

**MULTIPLE CASE ASSIGNMENTS**

by

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## ABSTRACT

We examine the data of multiple case assignments in an attempt to determine the nature of the mapping between abstract case and morphological case. We consider three potential sources of multiple case: percolation, agreement, and assignment. We argue that a potential multiple case assignment may be resolved by prevention of a structural case assignment; by prevention of case agreement; by reduction of assigned case features; or by morphological accommodation of the multiple cases.

We claim that accommodation of a multiple case by morphologically neutral forms reflects a general morphological process. We suggest that case assignment be represented as assignment of a positive case feature value, with morphologically neutral forms represented in the lexicon with underspecified case feature values.

We claim that case agreement between a trace and an antecedent in a non-argument position is forced by cyclic application of the Case Filter. This case transmission requirement, together with an agreement requirement between a relative pronoun and an empty pronominal head, creates case matching effects in free relatives. Reduction of such multiple case assignment is subject to a semantic constraint of recoverability, and creates resolution hierarchies of the general form, less informative cases < more informative cases.

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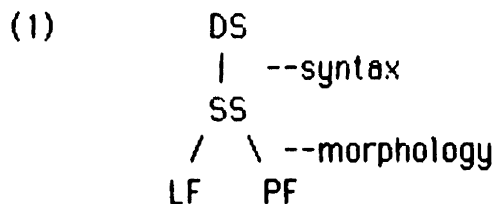
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# CHAPTER ONE: THE MAPPING FROM ABSTRACT CASE TO MORPHOLOGICAL CASE

## 1.0 Introduction

This thesis is cast in the framework of the theory of government and binding. We take Chomsky (1981) as the starting point of our discussion. In this theoretical perspective, the grammar is divided into modules, each module having its own properties and constraints. Syntactic rules connect the underlying representations of D-Structure with the intermediate representations of S-Structure. From S-Structure, morphological and phonological rules derive the Phonetic Form, while rules of semantics derive the Logical Form, the level of interpretation.



Case theory serves as a bridge between the syntactic (DS-SS) and morphological (SS-PF) components of the grammar. Argument structure is reflected in the abstract case assigned to each NP. This abstract case then determines the NP's morphological case inflection, depending on the morphology of the language. At PF, a Case Filter checks to see that case has been assigned.

Case is assigned to an NP either structurally or inherently, according to case assignment rules:<sup>1</sup>

(2) Structural Case Assignment (at SS)

- a. NP is nom. if governed by AGR
- b. NP is obj. if governed by a transitive verb
- c. NP is obl. if governed by P
- d. NP is gen. in [NP — X' ]

(3) Inherent Case Assignment (at DS)

NP is inherently Case-marked as determined by properties of its [-N] governor

The case assignment rules are subject to language-particular variations: prepositions assign obj. in English; [+N] may be a case assigner in Russian or German; etc. But the essential system of case assignment is presumed to derive from universal grammar. In particular, all case assignment is under government (and possibly subject to other conditions, such as adjacency); all languages have both structural (dependent on SS representation) and inherent (dependent on DS representation) case assignment, and all languages share the case filter:

(4) \* NP, where NP has phonetic content but no Case

The ungrammaticality of certain structures can be explained as a violation of the case filter. The requirement that an NP obtain abstract case is seen

---

<sup>1</sup>A somewhat different formulation is given in Chomsky (1985); there, structural case includes only nominative and objective.

as the driving force in such operations as "of-insertion" and Passive Movement.

The passive verb, for example, fails to assign case to its object, forcing the object NP to move to subject position in order to satisfy the Case Filter:

- (5) \* was admired Leanna
- (6) Leanna was admired

Similarly, an adjective fails to assign case to a complement, requiring "of-insertion" in structures like (7):

- (7) \* proud Noreen
- (8) proud of Noreen

Although one type of abstract case would suffice for the operation of the case filter, the case assignment rules mention several different varieties of abstract case (nom, obj, obl, gen), based on the traditional use of case terms in declensional morphology. Morphological cases are used as evidence for the presence of certain abstract cases relationships. For example, the presence of a morphological objective case in Raising constructions in English is cited as evidence of Exceptional Case Marking by verbs like believe:

- (9) I believe him/\*he to be a fool

Yet, even within one language, each occurrence of a given morphological case ending is not taken to represent the same abstract case. For example, the occurrence of a morphological nominative *who* in

(10) *who<sub>i</sub> are you talking to t<sub>i</sub>*

is not taken to suggest that English prepositions can assign an abstract nominative case. Often it is not clear which morphological variations reflect syntactic differences, and which are consequences of the morphological idiosyncrasies of a given language.

Case theory attempts to use abstract case to express syntactic generalizations which transcend morphological diversity. But, as Riemsdijk (1983) notes, "the relationship between ... abstract case distinctions and actual morphological cases in those languages that exhibit them has been left largely unspecified." Without such a specification, Case Theory remains an unreliable tool for investigating morphosyntax. This thesis joins a growing effort to define the relationship between morphological and abstract case.

### 1.1 Evidence from Single Case Assignment

It is clear that the relationship between abstract case and morphological case is not direct. The abstract case system must be uniform to some extent in order to capture syntactic generalizations across languages; yet this generalized system of abstract cases must be translated into a wide variety of morphological case marking systems. In this section we restrict

our attention to evidence from the most straightforward situation, in which a single case is assigned to a given NP. We will refer to this as single case assignment, in contrast to multiple case assignment, in which a given NP acquires multiple cases.

We note first that the mapping from abstract case to morphological case is language-dependent. Two abstract cases which are morphologically distinguished in one language may share a morphological realization in another language.

