staff, quality assurance, and infection control, it is imperative to be intimately knowledgeable about the Nursing Service requirements themselves. Consider the Nursing Service Standards VII in the 1987 JCAH Accreditation Manual for Hospitals:

#### Standard

- 12.7 Written policies and procedures that reflect optimal standards of nursing practice guide the provisions of nursing care.

#### Required Characteristics

- 12.7.1 Written standards of nursing practice and related policies and procedures define and describe the scope and conduct of patient care provided by the nursing staff.

These statements require nursing departments to write specific standards defining nursing responsibilities, systems function, and the quality of patient care to be provided. They do not, however, dictate the precise content of those standards, nor the manner in which they are to be written, except to state that they must be related to at least the following ten areas:

- Assignment of nursing care consistent with patient needs, as determined by the nursing process;
- Acknowledgment, coordination, and implementation of diagnostic and therapeutic orders of medical staff members;
- Medication administration;
- Confidentiality of information;
- The role of nursing staff in discharge planning;
- The role of nursing staff in patient/family education;
- Maintenance of required records, reports, and statistical information;
- Cardiopulmonary resuscitation;
- Patient, employee and visitor safety; and
- The scope of activity of volunteers or paid attendants.

The actual content of the standards that relate to each of these areas remains the prerogative of each nursing department. JCAH establishes "the bottom line;" you take it from there.

From : Smith-Marker, C.G. 1988. *Setting Standards for Professional Nursing: The Marker Model*. Baltimore: C.V. Mosby Company. p. 6.

## Of Manpower and Words: A Study of Linguistic Markers of Inclusion and Exclusion in Managerial Work in the Educational System<sup>1</sup>

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### Introduction

This exploratory study aims to identify the *idealect*<sup>2</sup> of managers in the educational system so as to gain a better understanding of the selection process in which they participate and to eliminate the systemic discrimination that occurs in this context.

Following the interactional sociolinguistic perspective (Goffman 1981; Gumperz and Hymes 1986), I have studied the functioning of statements of speakers in power positions, so as to understand the influence and impact of their discourse on their immediate environment. I have combined two approaches: the discourse analysis approach (Ghiglione et al. 1985; Moeschler 1985) and the content analysis approach (Bardin 1989; D'Unrug 1974), in order to establish thematic constants and linguistic markers that permit an attribution of meaning and a precise reference point to words and sentences.

In order to avoid an essentialist vision of the speech style of women or men, I have described the communication behavior of speakers according to their interactional connections, their position, and their role at the time of the conversational exchange. The study of the manager's 'idealect', considered as the *powerful* style because it is related to a position of authority, makes it possible to define the scope of the dominant/dominated interaction in the power

struggle always present in selection committees. Although the powerful style is actually identified as the 'masculine' style, it must be linked to the hierarchical position rather than to the sexual identity of the speaker. In fact, the literature on the subject reveals that the powerless style can be used by one or the other sex, according to whether or not the person holds a power position at the moment of the interaction (Kramarae et al. 1984; Preisler 1986).

## Method

My sampling consists of recordings of twenty-four interviews with male administrators working at the four levels of the Quebec educational system in the Montreal area: primary, secondary, college, and university<sup>3</sup>. These administrators were chosen on the basis of two criteria: first, they must have had teaching experience; second, they must have sat on selection committees recently. Since the objective of this study is to identify the linguistic comportment of a group of individuals placed in a comparable situation and sharing a similar ideology, I have chosen to restrict my sampling to male administrators. Although there are women as well as men in managerial positions in the Quebec educational system, it has been shown that men occupy the vast majority of high-level positions at primary, secondary, and college levels (Beaudoux 1989: 47-105). The situation could hardly be different at the university level, since women have only recently gained access to it as students, professors, or department heads.

The semi-directed interviews, including a list of questions, gave the participants all the time they needed to answer and the possibility of bringing out finer points. Included were informative questions, open and closed questions, and the simulation of a job interview: twelve with male candidates and twelve with female candidates. Of the forty-one questions included, ten



related to socio-demographic information, eight were closed questions, and twenty-three were open questions regarding opinions on characteristics of the ideal manager, perceptions, and interpretations of verbal behavior. The interviews were conducted exclusively in French<sup>4</sup>, and lasted, on the average, an hour and a half. All were conducted by myself to assure uniformity of presentation and to avoid changes in the procedure.

To locate the linguistic markers of inclusion and exclusion on the part of the speakers, I operate with the notion of modalization which is a part of the linguistic study of speech, 'linguistique de l'énonciation' (Cervoni 1987). By modalization I mean the various verbal operations which permit speakers to signal their attitudes in their utterances, or as Saint-Pierre (1991: 224) defines it: "the way in which an individual expresses his or her attitude toward his or her discursive contribution" [my translation]. I adopt three basic locutionary modalities: Knowledge, Obligation, and Personal Preference. Saint-Pierre (1991) calls these *epistemic*, *deontic*, and *appreciative*, respectively. The first, Knowledge, is *epistemic* ('épistémique') and takes the form of a belief or a certainty, as in the following sentence: *This is a fundamental point*. The second, Obligation, is *deontic* ('déontique') and takes the form of moral necessity; for example: *Our personnel simply have to adopt a new attitude*. The third, Personal Preference, is *appreciative* ('appréciatif') and expresses the approval or disapproval (positive or negative, good or bad) of the speaker in relation to the utterance. Rather than being a validation, it takes the form of subjective evaluation, for instance: *This is the way I like to see things done* [emphasis added].

The study of the epistemic, deontic, and appreciative modalities permits us to distinguish and to measure the degree and the strength of conviction (adhesion or exclusion) of the speakers in view of the ideas and values that they put forward. This was combined with the study of recurring key words or 'buzz words', following the content analysis approach, such as *participatory*

management and *competence*. These themes play a central role in the syntax and the utterances of the speakers. They permit us to identify the relevant semantic network and deduce the ideological reference and interpretation schemas of the speakers (Maingueneau 1987).

## Analysis and Discussion

Since the modalities are linked to *participatory* management and, to a lesser extent, to the *collegiate* and *democratic* managements associated with it, it is necessary before studying the modalities to consider the meaning of these 'buzz words', along with the notion of *competence*.

*Participatory* management is linked to different types of realities according to the various participant managers. According to some, it is a matter of professional training because it results from theoretical training in management. According to others, its necessity proceeds from the intermediate status of the managers. It can reflect either pressures from the outside or personal affinities. It is often connected with a sense of responsibility, and thus is at variance with the attitude of *laissez-faire*<sup>5</sup>, with the *incapacity to reach a decision*, and with *co-management*. On several occasions the speakers stress that it must be combined with a strong leadership. One of the administrators defines *participatory* management as the involvement of all individuals at every stage of a process, directly or indirectly.

By all accounts, *participatory* management is centered on action. It is a matter of *working with*, of *taking people into account*, of *getting them involved*, of *making the most of the abilities of each and every one*. It is sometimes considered as a sign of an *open-mindedness* and of *transparency*. Despite its numerous merits, *participatory* management also entails limits: it demands structures and the gathering of individuals; it requires more time, without always

succeeding in reducing the gap between the needs of the different levels of authority.

Another 'buzz word' often used by the manager in educational-system jargon, is *competence*. It is referred to as an essential hiring criterion. It appears in the openings of the utterances along with markers of inclusion such as: *what is important, in the first place, it is at least necessary, it is the basic element, is a premise*, etc. In fact, seventeen out of the twenty-four managers mentioned *competence* as the first hiring criterion. According to them, "a manager must know what he is talking about." As a notion in constant fluctuation, *competence* consists of many components whose absence would mean a disorder in managerial functioning without, however, entailing total incompetence. In addition to its reference to academic and occupational background, *competence* implies an ability to develop relationships.

The knowledge or epistemic modality, used mostly by the supporters of *participatory* management, shows us that this type of management is a matter of personal beliefs and views: *I think that this is important, What I find fundamental*, rather than a matter of obligation and necessity connected to the working-relationship environment. It reveals also that its complete assimilation and thorough integration as a value is in accordance with the managers' interests.

Moreover, the presence of personal preference or appreciative modalities, which comes within the affective register, attests to the strength of conviction of the managers about *participatory* management: *This is the way that I manage and that I like to be managed; I prefer that people sit around a table to make a decision rather than decentralize* [emphasis added].

The obligation or deontic modalization manifests itself in a toned-down way when it is used by the adherents of *participatory* management, who usually favor the epistemic mode. Unlike the epistemic mode which generally opens utterances, the deontic mode uses an impersonal turn of phrase (*one must*

reach; it is in this direction that one tries to. . .) and is mostly centered on the optional rather than the compulsory. It comprises infinitive verbs: *pas de laisser-faire*, to get someone to participate. It uses attenuative turns of phrase (theoretically, I say theoretically they should) and is expressed as a constative descriptive speech act<sup>6</sup>, that is, an utterance presented as the result of a diagnosis or an identification implying an objective observation (Saint-Pierre and Feider 1984): *If a secretary who works hard all day doesn't know why she's working and is only trying to please her boss, as far as I'm concerned, she isn't working for an organization..*

The deontic mode is used in a very affirmative way by those managers who prefer it to the epistemic mode. In spite of an impersonal turn of phrase, the numerous repetitions of modal verbs such as *it has to* with the contextualization 'mise en situation' (e.g., *you must; you need to; you have to*, etc.) reinforce the interlocutor's feeling of being under an obligation. Moreover, the presence of an emphatic turn of phrase (as in: *Sometimes we cannot say that being participatory is universally good* [emphasis added]) contributes to accentuating the strike force of the utterance.

The choice of the epistemic mode on the part of the administrators of levels 1 and 2 shows a thorough integration of *participatory* management as a value. The use of the deontic mode by the managers of the fourth level indicates that they were more sensitive to the influence of external pressures such as organizational context and institutional needs.

Although epistemic and deontic modes can coexist, they are realized in a complementary distribution within the framework of this research. It is the epistemic mode that characterizes the speech style and vocabulary of the administrators of levels 1 and 2. Not as unanimous as the *participatory*-management followers, the managers of level 3 and most of all those of level 4 preferred the deontic mode--a fact that is not without impact on the utterance.

Table 1 shows the preference for the epistemic mode, based on Knowledge, on the part of the managers of levels 1 and 2 (11 out of 12) and the preference for deontic modalization, based on Obligation, on the part of all the managers of level 4. We can therefore talk of an epistemic 'idealect' for the former group, and of a deontic 'idealect' for the latter. Although the managers of level 3 were mostly users of the epistemic mode, their answers were too diversified to permit any generalization of this kind at this point in the research.

*Collegiate* management is exclusively chosen by half of the managers from level 4 under the deontic form. *Collegiate* management is based on consensus, participation, consultation, and communication. As the administrators who recommended *participatory* management, the managers who support *collegiate* management warn against co-management and insist on the necessity of making decisions and taking

Table 1: Type of modalization according to institution level and preferred type of administration

Type of administration and modalization:

| Level: | Participatory       |                     | Collegiate          |                     | Democratic          |                     | Others              |   | Total |
|--------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---|-------|
|        | Epistemic / Deontic | Epistemic / Deontic | Epistemic / Deontic | Epistemic / Deontic | Epistemic / Deontic | Epistemic / Deontic | Epistemic / Deontic |   |       |
| 1      | 5                   | 0                   |                     |                     | 0                   | 1                   |                     |   | 6     |
| 2      | 6                   | 0                   |                     |                     |                     |                     |                     |   | 6     |
| 3      | 2                   | 1                   |                     |                     | 0                   | 1                   | 0                   | 2 | 6     |
| 4      | 0                   | 2                   | 0                   | 3                   | 0                   | 1                   |                     |   | 6     |
| Total  | 13                  | 3                   | 0                   | 3                   | 0                   | 3                   | 0                   | 2 | 24    |

responsibility. Consequently, it presents affinities with *participatory* management. This similarity permits us to isolate constants for the managers at

the university level and to characterize their speech style as a deontic 'idealect' related to the organizational structure.