Vergnaud (1982) suggests that a language-particular mapping function mediates between abstract case and morphological case. The least marked function, according to Vergnaud, is that in which each abstract case receives a unique morphological interpretation, independent of context.

French provides an example of the least-marked mapping:

(11) French case mapping

abstract case		morphological case
Nom	----->	nom
Obj	----->	obj
Obl	----->	obl

The English mapping, Vergnaud claims, is more marked, with two abstract cases receiving one morphological interpretation:

(12) English case mapping (NOM, OBJ, OBL)

abstract case		morphological case
Nom	----->	nom
Obj	----->	obj
Obl	-----/	



Thus, English pronouns distinguish nom and obj, but not obj and oblique:

- (13) I sent her [obj] to him [obl]
- (14) I sent him [obj] to her [obl]

We could attempt to regularize the English mapping by reducing the inventory of abstract cases. Kayne (1984:116) suggests that English prepositions assign objective, not oblique. If English has truly lost the abstract oblique case, then we might devise a one-to-one mapping:

- (15) English case mapping (NOM, OBJ)  
    abstract case                      morphological case  
    Nom ----->    nom  
    Obj ----->    obj

This proposal illustrates two potential parameters of case assignment: variation in the inventory of abstract cases, and variation in the case subcategorization requirements of the case assigners. In (15) we have sacrificed consistency between the French and English abstract case inventories and the generalization "P assigns oblique", in order to preserve a one-to-one mapping of abstract case to morphological case.

However, the one-to-one mapping established in (15) only holds for the pronouns. English Nom and Obj have distinct pronominal representations, but fall together in proper and common nouns:

- (16) He consulted the professor
- (17) The professor consulted him

(18) English Case Mapping Paradox

abstract case		morphological case
Nom	----->	nominative: he, professor

Obj	----->	objective: him
-----	--------	----------------

The relationship in English between abstract Nom and Obj and morphological nom and obj can be represented neither as a one-to-one, onto mapping nor as a coalescence of the morphological cases. This leads us to our second conclusion, that the relationship between abstract case and morphological case is somehow dependent on lexical information.

The paradoxical treatment of nominative and accusative case in (18) derives from our use of the term "morphological case" at a level of abstraction divorced from the actual morphological forms. We will call this generalized morphological case. We argue that the case mapping system should not rely on generalized morphological cases.

First, the use of generalized morphological cases requires an additional mapping, from generalized morphological case to morphological case form. In a sense, each morphological realization of an abstract case is unique, since the realization includes the form of a particular lexical item. For example, knigu 'book' and devušku 'girl' are distinct morphological realizations of the Russian abstract accusative case, even though they share the accusative case suffix -u. So we cannot simply map abstract accusative into a generalized morphological accusative; we must then map the generalized morphological accusative into specific morphological forms.

(19) Two Stage Case Mapping

Abstract case	generalized morphological case	morphological case form
Acc ----->	accusative ----->	knig+u
Acc ----->	accusative ----->	devušċ+u

More interestingly, a single morphological realization of each abstract case cannot always be isolated even when we restrict our attention to case morphemes per se. The realization of a particular case may vary from item to item, depending on declension class and grammatical properties such as gender, number, and animacy. For example, the realizations of the Russian abstract accusative include -u (in feminine singular), -o (in neuter singular), and -a (in animate masculine singular). We might turn to an intermediate, generalized morphological case to represent declensional differences.

(20) Two Stage Case Mapping

Abstract case	generalized morphological case	morphological case form
Acc ----->	accusative #1 ----->	knig+u
Acc ----->	accusative #2 ----->	pis'm+o
Acc ----->	accusative #3 ----->	mal'ċik+a

But something must condition the choice of generalized morphological cases. We cannot express all variations in the first mapping, (from abstract case to generalized morphological case), since some of the variation depends on specific lexical information. In particular, membership in a given declension class may be an arbitrary property of a lexical item. The

final realization of an abstract case can only be determined with reference to specific lexical entries.

Second, the introduction of generalized morphological case creates confusion about abstract and morphological case. By postulating a generalized morphological case which is independent of lexical information, we invite statements to the effect that "language X lacks morphological case," or that language X lacks a particular morphological case. Languages may differ in their inventory of abstract cases, but each abstract case included in the inventory of a given language receives a morphological realization. The nominative morphological case is the form of a given lexical item which is used when [Nom] abstract case is assigned; the objective morphological case is the form of a given lexical item which is used when [Obj] abstract case is assigned. If these forms coincide for a given lexical item, or for some class of lexical items, it does not mean that the nominative or objective morphological case is missing.<sup>1</sup>

In light of these remarks, let us reconsider our description of the English case mapping system. We adopt Comrie's (1986:91) diagnostic for the inventory of abstract cases: "... if a case distinction is made formally in any nominal, then that same case distinction exists for all nominals. ..." Since English pronouns have distinct nominative and objective forms, we postulate distinct NOM and OBJ abstract cases. On the other hand, no OBL

---

<sup>1</sup>We might say that a morphological case is missing for a given lexical item if that lexical item altogether lacks a morphological realization for a certain abstract case. For example, the Russian reflexive *sebjä* 'self' lacks a nominative form (Davis and Oprendeck (1973)). Note, however, that the absence of a nominative reflexive may be due to syntactic constraints on reflexivization, rather than on a morphological gap.

case is ever morphologically distinguished from OBJ, and so we do not postulate an abstract Oblique. (We ignore for present purposes the treatment of genitives ) This gives us the abstract case inventory {NOM, OBJ}. The abstract NOM and abstract OBJ are realized in various forms by different lexical items. Note that if we introduce generalized morphological case as a stage between abstract case and morphological case, we must to refer to the nominal and pronominal declensions separately.