The *democratic* type of management finds followers among administrators of levels 1, 3, and 4. It is mostly formulated under the deontic form. Although the limited corpus on the subject restricts considerably the analysis and any generalization on its account, it seems that this type of management is viewed as more authoritarian. Nevertheless, it is still very similar in its content to the *participatory* management style, as the next statement will corroborate:

[T]he university is an extremely conservative organism, any change is almost impossible and consequently *you must* achieve a consensus management. When you have a project that has obtained such a consensus and the participation of the university community, it can move ahead [italics added].

The values associated with each of these three types of management are similar and could be considered as a continuum. This would prevent them from being linked exclusively to one type of modality. Only *participatory* management, because of the important proportion of its followers (relative to the whole corpus) and their unanimous use of the epistemic mode, can authorize such a generalization. However, the analysis of this corpus shows the presence of a polarization in the 'idealect' of the managers. It shows that their use of modality is more attributable to their membership than to the values they adhere to, or claim to adhere to. This is confirmed by the managers of level 4: regardless of what values are put forward by them, the deontic mode, centered on the sense of duty and, more precisely here, on the mission of the organization, is the only one they use. By extension, the choice of the type of modalization could serve as an indicator of the utterance speech style, as well as the content advocated in this sector of activities.



When we look at the question of retention or dismissal of an employee showing incompetence (in the simulation of a problematic case), personal pronouns and 'institutional' or formal-style pronouns are in complementary distribution. The use of institutional *one*, *we*, and *it* ('il' with impersonal verb ) is predominant among the managers in favor of dismissal, who use these pronouns three times more frequently than their colleagues who prefer retention of the employee. The latter use the personal pronoun *I* three times more often than the ones in favor of dismissal. The dismissal is coupled with a distant relationship with the employee (use of institutional pronouns), along with self-disclosure (personal experiences or examples) as a means of objectivizing their position. The private nature of these revelations is therefore diminished on account of the pseudo-objective environment in which they are inscribed.

Although the epistemic (Knowledge) and deontic (Obligation) modalizations are realized in a complementary way with respect to certain concepts and values presented in this research, the appreciative modality (decrease or reinforcement) turns up randomly in epistemic or deontic utterances. Linguistic markers of inclusion (identity, adhesion) and of exclusion (otherness, rejection) are used with the three types of modalities and permit us to identify the attitudes of the speaker in his utterance.

The attitude of the speaker may be indicated by the use of key words, frequency of mention, or indeed absence of mention altogether. Markers of inclusion and exclusion allow us to track down signs of the subjectivity of the speaker in his utterance. These markers are therefore signaled at the semantic level by the choice of certain words such as adjectives, adverbs, and nouns, but also by function words, turn of phrase, and choice of verbal mode and tense at the morpho-syntactic level. This study made it possible to list the following markers of the key words *participatory* management and *competence*.

## Markers of inclusion:

- personal pronoun (subject): *I*;
- topicalization: *In my opinion, I find it important*;
- contextualization 'mise en situation': *You must, you need to*;
- constative assertive speech act<sup>7</sup>: *I think, I believe*;
- affirmative and emphatic turn of phrase: *Sometimes we cannot say that being participatory is universally good*;
- present tense;
- modal verbs: *It must be taken into consideration, One has to*;
- adverbs: *ideally, absolutely, really*;
- possessive adjectives: *our circle*;
- 'strong' adjectives: *fundamental, essential, important*;
- 'positive' hierarchical nouns: *premise*;
- metaphorical deictics: *here, today, But today I think these problems are solved*.

## Markers of exclusion:

- institutional pronouns (subject): *one, it* ('il' with impersonal verb);
- impersonal turn of phrase: *It is in this direction that we. . .*;
- negative, euphemistic, and attenuative turn of phrase: *It is not reasonable, I would not be inclined to make him a manager, theoretically, I say theoretically they should. . .*;
- future tense and conditional mode: *he will have, he would have*;
- infinitive verbs: *to get someone to participate* ('faire participer')
- constative descriptive speech act: *If a secretary who works hard all day doesn't know why she's working and is only trying to please her boss, as far as I'm concerned, she isn't working for an organization*;

-'negative' nouns: *handicap, problem*;

-mitigative adjective: *It's unfortunate*;

-demonstrative adjective: *This is, that*.

## Conclusion

This study is exploratory and nonexperimental because the speakers were chosen according to predetermined criteria. The confidentiality of the hiring process makes it impossible to observe directly the utterances in the hiring-committee context. Nevertheless, the length of the process and the diversity of the tools used in the interviews (questionnaire, list, simulation) have supplied valuable information about the speech pattern of the 'idiolect' of each of the participating managers. Even more interesting was the fact that the grouping together and the cross-checking of the results inform us about the nature and the content of the collective speech pattern of the managers in the educational system, in short, of their 'idealect'.

The combination of the study of modalities with the study of key words facilitates the establishment of an inventory of 'taxèmes'<sup>8</sup> connected to a precise 'idealect'. It aims to identify the functional link between the communication process and the social representations that occur in it.

The setting-up of a modality pattern (order establishment and calculation of its illocutionary force) is premature at this stage of the research. Nevertheless, this study shows that the membership and the value put forward are influential factors when we consider the use of modality. I have mentioned how the epistemic and deontic modes characterize the speech of certain managers, as well as how epistemic and deontic modalization (supported by the appreciative modality) were seen to be in complementary distribution, showing the different

ways in which the managers could express their adherence to, or their rejection of, certain types of persons, values, or ideas.

Among the markers of inclusion, I have listed the personal pronoun *I*, sometimes topicalized, opposed to the 'institutional' pronouns *we*, *one* (exclusive 'on'), and *it* (impersonal 'il'), expressing exclusion and disapproval. The affirmative turn of phrase and the use of the present tense and the assertive form also express acceptance, while the negative and sometimes euphemistic turn of phrase, the presence of the future tense or the infinitive and conditional modes, along with the use of descriptive speech acts, allows managers to express reservation. The presence in the utterance of certain adjectives, adverbs, and nouns, and the use of appreciative verbs ("I like") and also contextualization, allow the administrators to signal their approval or disapproval. The placing of these elements at the beginning of the utterance adds to their force.

Personally, I agree with Cervoni (1987: 78) that an empirical approach of this kind is required in the case of modality and of content analysis, because of the absence of overt distinctive formal characteristics. We have to invent a procedure for each situation and proceed from an idea to a provisional definition, and then see how it appears in the discourse.

My research is related to the question of women's access to managerial jobs in the educational system. After noticing opposite interpretations and evaluations on the part of managers of identical simulations of female and male candidates, I have looked for the functional links between the opinions they expressed, and their expectations and evaluations. It is clear that linguistic characteristics are not invariable properties, nor are they attributable to one sex rather than another. On the contrary, they are the expressions of situations or relations linked to group dynamics. As D'Unrug says:

We think that opinions, attitudes and representations are the preexistent content of speech acts which are then translated into transparent or semi-transparent utterances. It turns out that, in reality, discourse must be viewed as an ongoing process of elaboration. (1974: 229) [my translation]

The study of how power is 'spoken', that is, how it presents itself in language, helps us to a better understanding of how it is 'thought', how it is represented in our symbolic system (Aubert et al. 1986).

## Notes

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<sup>2</sup> *Idealect*: ('idéolecte'): linguistic competence of a group of individuals sharing the same ideology (Kerbrat-Orecchioni 1980: 183).

<sup>3</sup> Therefore classified as Level 1, schoolboards of primary level; Level 2, schoolboards of primary-secondary level; Level 3, colleges; and Level 4, universities.

<sup>4</sup> I am responsible for the translation of the material into English for this article.

<sup>5</sup> All the statements used in this paper reproduce authentic utterances and are translated literally from the original French version.

<sup>6</sup> Constatative descriptive speech acts are a form of speech acts which express the belief of Speaker (**S**) that Proposition (**P**) is true or false. The constative speech act thus simply expresses the belief of **S**. (Saint-Pierre and Feider 1984).

<sup>7</sup> In the constative assertive speech act, a form of constative, the belief of **S** that **P** is represented as an irrefutable fact (Saint-Pierre and Feider 1984).

<sup>8</sup> Kerbrat-Orecchioni (1986: 21) defines 'taxème' as "the entire verbal and paraverbal facts that can be considered as position givers or indicators" [my translation].



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## INDEX

- Abbott, R. D., 131  
Aburdene, Patricia, 175  
Alderfer, Clayton P., 149, 160  
Allen, Mike, 155, 157  
American Management Association, 175  
Anderson, J. M., 51  
Andrews, Patricia, H., 186  
Androgyny, 24  
Argyle, Michael, 156  
Aries, Elizabeth, 152, 181  
Astin, Helen S., 179, 181  
Atkins, Bowman, 116, 132  
Aubert, N., 229  
Authority/authoritative, 144, 155, 156, 173, 175, 177, 179, 180, 183, 185, 187, 195-201, 211-214; challenge/resistance to, 196, 199, 200; figures, 196; response to, 199, 200  
Baird, John E., Jr., 150, 151  
Baldwin, K., 80  
Bales, Robert F., 151, 160, 161, 188  
Bardin, L., 217  
Barnes, Michael L., 41, 153  
Barron, Nancy, 151  
Bate, Barbara, 194  
Baumann, Marie, 153  
Bazin, Nancy T., 166  
Beaman, A. L., 131  
Beaudoux, C., 218  
Behavior modeling, 132  
Belenky, Mary Field, 26  
Belk, Sharyn, 41, 153  
Bem, Sandra L., 15, 16, 26, 27, 166  
Bennis, Warren G., 160, 175, 180  
Bernard, Jessie, 152  
Bernay, Toni, 179  
Berryman, Cynthia L., 154  
Biber, Douglas, 109  
Bion, William R., 160  
Black Caribs, 1  
Blaubergs, M., 51  
Bleich, David, 110, 131  
Blumstein, Philip, 132, 151  
Bodine, Ann, 151  
Bohan, J. S., 17  
Bonanno, Michelina, 150, 151  
Borgatta, Edgar F., 161  
Borker, Ruth, 3, 29, 30, 38, 78, 80, 152  
Bornstein, K., 20  
Boyatzis, Richard, 175  
Bradley, Patricia, 179  
Bridwell-Bowles, Lillian, 113, 127  
Brogan, E., 131  
Brown, Penelope, 4, 37  
Bruffee, Kenneth A., 105, 109, 113, 124, 131  
Buss, David M., 41, 153  
Buunk, Bram, 41  
Cameron, Deborah, 3, 101  
Canary, D. J., 18  
Cantor, Dorothy W., 179  
Case, Susan S., 150-154, 156, 161, 175, 176, 179-181, 183, 184, 186, 188  
Cazden, Courtney, 110  
Cervoni, J., 219, 228  
Chafe, Wallace L., 109  
Chaffin, Roger, 152  
Chaikin, Alan L., 152, 180  
Chapkis, W., 19  
Chukchi, 1  
Clark, Ruth A., 151, 152  
Clifton, A. K., 153  
Clinchy, B. M., 26  
Cloze task, 56  
Coates, Jennifer, 3  
Cognition, 2  
Cohen, Stephen T., 161  
Collaborative/activity, 131; composition, 193; creation, 113; group, 132, 133, 141; learning, model, 109, 132, 194; learning, theory, 145; manner, 111; writing, 141, 194, 195, 199  
Communication, cross-cultural communication theory, 29; cross-ethnic, 30  
Condry, John, 179  
Condry, Sandra, 179  
Constructionism, 17  
Convention, cultural, 92; organizational, 105  
Conversation, academic, 105, 124; classroom, 106; cross-sex, 5, 132; dialogic, 121; interruptions, 33; question asking, 34; topic