(21) English Case Mapping Using Generalized Morphological Case

Abstract Case		Generalized Morphological Case		Morphological Case
<u>Pronouns</u>				
[NOM]	--->	"nominative"	---	I    he
[OBJ]	---	"objective"	---	me   him
<u>Common Nouns</u>				
[NOM]	---	"nom/obj"	---	student    professor
[OBJ]	--/			

Instead, we represent this mapping directly, with no intervening level of generalized morphological case:

(22) Direct English Case Mappings

	Abstract Case		Morphological Case		
a.	[NOM]	---	I	he	student    professor    ...
b.	[OBJ]	---	me	him	student    professor    ...

Compare this with the traditional concept of paradigm. Our abstract case corresponds roughly to the dimensions or labels of a paradigm; our morphological case corresponds to the forms which fill out the paradigm. But, continuing the metaphor, this direct mapping from assigned abstract case to morphological case form neglects the concept of declension class. We have no way in this system to state the regularities among morphological case forms. We cannot express the fact that NOM and OBJ map to distinct forms in most personal pronouns, but to identical forms in each common noun

We argue that such declensional information should be represented in the lexicon. Thus, abstract case will map directly to a morphological form, but the lexicon will contain information about the relationships between forms. In Chapter Two we discuss two ways to do this: by case features and lexical redundancy rules, or by a formalization of the traditional concept of paradigm.

### 1.1.1 First Model of Case Mapping

In the previous section we established that the mapping between abstract case and morphological case is not one-to-one. Two distinct abstract cases may have identical morphological forms for a given lexical item, reflecting a many-to-one mapping. One abstract case may have different morphological realizations in different declension classes, reflecting a one-to-many mapping. Thus, we see that the abstract-morphological mapping is not only language-dependent, but also lexically-dependent. We have

suggested that this lexical dependence should be represented in the lexicon, and not as a separate stage of "generalized" morphological case.

Based on the evidence from single case assignment, we develop the following model of the mapping from abstract case to morphological case:

### (23) First Model of Case Mapping

#### I. Assignment

DS (XP): Inherent Case Assignment

SS (XP): Structural Case Assignment

#### II. Adjustment

SS (XP): Agreement

SS (X°): Percolation

#### III. Realization

PF (X°): Accommodation

We distinguish three stages of case-mapping, assignment, adjustment, and realization. Assignment includes both inherent and structural case assignment. Adjustment includes any post-assignment syntactic processes which manipulate abstract case. Adjustment includes case agreement at the phrasal level, and percolation of case from the phrasal level to the X° level. Realization refers to the morphological spell-out of abstract case. When realization takes place at the X° level, we say that the X° element accommodates the abstract case. (We exclude from consideration here the case-agglutinating languages, in which case may be realized at the phrasal level. Case-agglutinating languages are discussed in Appendix A; the other

chapters of this thesis are restricted to case-inflecting languages.<sup>1)</sup>

Below, each of the stages of this mapping are discussed in detail.

### 1.1.1.1 Assignment

We maintain the distinction between structural and inherent case: inherent case is  $\theta$ -related, and assigned at D-Structure; structural case is not  $\theta$ -related, and is assigned at S-Structure. In both instances, we suggest that the assignment of abstract case corresponds to a case assigner assigning a positive case feature value to a position it governs. This position must later be filled by a lexical entry which is compatible with that case feature value (see Realization, below).

(24) Case Assignment

$$B \text{ ---} \rightarrow [+ \text{Case Feature } K] / A \text{ \_\_\_ } , \text{ where } A \text{ governs } B \\ (+K)$$

The notation  $A(+K)$  indicates that  $A$  is a case assigner which can assign the feature value  $[+ \text{ case feature } K]$ .<sup>2</sup> The rule of case assignment is feature-filling only: the output  $[\pm K]$  is ill-formed. In addition, there is a redundancy rule which makes all unassigned case feature values negative prior to lexical insertion.

(25)  $[0 \text{ Case Feature } K] \text{ -----} \rightarrow [-\text{Case Feature } K]$

---

<sup>1</sup>In the sense of the traditional typological classifications of isolating, inflecting, and agglutinative. Thus, case-inflecting does not imply a particularly rich case marking system, but rather a system in which case morphemes are tightly bound to the stem.

<sup>2</sup>Being able to assign a case feature  $K$  is not necessarily the same as having the feature value  $[+K]$ .



The case filter may be construed as a constraint that each case feature matrix must have at least one positive case feature value upon entering PF.

(26) Case Filter

- \* - Case 1
- Case 2            at PF
- .
- Case n

In Chapter Five we reconsider the Case Filter and the nature of structural case, considering the possibility that case is just one of several licensing strategies. Structural case, in this view, might be just a reflection of structural licensing. For now, however, we retain both structural case and the Case Filter as described here.

1.1.1.2 Adjustment

Adjustment processes manipulate assigned case feature values. Agreement refers to the sharing of case features between two co-indexed NPs. For example, languages often require a predicate or appositive NP to agree in case with the subject NP. Case agreement may also subsume inheritance of case from a *wh*-trace. Percolation refers to the internal transmission of case features from the maximal projection to the head and its modifiers. Adjustment processes seem to be generally subject to parameterization: percolation is not necessary in case-agglutinating languages; appositives and predicate nominals do not always exhibit agreement.

### 1.1.1.3 Realization

For the case-inflecting languages, we assume that each nominal lexical entry is associated with a set of case features, which may have the values +, -, or remain unspecified (represented by 0). A lexical item may be inserted in a given position only if the case feature values of that lexical item are non-distinct from the case feature values which have been assigned to that position. When this condition is met, the lexical item is said to accommodate the abstract case assignment. (We assume lexical insertion; alternatively, the case assigned by the case assigner could simply be checked against the case features of a lexical item occurring in that position.) The system may be illustrated with the following derivation.