- initiation, 32; turns-at-talk, 33;  
 turn-taking violation, 33-35, 39,  
 41; -al classroom, 114; -al floor,  
 106, 107, 111, 122; -al  
 maintenance, 34; see also Turn
- Cook, Mark, 152
- Cooper, Marilyn, 113, 127, 131
- Corder, J., 110
- Courtright, John A., 152
- Cozby, Paul C., 152
- Craik, Kenneth H., 188
- Crawford, Mary, 15, 25, 27, 152
- Crockett, Harry J., Jr., 151
- Crouch, Isabelle, 2, 153
- Culley, Margo, 113
- Cutler, Ann, 109
- Daly, Mary, 18
- Danielwicz, Jane, 109
- Dautermann, Jennie, 195
- Davis, Floyd James, 12, 13
- Deaux, Kay, 15, 16, 24, 27, 176
- DeFrancisco, Victoria L., 30, 152,  
 188
- De Mello, G., 51
- Derlega, Valerian J., 152, 180
- Derne, Steve, 102
- Devor, Holly, 19, 20
- Dialogic, classroom, 106;  
 collaborative work, 194;  
 conversation, 121; discourse,  
 111; mode, 108, 141; voice, 105,  
 125;
- Dichotomous categories, 12,-14, 20,  
 21-23
- Dictionary categorization, 59, 61, 63
- Diener, E., 131
- Dindia, Kathryn, 151
- Doherty, Edmund G., 151
- Dominance, 2-7, 17, 30, 34, 42, 77,  
 125, 132, 135, 138, 142, 143,  
 156
- Donnelson, Anne, 149
- DuBois, Betty L., 2, 153
- D'Unrug, Marie-Christine, 217, 228
- Eagly, Alice H., 188
- Eakins, Barbara, 2, 152, 176, 178
- Eakins, Gene, 2, 152, 176, 178
- Echaide, A. M., 50, 51
- Ede, Lisa, 113, 141, 194
- Edelsky, Carole, 108, 132, 194
- Edmondson, W., 108
- Edwards, Viv, 102
- Eichler, Margit, 179, 188
- Eman, Virginia, 154
- Enriquez, E., 238
- Entin, E., 132
- Epstein, Cynthia F., 18, 22, 24, 176,  
 188
- Fasold, Ralph W., 151
- Fausto-Sterling, Anne, 20, 22
- Feider, H., 222, 230, 256
- Female, cultural identity, 84;  
 -intensive professions, 52
- Feminist/Feminism, 1, 18; theory, 18
- Fisher, A. B., 154, 171, 182
- Fisher, Sue, 5
- Fishman, Joshua, 151, 152, 153,  
 186
- Fishman, Pamela, 34, 77, 111, 118,  
 119, 132, 152, 153, 154
- Fitzpatrick, Mary Ann, 41
- Flax, J., 15, 26, 27
- Floor, 108, 114, 117, 121, 122, 125,  
 126, 143, 152; academic  
 conversational, 114; access to,  
 106, 107, 115, 118; claim, 126;  
 classroom, 114, 119;  
 conversational, 107, 111, 114,  
 122; equally apportioned, 123;  
 hold, 125, 180, 184, 187; regain,  
 143; singly developed, 108;  
 space, 106, 117, 118, 119, 124
- Folger, Joe, 41
- Formality, 4, 93, 109
- Frances, Susan J., 151, 152
- Franzwa, Helen, 176
- Fraser, S. C., 131
- Freire, Paolo, 110, 113
- Fried, Lisbeth, 187
- Friedman, Susan S., 113
- Fulmer, R. M., 179
- Gale, Wanda S., 153
- Gall, Meredith D., 188
- Garcia-Falconi, Renan, 153
- Gayle, Barbara, 153
- Gender, -as-relation, 21; benders,  
 20; blenders, 20; class, 50;  
 differences in style 107; doing,  
 23; equality, 144; equity, 99;  
 grammatical, 1, 8, 53, 54, 55, 65;  
 linguistic, 64; linked differences,  
 1, 2, 3, 8; markers, 6, 50, 54, 56;  
 marking patterns, 49; natural, 49,  
 51, 53, 54, 55; natural -  
 languages, 51; - neutral  
 languages, 166; outlaws, 19;

- roles, 30, 43, 45; social 1, 2, 99;  
 status, 65; styles of narrative, 81;  
 verbing, 22; -hood, 93  
 Generic/unmarked referent, 51  
 Gentile, D. A., 15  
 George, D., 131, 132  
 Gere, A. R., 131  
 Ghiglione, Rodolphe, 217  
 Gilbert, Shirley J., 151  
 Giles, Howard, 40, 77; Gile's  
   accommodation theory, 21  
 Gilligan, Carol, 26, 155, 174, 183,  
   189  
 Gioia, Dennis, 149  
 Gluck, Sherna Berger, 101  
 Goffman, Erving, 217  
 Goldberg, Philip, 188  
 Goldberger, N. R., 26  
 Goleman, Daniel, 183  
 Goodchild, Jacqueline, D., 179  
 Goodwin, Margarie H., 153, 181  
 Graddol, David, 142  
 Gronn, Peter C., 153  
 Gumperz, John J., 6, 30, 225  
 Gutek, Barbara, 176, 179  
 Hall, Deanna, 80, 97, 194  
 Hall, Judith, 18, 22  
 Halpern, Diane F., 18  
 Hampares, K. J., 51, 52, 53, 56, 59  
 Hardeman, M. J., 12, 14, 15  
 Hare, A. Paul, 161  
 Hare-Mustin, Rachel T., 17  
 Harris, J. W., 51, 54, 55, 66  
 Harvey, Lynn, 152  
 Hawkins, C., 151, 152  
 Hayden, Sara, 4  
 Hedges, 2  
 Heilbrun, Carolyn G., 166  
 Heimreich, R. L., 16, 26  
 Heiss, Jerold C., 152  
 Helgesen, Sally, 181  
 Henley, Nancy, 2, 29, 31, 40, 150,  
   151, 181  
 Hernandez-Sanchez, Julita, 153  
 Hierarchical, behavior, 126; mode,  
   141; position, 218; relations, 131;  
   relationships 132  
 Hilpert, Fred, 151, 152  
 Hindi, 79, 84, 94, 98, 101  
 Hirschman, Lynnette, 152, 166  
 Hite, Shere, 38  
 Hobby, Amos K., 188  
 Hollander, Edward P., 188  
 Holmes, Janet, 1, 4, 5  
 Holyoak, Keith, 187  
 Hooks, Bell, 14, 18  
 Hudson, Richard, 1  
 Hyde, Janet S., 18, 22  
 Hymes, Dell, 186, 217  
 Idelect, 217, 223, 224, 227, 230  
 Ideology, 21, 25, 218, 230  
 India, 6, 84, 89, 91, 98, 101, 102;  
   North 79, 83, 101, 102  
 Interruptions, 4, 33, 118, 132, 135,  
   139, 140, 143, 159, 166, 168,  
   173, 180, 181, 184  
 Involvement, 92, 94, 97, 109; high,  
   139  
 IRE, 111, 114; evaluation, 107, 110;  
   initiation, 107, 110; response,  
   107, 110, 112, 117  
 Jacobson, Doranne, 102  
 Jaffe, J., 132  
 Jagger, Alison M., 24  
 James, D., 24  
 James, Reta M., 151, 152  
 Jarrett, S. C., 194  
 Jefferson, Gail, 32, 108  
 Jenkins, Mercilee M., 194  
 Jespersen, Otto, 1  
 John, Vera, 152  
 Johnson, Janet L., 153  
 Johnson, Paula B., 179  
 Jones, D., 78, 81  
 Jones, T., 152  
 Joseph, Gloria I., 18  
 Jourard, Sidney M., 152  
 Julian, James W., 188  
 Kachru, Yamuna, 91  
 Kačik, Susan, 80, 97, 152, 181  
 Kanter, Rosabeth M., 18, 149, 179  
 Kaplan, Susan, 173  
 Katbamna, Savita, 102  
 Keane, Terrence, 179  
 Keashley, L., 21, 24  
 Kelem, R. T., 131  
 Kelly, Jeffrey, 179  
 Kerbrat-Orecchioni, C., 230  
 Kerkstra, Ada, 41  
 Kern, Jeffrey, 179  
 Keroes, J., 194  
 Kessler, Suzanne J., 14, 15, 19, 20,  
   22, 26  
 Key, Mary R., 150, 151  
 Kirkley, Betty, 179  
 Klein, P. W., 54, 55, 66

- Koasati, 1  
 Kollock, Peter, 132, 151, 152, 153  
 Komarovsky, Mirra, 38, 152  
 Korsmeyer, C., 51  
 Kramarae, Cheri, 2, 3, 18, 21, 24, 29, 31, 37, 40, 44, 109, 110, 111, 116, 125, 150, 151, 152, 153, 178, 181, 218  
 Kramer, Cheri, 150, 151, 152  
 Krupnick, Catherine G., 111, 112, 120, 127  
 Labov, William, 77, 150, 151  
 Lakoff, George, 11  
 Lakoff, Robin, 1, 2, 116, 150, 153, 178  
 Lallijee, Mansur, 152  
 Lamb, Catherine E., 113  
 Lamb, T. A., 132  
 Langellier, Kristin, 80, 97, 194  
 Language, acquisition, 2; gender-neutral, 172; variation, 1-2, 7  
 Lapadat, Judy, 153  
 Leadership, 136, 138, 140-144, 150, 153, 159, 166, 176, 179, 183, 184, 185  
 LeFevre, Karen Burke, 113  
 Leland, Carole, 179, 181  
 Levine, Victor, 149, 151  
 Levinson, Stephen, 4, 37  
 Lewis, Jill, 18  
 Lott, B., 18, 22  
 Louis, Meryl R., 175  
 Lunsford, Andrea A., 113, 141, 194  
 MacKay, D. G., 51  
 Macke, Anne S., 179  
 Maher, Frances, 111  
 Maingueneau, Doiminique, 228  
 Malinowski, A., 52, 54, 65  
 Maltz, Daniel, 3, 29, 30, 38, 78, 79, 152, 153  
 Major, B., 15, 27  
 Management, 7, 16, 159, 175, 176, 179, 180, 182, 186; co-, 220, 223; collegiate, 7, 220, 223; consensus, 224; democratic, 7, 219, 223; participatory, 7, 219-225; styles, 7  
 Mann, Richard B., 151  
 Maracek, Jeanne, 17  
 Margrain, S., 3  
 Martyna, W., 51  
 McClelland, David C., 183, 188  
 McConnell-Ginet, Sally, 2, 51, 154  
 McGrath, Diane, 153  
 McHoul, Andrew, 107, 110  
 McKenna, Wendy, 15, 19, 20, 22, 26  
 McMillan, Julie R., 153  
 Mehan, Hugh, 110  
 Merton, Robert K., 176, 188  
 Meyer, Jasna, 5  
 Millar, Frank E., 152  
 Miller, Jean Baker, 18, 22, 144  
 Miller, Judi Beinstein, 15  
 Miller, Martha G., 149, 178  
 Milroy, L., 3  
 Minister, Kristina, 78, 101  
 Mintzberg, Henry, 149  
 Mitchell-Kernan, Claudia, 151  
 Modalities, 219, 220, 221, 224, 225, 227, 228; appreciative, 7, 219, 221, 225, 227; deontic, 7, 219, 221-225, 227; epistemic, 7, 219, 221-225, 227  
 Modalization, 219, 221, 223, 224, 225, 227  
 Model, 109; active engagement, 109; collaborative learning, 109, 131, 132, 145; dominance, 143; gender-based communication, 79; language distribution, 159  
 Moeschler, J., 217  
 Monologic, barriers, 113; classroom, 106, 111; form, 106; mode, 108; style, 121; turns, 106; voice, 105, 125  
 Morawski, J. G., 27  
 Morgan, Brian S., 152  
 Morgan, Marabel, 116, 120  
 Morgenstern, Lin, 112, 127  
 Morley, E., 179, 188  
 Morpho-phonological, shape, 59, 61, 66; type, 62, 63  
 Morrison, Anne, 179  
 Morrison, Toni, 13  
 Mulac, Anthony, 21, 151, 152  
 Naisbitt, John, 175  
 Narrative, 79-102; American women's, 80, 83; chronological, 80, 92; discourse, 79; episodic, 83; gender styles of, 83, 100-101, 102; Hindi, 84; Indian women's, 83, 91, 98; oral, 80, 82, 91, 93  
 Natale, M., 132, 143  
 Nelson, M. W., 194  
 New Zealand, 1, 5