(27) Example of Accommodation

[<sub>VP</sub> V (+A) NP ]

- a. V assigns [+A] to the NP position
- b. no value is assigned for case feature B
- c. [OB] ---> [-B]. NP position now is marked [+A, -B]
- d. lexical insertion can apply with lexical entries of the form:  
[+A, -B], [+A, OB], [0A, -B], [0A, OB]
- e. lexical insertion cannot apply with lexical entries of the form:  
[⊖A, +B] (+B is incompatible with position's -B)  
[-A, ⊖B] (-A is incompatible with position's +A)

### 1.2 Evidence from Multiple Case Assignment

Multiple case assignment occurs when one NP becomes associated with more than one abstract case. This situation strains the abstract/morphological relationship, and thus provides crucial evidence about the case mapping process.

The case-inflecting languages typically allow only one case inflection per nominal element, and hence do not easily tolerate the assignment of more than one abstract case per NP. In fact, it is sometimes assumed that Case Theory must prohibit instances of multiple case assignment. For example, Radford (1984) argues that "...the c-command analysis [of government] would wrongly produce instances of case conflict, where a given NP is assigned more than one distinct case. But there is no evidence that this situation arises in natural languages: i.e., it is typically the case that NPs in natural language are morphologically marked for only one case." Similarly, Sells (1985:53) suggests that the Case Filter requires one and only one case: "The Case Filter is like the  $\theta$ -Criterion in that having two Cases is as bad as having none at all; ..." Chomsky (1986) formulates a Chain Condition which restricts case assignment to the chain of NP-movement: The chain formed by NP and its trace must have exactly one case-marked position, that of the head of the chain. A chain with no case or a chain with more than one case-marked position is not visible for thematic role assignment, and will violate the theta-criterion, which requires each argument to have a theta role (see Chapter Five).<sup>1</sup>

The terminology of recent work reflects this assumed prohibition: Multiple case assignment is said to cause "case conflict", "case clash", or "case competition".<sup>2</sup> We will show that multiple case assignment may be well-formed under certain morphological and syntactic conditions. Although the assignment of multiple cases sometimes leads to ungrammaticality, we

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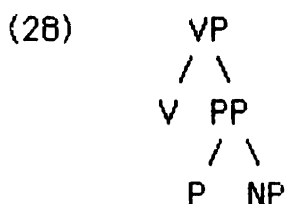
<sup>1</sup> Note that the Chain Condition does not apply to the chain formed by wh-movement; also, the Chain Condition might allow multiple case assignment, if all cases were assigned to the head of the chain.

<sup>2</sup> Massam (1985) employs the more sympathetic phrase, "redundant case marking".

argue that Case Theory should not contain any sweeping prohibition of multiple case assignment. Claims that case conflict underlies the ungrammaticality of certain constructions must be examined in light of the entire case mapping system.

### 1.2.1 Sources of Multiple Case

In the model outlined above in (23), multiple abstract cases can accumulate to a single NP at either the assignment stage or the adjustment stage. At the assignment stage, two case assigners could assign distinct abstract cases to the same NP. For example, Babby (1984) suggests that both V and P can assign case to NP in the construction (28):



Another potential source of multiple case assignment is the movement of a case-marked NP to the domain of second case assigner. We term this assignment-induced multiple case.

Most sources of assignment-induced multiple case are prohibited under standard GB assumptions. These issues will be discussed in Chapter Five.

At the adjustment stage, a NP which has been assigned case could accumulate additional cases through case agreement. For example, a relative pronoun may be assigned case within its clause and then also

acquire the case originally assigned to its antecedent in the main clause. We term this agreement-induced multiple case. Additionally, an  $X^{\circ}$  nominal element (typically, N or A) could accumulate multiple cases by percolation of case features from the maximal projection, XP. This will be referred to as percolation-induced multiple case.

We use the general term, multiple case assignment, to refer to assignment-induced, agreement-induced, and percolation-induced multiple case.

### 1.2.2 Resolution of Multiple Case

We introduce the terms resolution, prevention, and reduction to describe the disposition of multiple case assignment. Resolution refers to the well-formed expression of a potential multiple case assignment.<sup>1</sup> When there is no well-formed expression possible, the multiple case assignment is said to be unresolved. Resolution encompasses prevention, reduction, and accommodation (described previously), each of which is relevant to a different stage of the mapping from abstract case to morphological case.

#### 1.2.2.1 Prevention

Prevention refers to the blocking or inhibition of a potential assignment, agreement, or percolation of abstract case. We distinguish two kinds of prevention, structural and principled. Structural prevention occurs when

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<sup>1</sup>The term resolution is used by Babby (1980, 1984, 1986), Pullum & Zwicky (1986). Pullum & Zwicky use the terms principled resolution and phonological resolution: these correspond roughly to our use of the terms reduction and accommodation, respectively. See Chapter Two. Babby uses the term resolution to describe what we would describe as prevention and reduction processes. See Chapter Three.

the structural conditions for assignment, agreement, or percolation are not met. Structural prevention might be considered external to the case mapping process; we include it here because the structural analysis of a construction is crucial to determining its case mapping properties. Principled prevention occurs when some non-structural constraint applies to prevent case assignment, agreement, or percolation.

### 1.2.2.2 Reduction

We use the term Reduction to describe an adjustment rule which removes a case feature. Reduction may apply at the XP-level or at the X<sup>o</sup>-level. XP-level reduction removes case features accumulated through case assignment and case agreement. X<sup>o</sup>-level reduction removes case features accumulated through percolation. Since reduction may obscure the original case-marking properties of a construction, we would prefer to restrict its operation as much as possible, if not eliminate it completely. We will examine evidence that reduction rules do exist in some languages. However, as a destructive process, reduction should be subject to recoverability of deletion, and we consider evidence to that effect.

### 1.2.2.3 Accommodation

Accommodation was described in the previous section as the morphological realization of an abstract case in a particular lexical item. Accommodation extends to the simultaneous realization of multiple abstract cases in a single lexical item. If a word has distinct realizations for each abstract case, there will be no possible realization of a multiple case assignment; there will be a lexical entry for each case form, and each lexical entry can accommodate only one abstract case assignment. However, when two

abstract cases receive the same morphological representation for one word, this may be represented by a single lexical entry with underspecified case features. In this situation, the syncretic morphological form accommodates the multiple case assignment, since it is non-distinct from the multiple positive case feature values which have been assigned to the position in question.

(29) Example of Accommodation of Multiple Case Assignment

[<sub>VP</sub> V (+A) [<sub>PP</sub> P (+B) NP ] ]

- a. P assigns [+B] to the NP position.
- b. V assigns [+A] to the PP.
- c. [+A] percolates from PP to NP.  
NP position now is marked [+A, +B]
- d. lexical insertion can apply with lexical entries of the form:  
[+A, +B], [+A, 0B], [0A, +B], [0A, 0B]
- e. lexical insertion cannot apply with lexical entries of the form:  
[@A, -B] (-B is incompatible with position's +B)  
[-A, @B] (-A is incompatible with position's +A)

1.2.3 Revised Model of Case Mapping

We revise our model of case mapping in light of the evidence of multiple case assignment and resolution. As described in the previous sections, resolution can take the form of an existing mapping process (accommodation), a constraint on an existing mapping process (prevention), or the introduction of a special mapping process (reduction). The resolution components of this model are highlighted in bold type. (Again, case-agglutinating languages are excluded; see Appendix A for a model of case mapping in case-agglutinating languages.)

## (30) Model of Potential Case Assignments and Resolutions

### I. Assignment

DS: Inherent Case Assignment

SS: Structural Case Assignment: **Subject to Prevention**

### II. Adjustment

SS: Agreement: **Subject to Prevention**

SS: **XP-Level Reduction**

SS: Percolation: **Subject to Prevention**

SS: **X°-Level Reduction**

### IV. Realization

PF: **Accommodation**

This model represents all potential multiple case assignments and resolutions. It can be difficult to tell whether a particular instance of resolution is due to prevention of a case feature association or reduction once that association has taken place; it is also sometimes unclear whether resolution takes place at the XP or X° level. While we will present evidence for accommodation, reduction, and prevention, we will argue that the indications of prevention and reduction here are excessive. In Chapter Five we will give a final model of the case mapping, based on the evidence discussed in the body of the thesis.

### 1.3 Outline of Thesis According to Case Mapping Model

The rest of this thesis is devoted to an exploration of resolution at the various stages of the case mapping process. We begin with the concrete and proceed to the abstract, working our way backward through the case mapping model.



### 1.3.1 Chapter Two: Accommodation

Chapter Two deals with the morphological realization of multiple cases. We review evidence that syncretic forms can accommodate multiple case assignment. Such syncretic resolution of multiple case assignment shows that some multiple cases persist into the morphology, providing crucial evidence that Case Theory cannot prohibit multiple case assignment on syntactic principles.

### 1.3.2 Chapter Three: Percolation-Induced Multiple Case

Chapters Three and Four deal with case hierarchy, in which a multiple case assignment is resolved according to a set of precedence relations among abstract cases. We argue that case hierarchy is not a morphological phenomenon, but rather a syntactic phenomenon. We consider several possible explanations of case hierarchy, including structural prevention, rule-based prevention, and reduction. Chapter Three discusses hierarchical resolution of percolation-induced multiple case in Russian and Polish numeral phrases.

### 1.3.4 Chapter Four: Agreement-Induced Multiple Case

Chapter Four discusses hierarchical resolution of agreement-induced multiple case in relative clauses. We give a prevention and reduction analysis of case matching effects in free relatives. We argue that reduction is a language-specific property which underlies the matching parameter. We claim that case hierarchy in free relatives is due to a recoverability constraint on reduction.

### 1.3.5 Chapter Five: Assignment-Induced Multiple Case

Chapter Five first discusses the possibility of assignment-induced multiple case. We contend that assignment-induced multiple case occurs in certain constructions, in violation of the Chain Condition. We offer a prevention analysis of multiple case assignment in passives, exceptional case marking, and raising to subject constructions. We claim that the transmission of case from *wh*-trace is forced by cyclic application of the Case Filter.

### 1.3.6 Appendix A: Case-Agglutinating Languages

Appendix A discusses the mapping from abstract to morphological case in case-agglutinating languages. In these languages, cliticization of case morphemes may lead to a stacking of case morphemes. However, the presence of multiple case morphemes on a particular element does not always indicate the presence of multiple case assignment to that element. We consider two candidates for multiple case assignment, possessor phrases and raising constructions.

## CHAPTER TWO: ACCOMMODATION

### 2.1 Introduction

In Chapter One we outlined a case-mapping model in which abstract case can come to be associated with a nominal element by case assignment, case agreement, or case percolation. Separately or in combination, these processes can lead to an accumulation of abstract cases, represented by case features. This chapter details the morphological realization of such multiple case assignments.