- Niederman, Sharon, 152  
 Nieva, Veronica, 176, 179  
 Nystrand, Martin, 109  
 O'Barr, William M., 2, 116, 132  
 Obligation, 219, 223, 225  
 Octigan, Mary, 152  
 O'Keefe, Barbara J., 109  
 Orcutt, James, 152  
 Palmer, M. T., 132  
 Parker, Argyle M., 188  
 Patai, Daphne, 101  
 Penelope, Julia, 14  
 Perry, R., 18  
 Philips, Jane, 38  
 Polanyi, Livia, 79, 80, 92  
 Politeness, 2, 4, 22-23, 161  
 Poole, Marshall Scott, 41  
 Porter, Lyman W., 175  
 Postulates, 12; of ethnicity, 12; of gender, 12; of number, 12; of race, 12-13  
 Power, 2, 3, 4, 5, 6, 7, 8, 17, 31, 37, 38, 40, 102, 109, 110, 132, 133, 135, 138, 140, 141, 142, 143, 145, 153, 157, 159, 178, 183, 188, 194, 196, 197, 199, 202, 203; asymmetries, 23; components of, 142; device of, 38; imbalances, 107; linguistic, 2; structures, 196; -less, 116  
 Preisler, Bent, 218  
 Preiss, Raymond W., 153  
 Quebec, 7, 218  
 Rakow, Lana, 43  
 Reid, E., 77  
 Reither, James A., 113  
 Remlinger, Kathryn A., 112  
 Report talk, 111  
 Rhode, Deborah L., 18, 19  
 Rich, Adrienne, 114  
 Riessman, Catherine Kohler, 80  
 Riley, William, 151  
 Robinson, David G., 195  
 Robinson, Dawn T., 151, 152  
 Roca, I. M., 51  
 Rogers, William, 152  
 Rogers-Millar, L. Edna, 152  
 Rosener, Judy B., 152  
 Rosenfeld, Howard, 152  
 Rubin, Lillian, 38, 10  
 Ruble, T. L., 24  
 Russell, W. M., 50, 69  
 Sacks, Harvey, 32, 108  
 Sadker, David, 108, 111  
 Sadker, Myra, 108, 111  
 Saint-Pierre, M., 219, 222, 230  
 Sapir, Edward, 1  
 Saporta, Sol, 50  
 Sarah, Elizabeth, 108, 111  
 Sattel, Jack W., 38, 143, 144  
 Schaap, Cas, 41  
 Schafer, John C., 109  
 Schegloff, Emanuel, 32, 108, 152, 153  
 Scherer, Klaus R., 77  
 Schneer, J. A., 24  
 Schulz, Muriel, 2  
 Schutz, William C., 160  
 Schwartz, Pepper, 132, 151  
 Schwichtenberg, C., 15  
 Scott, David R., 108  
 Seccombe-Eastland, L., 194  
 Seesahai, Maureen, 153  
 Selfe, Cynthia L., 113, 127  
 Sex, biological categories of, 1, 2, 8, 14, 15, 17, 99; -correlated behaviors, 20-21, 24, 26; cross-, 5-8, 132; cross-typed speech, 157; measurement tools of, 17; measuring instruments of, 16; same- 8; secondary characteristics, 20; stereotyped role, 15; -typed task, 6  
 Shepard, Herbert A., 160  
 Shibamoto, Janet S., 1  
 Shuy, Roger, 151, 195  
 Silberstein, Sandra, 80  
 Silveira, J., 51  
 Sims, Henry P., Jr., 149  
 Slang, 155, 156, 161, 166, 171, 173  
 Smith, Ken, 149  
 Smith-Marker, C. G., 216  
 Smith-Lovin, Lynn, 151  
 Smythe, Mary-Jeanette, 5, 24  
 Snell, William, 153  
 Socratic method, 110, 114  
 Solidarity, 4, 8, 98  
 Soskin, William, 152  
 Spanish, 6, 49-66  
 Speech acts, 229, constative, 230; constative assertive, 226, 230; constative descriptive, 222, 226, 230; descriptive, 228  
 Speech style, 217, 222, 223, 224; assertive/authoritative, 155, 156, 164; competitive, 77;