The morphological realization of case depends on the morphological character of the language; in particular, we distinguish case-agglutinating languages from case-inflecting languages.<sup>1</sup> Case-agglutinating languages realize abstract case as independent case morphemes, which are then cliticized to the case-marked phrase or its head. We discuss case-agglutinating languages in Appendix A. In contrast, case-inflecting languages use case morphemes which are tightly bound to a nominal stem. In these languages case features cannot be realized directly on a phrasal constituent, but must be percolated to the X<sup>0</sup> level. The input to the realization stage in a case-inflecting language therefore consists of an X<sup>0</sup> category and its associated case features; these must be spelled out by a single lexical entry. We use the term accommodation to refer to the morphological realization of case features in a particular lexical item. Multiple case assignment is reflected at this stage as an accumulation of

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<sup>1</sup>In the sense of the traditional typological classifications of isolating, inflecting, and agglutinative. Thus, case-inflecting does not imply a particularly rich case marking system, but rather a system in which case morphemes are tightly bound to the stem.

positive case feature values, and can only be accommodated if there is a lexical entry which is compatible with more than one positive case feature value. We will see that lexical entries which exhibit a case syncretism (i.e., which are morphologically neutral over two or more case forms) may accommodate multiple case assignments. We refer to this accommodation process as syncretic resolution of multiple case assignment. The existence of syncretic resolution shows that some multiple case assignments persist into the morphology. Therefore, Case Theory cannot contain a syntactic principle prohibiting all multiple case assignments.

In the first section of this chapter we review the accommodation data. In the second section we present a case feature analysis of syncretic resolution. An alternative analysis is considered which formalizes the traditional notion of paradigm.

## 2.2 Data

### 2.2.1 Syncretic Resolution of Movement-Derived Multiple Case

First, we show that syncretic resolution of multiple case assignment occurs in a variety of languages and syntactic constructions. Some of the data here are drawn from Toraldsen (1981), Groos & Riemsdijk (1981), and Dyła (1984). Next, we review the evidence given by Zaenen & Karttunen (1984) and by Pullum & Zwicky (1986) which shows that syncretic resolution is not limited to the assignment of multiple cases. Finally, we will consider instances in which syncretism fails to resolve multiple case assignment.

Movement-derived multiple case assignment occurs when an NP is assigned case in one position and then moves to the domain of another case assigner. The main source of movement-derived multiple case assignment is the free (or "headless") relative construction, in which a relative pronoun appears without an antecedent in the main clause. Movement to COMP puts the relative pronoun in the domain of the case normally assigned to its head. The structure of free relatives will be discussed in Chapter Four; for our present discussion we simply stipulate that the relative pronoun in a free relative accumulates both cases. In many languages, the free relative construction is limited to sentences in which the same abstract case is assigned in both clauses. This constraint is usually called a case-matching effect or requirement.

We term the case assigned to the head noun the "external" case; we term the case assigned to the relative pronoun the "internal" case. The external and internal cases are typically realized morphologically on the head and the relative pronoun, respectively. In headed relatives, we represent the case relations with the notation:

(1) external [ internal

In free (headless) relatives, the relative pronoun can only realize one of these two cases; we term this the "resolution" case. We represent the case relations of the free relative with the notation:

(2) external [ internal = resolution

Morphological syncretism is represented with a slash:

(3) nominative | accusative = nominative/accusative

Taraldsen (1981) gives the following examples of case-matching in German. In (4)-(6), the relative pronoun receives nominative case as the subject of 'annoy'. The relative clause as a whole serves as the object of the matrix verb, 'destroy'. The accusative/nominative multiple case assignment cannot be accommodated by either nominative wer 'who' or accusative wen 'whom'.

(4) acc(nom=nom  
\*ich zerstöre wer mich ärgert  
I destroy who me annoys  
'I destroy who annoys me'

(5) acc|nom=acc  
\*ich zerstöre wen mich ärgert  
I destroy whom me annoys  
'I destroy whom annoys me'

The syncretic nominative/accusative form was 'what' can accommodate the multiple case assignment:

(6) acc(nom=nom/acc  
✓ich zerstöre was mich ärgert  
I destroy what me annoys  
'I destroy what annoys me'

Other German examples are provided by Groos & Riemsdijk (1981), showing that the order of the cases (nom|acc or acc|nom) does not affect the neutralizing property of was.

- (7) nom[acc=nom/acc  
 ✓was du mir gegeben hast, ist prächtig  
 what you me given have is wonderful  
 'What you have given to me is wonderful.'
- (8) nom[acc=nom/acc  
 ✓was du vorschlägst, kommt nicht in Frage.  
 what you propose comes not into question  
 'What you propose is out of the question.'
- (9) acc[nom=nom/acc  
 ✓Ich habe gegessen was noch übrig war.  
 I have eaten what still left was  
 'I ate what was left'
- (10) acc[nom=nom/acc  
 ✓Hast du was im Programm war schon kopiert?  
 Have you what on the program was already copied  
 'Have you already copied what was on the program.'

Polish free relatives also exhibit syncretic resolution. When the same abstract case is assigned in both clauses, the relative clause may stand without an antecedent:

- (11) gen[gen  
 ✓nie kupuje tego czego nie lubie  
 not buy it what not like  
 'I don't buy that which I don't like'
- (12) gen[gen=gen  
 ✓nie kupuje czego nie lubie  
 not buy what not like  
 'I don't buy what I don't like'

In (11) and (12), both matrix and embedded verbs assign a genitive of negation,<sup>2</sup> and the head tego 'it' genitive is optional. When two different abstract cases are assigned, the absence of the antecedent leads to a multiple case assignment:

(13) acc/gen  
✓kupuje to czego nie lubie  
buy it what not like  
'I buy that which I don't like'

(14) acc/gen=acc  
?kupuje co nie lubie  
buy what not like  
'I buy what I don't like'

(15) acc/gen=gen  
?kupuje czego nie lubie  
buy what not like  
'I buy what I don't like'

In (13), the matrix verb assigns accusative, while the negated verb in the relative clause assigns genitive. Neither co 'what' accusative nor czego 'what' genitive can accommodate this accusative/genitive multiple case assignment. Such multiple case assignments are grammatical in Polish if there is a syncretic form of the relative pronoun, as in (16):

(16) acc/nom=acc/nom  
✓kupilam co bylo w sklepie  
bought what was in store  
'I bought what was in the store'

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<sup>2</sup>Perhaps the negative particle itself assigns the genitive of negation, or perhaps the negative particle empowers the verb to assign genitive. Pesetsky (1982) unifies the genitive of negation with the genitive of quantification.



In sentence (16), the relative pronoun *what* has a single form for nominative and accusative, and thus can accommodate the assignment of nominative in the matrix clause and accusative in the embedded clause. The syncretic resolution of multiple case assignment is not limited to free relatives. Toraldsen (1981) argues that syncretism resolves multiple case assignments in Norwegian topicalization. He assumes that, in standard Norwegian, when an embedded subject is raised to topic position it must pass through a case-marked COMP position:

- (17) ✓*Per* <sub>i</sub> hadde de trodd [<sub>S</sub> t<sub>i</sub> [<sub>S</sub> t<sub>i</sub> ville komme forsent ] ]  
 Peter had they thought - would come too late.

The topicalized NP then "comes to accumulate two case-features, [+nom] and [+obj]." (p. 380) A noun such as *Per* does not decline for nominative and objective and thus can simultaneously spell out both features. Personal pronouns which must distinguish nominative and objective morphologically cannot be topicalized in the same way:

- (18) \**jeg* hadde de trodd - ville komme forsent  
 I had they thought - would arrive too late  
 (nom: jeg; obj: meg)
- (19) \**du* hadde de trodd - ville komme forsent  
 you (sg) had they thought - would come too late  
 (nom: du; obj: deg)
- (20) \**vi* hadde de trodd - ville komme forsent  
 we had they thought - would arrive too late  
 (nom: vi; obj: oss)

Personal pronouns which neutralize nominative and objective can resolve the multiple case assignment:

- (21) ✓dere hadde de trodd - ville komme forsent  
you (pl)  
(nom: dere; obj: dere)

### 2.2.2 Syncretic Resolution of Coordination-Derived Multiple Case

Coordination-derived multiple case assignment occurs when one NP coordinates over two conjuncts which are assigned different cases. This may occur in wh-questions, relativization, topicalization, and cliticization. Coordination-derived multiple case may also occur when one NP is the object (or subject?) of two conjoined verbs which assign distinct cases.

Dyła (1984) shows that syncretism can resolve multiple case assignment in Polish across-the-board (ATB) wh-dependencies, with one wh-phrase corresponding to gaps in two conjuncts. For example, the accusative/genitive form kogo 'whom' can appear simultaneously with verbs that require accusative ('like') and genitive ('hate'):

- (22) ✓kogo Janek lubi a Jerzy nienawidzi?  
who John likes and George hates  
'Who does John like and George hate?'

Sentence (22) contrasts with (23), in which the wh-phrase is co 'what' nominative/accusative:

- (23) \*co Janek lubi a Jerzy nienawidzi?  
what John likes and George hates

**'What does John like and George hate?'**

Similarly, the relative pronoun *który* 'who' accommodates an acc/gen multiple case assignment in its syncretic masculine form *którego* 'whom' genitive/accusative but not in its distinct feminine forms *której* 'whom' genitive/dative, *która* 'whom' accusative.

- (24) ✓ *Chłopiec, którego Maria lubi a Ewa nienawidzi . . .*  
boy who Mary likes and Eve hates  
'The boy who Mary likes and Eve hates . . .'
- (25) \**Dziewczyna, która Janek lubi a Jerzy nienawidzi . . .*  
girl who John likes and George hate  
'The girl who John likes and George hates. . .'

Polish topicalization is also a source of resolvable multiple case assignment, as Dylą shows. The masculine third person pronoun has one form for genitive and accusative, *jego* 'him'; the feminine third person pronoun has distinct forms, *jej* 'her' genitive/dative and *ją* 'her' accusative. Only the masculine form is compatible with the multiple case assignment created by topicalization in (26) and (27).

- (26) ✓ *Jego Janek lubi a Jerzy nienawidzi*  
him John likes and George hates  
'Him, John likes and George hates.'
- (27) \**Ja Janek lubi a Jerzy nienawidzi*  
her John likes and George hates  
'Her, John likes and George hates.'

Zaenen & Karttunen (1984) demonstrate the syncretism effect for VP conjunction in Icelandic. In (28), 'steal' governs accusative while 'eat' governs dative. In the definite, 'cookie' has distinct forms for accusative and dative, neither of which can satisfy the multiple case assignment.

- (28) \*Hann stal og bordaði kökuna (acc)/ kökunni (dat)  
He stole and ate the cookie.

In the indefinite, 'cookie' has the same form for accusative and dative, and the conjunction is grammatical (for some speakers: see section 3, below).

- (29) ✓Hann stal og bordaði köku (acc/dat)  
He stole and ate a cookie.

French cliticization also exhibits the neutralizing effect of syncretism. Zaenen & Karttunen point out that the third person clitic, having separate forms for accusative (le) and dative (lui), cannot accommodate an accusative/dative multiple case assignment. The first person clitic, with a single form (me) for both dative and accusative, resolves the multiple case assignment.