- cooperative, 77, 94;  
 facilitative/personal, 155, 160,  
 168; gendered, 120;  
 masculine/male and  
 feminine/female, 154-192;  
 Speech/Verbal repertoires, 150,  
 166, 184, 186  
 Spellman, Elizabeth V., 13, 14, 18  
 Spence, Janet T., 16, 26, 188  
 Spender, Dale, 2, 14, 34, 40, 77,  
 108, 109, 116, 119, 152  
 Stanley, E., 152  
 Status, 65, 98, 142, 156, 159, 186;  
 economic, 4; expert, 5; gender, 5;  
 social 3  
 Stories, 79, 80, 92, 94, 97, 98, 100;  
 American men's, 80; American  
 women's, 80, 83; Indian  
 women's, 98; women's, 80, 97  
 Strategy, 41; collaborative conflict  
 avoidance, 41, 153;  
 uncooperative conflict  
 avoidance, 44; unilateral, 41, 42,  
 153  
 Street, Richard, 40  
 Strodbeck, Fred L., 151, 152  
 Stubbs, Michael, 110  
 Suardiaz, D. E., 51  
 Swacker, Marjorie, 108, 118, 151,  
 152  
 Swann, Joan, 105, 111, 142  
 Swartz, Lora, 151, 152  
 Swearing, 161, 168, 170, 173  
 Tag questions, 2, 153, 155, 156,  
 160, 166, 173, 181, 187  
 Tannen, Deborah, 3, 4, 6, 7, 24, 29,  
 30, 33, 34, 38, 40, 42, 43, 44, 78,  
 80, 109, 111, 112, 125, 139, 140,  
 151, 152, 153, 156, 157, 194  
 Tarule, J. M., 26  
 Taubman, Bryna, 116  
 Taylor, Anita, 15, 22, 194  
 Taylor, D. M., 1  
*Taxèmes*, 236, 239  
 Teschner, R. V., 50, 69  
 Text, 97, 105, 109, 127, 159, 195-  
 214; feminist, 122  
 Thomas, D., 131  
 Thomas, G., 131  
 Tompkins, Jane, 109  
 Thompson, Lorraine, 150  
 Thorne, Barrie, 2, 150, 151, 154,  
 181  
 Toma, Chikako, 109, 110  
 Topic, 31, 32, 33, 34, 35, 39, 41, 42,  
 43, 80, 81, 83, 86, 89, 92, 96, 97-  
 98, 135, 139, 140, 151, 152, 153,  
 154, 155, 161, 166, 170, 171,  
 172, 173, 182, 187; initiation, 32-  
 33, 152; success/failure, 32, 34,  
 152  
 Treichler, Paula, 110, 111, 125, 151,  
 152, 153  
 Trimbur, John, 113, 131  
 Tromel-Ploetz, Senta, 40  
 Trudgill, Peter, 1, 151, 179, 185  
 Truth, Sojourner, 13-14  
 Turn, 7, 39, 46, 106, 110, 113-120,  
 122, 123, 125, 128, 129, 134,  
 135, 137, 151; apportionment,  
 107, 108, 114, 117, 118, 119,  
 125, 128, 129; -at-talk, 33, 105,  
 117, 119, 128, 129, 134, 137,  
 143; length, 105, 106, 151;  
 monitoring, 107, 123, 125; taking,  
 36, 106-107, 108, 114, 116, 118,  
 119, 132-138, 140, 151, 161;  
 violations, 32, 34, 35, 39, 41, 151  
 Uchida, Aki, 17  
 Unger, Rhoda K., 15, 25, 26, 27  
 Van Velsor, Ellen, 175  
 Vipond, Douglas, 113  
 Voice, 105, 106, 108, 111, 112, 113,  
 114, 121, 125, 126, 141, 155,  
 180, 183, 184, 189, 197, 198,  
 202; dialogic, 105, 125;  
 monologic, 105, 125  
 Volume of talk, 4, 83  
 Wadley, Susan, 102  
 Watson, C., 21, 24  
 Weiner, H. S., 131  
 Wertsch, James V., 109, 110  
 West, Candace, 4, 77, 111, 118,  
 132, 152, 153  
 Wheelless, L. R., 17, 26  
 Wheelless, V. E., 17  
 White, Randall, 179  
 Wide-verbal-repertoire, 7, 150, 158,  
 163, 164, 166, 168, 174, 175,  
 176, 177, 180, 181, 182, 183,  
 184, 192; balanced profile, 164,  
 166-168; extreme profile, 164,  
 168-170; mixed profile, 164, 171-  
 174  
 Wolfram, Walter, 151  
 Woods, Nicola, 108

Wyatt, N., 194

Yana, 1

Zimmerman, Don H., 4, 77, 111,  
118, 132, 152, 153

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CONTENTS

|                                                                                                                                                   |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Introduction                                                                                                                                      | 1   |
| <b>Section 1: Cross-Sex Communication: Dominance or Difference?</b>                                                                               |     |
| ANITA TAYLOR: Language and the construction of gender: Clarifying ideas about gender                                                              | 11  |
| V. L. DEFRANCISCO: Difference or dominance: A critique of two theoretical attempts to explain gender based communication barriers                 | 29  |
| <b>Section 2: Gender Marking in Language and Language Use</b>                                                                                     |     |
| V. C. MUELLER GATHERCOLE & D. J. HASSON: Gender marking in Spanish: Linguistic and sociological determinants of feminine form in words for humans | 49  |
| T. M. VALENTINE: What's the point? Storytelling by women in India                                                                                 | 77  |
| <b>Section 3: Gender and Power in Classroom Interaction</b>                                                                                       |     |
| V. L. BERGVALL: Joining in academic conversation: Gender, power and the apportionment of turns at talk                                            | 105 |
| GERALD J. SAVAGE: Sociolinguistic construction of power in two classroom peer groups                                                              | 131 |
| <b>Section 4: Gender and Language in the Professions</b>                                                                                          |     |
| SUSAN S. CASE: Gender, language and the professions: Recognition of wide-verbal-repertoire in speech                                              | 149 |
| JENNIE DAUTERMANN: A case for examining professional voices in institutional settings: Nurses in conversation                                     | 193 |
| LYSANNE LANGEVIN: Of manpower and words: A study of linguistic markers of inclusion and exclusion in managerial work in the educational system    | 217 |
| Bibliography                                                                                                                                      | 231 |
| Notes on Authors                                                                                                                                  | 265 |
| Index                                                                                                                                             | 269 |









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