- (30) \*je l'ai mis à la porte et donné des coups de pied  
I him have put at the door and given some kicks

- (31) ✓Il m'a frappé et donné des coups de pied  
[he me has hit and given some kicks]

### 2.2.3 Interaction between Case and Other Grammatical Properties

Syncretic resolution of multiple feature assignment is not limited to case, but may occur with other grammatical features such as person, number, and

gender. Pullum & Zwicky (1986) note the syncretic resolution of a person conflict in (32):

- (32) ✓...weil wir das Haus und die Muellers den Garten kaufen  
because we the house and the Muellers the garden buy

The verb ending -en serves for both first person plural and third person plural.

Zaenen & Korttunen (1984) demonstrate that a syncretic form may resolve a conflict across more than one feature dimension: in the Finnish example (33), the form kirjansa is ambiguous over nominative singular, nominative plural, and genitive plural, and hence accommodate a gen pl/nom sg conflict.

- (33) He lukivat hänen uusimman \_ ja me hänen parhaat \_ kirjansa  
they read his newest (sg gen) and we his best (pl nom) book/books.

These examples suggest that syncretic resolution is a general process or strategy, and not specific to Case Theory.

#### 2.2.4 Limitations on Syncretic Resolution

We have seen that syncretic resolution of multiple feature assignments is a general phenomenon, occurring in a variety of syntactic constructions and in a number of languages. It is important to note, however, that the presence of a morphologically syncretic form does not always resolve a grammatical conflict. First, we note that the construction must not violate other syntactic and semantic requirements. Zaenen & Korttunen (1984) observe that coordination constructions must obey a semantic constraint they call

the Anti-Pun Ordinance. Dyła (1984) argues for an abstract case-matching requirement; we suggest, however, that the restrictions he notes can be reinterpreted in terms of factoring requirements on across-the-board rule application.

In addition to these independent constraints, there appears to be a lexical constraint on syncretic resolution. Zaenen & Karttunen (1984) suggest that a case syncretism may reflect either one lexical entry or two homophonous lexical entries; they claim that only the latter may accommodate a multiple case assignment. A similar proposal is presented by Pullum & Zwicky (1986).

In his treatment of across the board dependencies Dyła (1984) suggests that, in addition to morphological matching, grammatical multiple case assignments must observe an abstract case matching condition which distinguishes Nominative, Objective, and Oblique. Dyła uses this condition to explain the contrast between the acc/gen examples (22), (24), and (26), and (34), in which the syncretic form co 'what' nominative/accusative fails to resolve the nom/acc multiple case assignment:

- (34) \* co Janek zrobil a zmartiwilo Marie ?  
what John did and upset Mary  
'\*What did John do and upset Mary?'

According to Dyła, conflicts between genitive and accusative are potentially resolvable, since these are both Objective cases. The nom/acc conflict in (34) is irresolvable, since it involves an abstract multiple case assignment, Nominative/ Objective. Dative, says Dyła, may instantiate

Objective in double object constructions, leading to the syncretic resolution of a dative/accusative conflict in sentences like (35) and (36):

- (35) Dziewczyna, której Janek nigdy przedtem nie widział a dzisiaj  
pozyczył pieniędzy  
girl who John never before neg saw and today lent money
- (36) Jej Janek nigdy przedtem nie widział a dzisiaj pozyczył pieniędzy ...  
her John never before neg saw and today lent money  
'Her, John had never seen before and today lent some money.'

Genitive/accusative conflicts are permissible with an Objective genitive, such as the object of 'hate' in (22), (24), and (26). But genitive is not always Objective, according to Dyła. He claims that sentences (34) and (35) involve a both an objective dative and a non-objective genitive, and hence cannot be resolved, even with an appropriate genitive/dative form.

- (34) \*Dziewczyna, której Janek chciał złożyć wizytę a nie było w domu  
girl who John wanted to-pay visit and neg was at home:  
'\*The girl who John wanted to visit and wasn't home ...'
- (35) \*Dziewczyna, której Janek dał swoją marynarkę a mimo tego  
było zimno ...  
girl who John gave refl's jacket and in spite it was cold  
'The girl who John gave his jacket and in spite of it was cold ...'

Dyła's abstract case matching condition seems to handle across-the-board extractions. But we have seen in example (16), repeated here, that Polish does allow a Nominative/Objective multiple case assignment in free relatives:

- (16) kupiłam co było w sklepie

nom/acc  
 bought what was in store  
 'I bought what was in the store'

In fact, Dył̥a's example, given above as (34), can be reconstructed as a relative clause, yielding the slightly odd, but grammatical (39):

(39) (?) [ co Janek zrobił ] zmartwiło Marie  
 'what Janek did upset Marie'

It seems unlikely that a condition on abstract case matching would be construction-specific. We suggest that Dył̥a's insight be expressed as a condition on across-the-board factoring, along the lines set out in Williams (1978). While not specifically ruling out the combination of subject extraction and object extraction, Williams' formalization prohibits factorings of the form (40):

(40) \* [ [X |  $\alpha$  ] C1 | and ]  
 [ | [  $\alpha$  | Y ] C2 ]

where  $\alpha$  is the variable in each conjunct. This rules out (34) and (38); (35) is probably ruled out as well, depending on the factoring of the introductory phrase, a mimo tego, 'in spite of'.

Zaenen & Karttunen note a semantic constraint on conjunction in their Anti-Pun Ordinance:

(43) A phrase cannot be used in two different senses at the same time.



Some constructions which might be candidates for syncretic resolution are ruled out independently by the Anti-Pun Ordinance. Zaenen & Karttunen observe that the existence of an appropriate syncretic form does not salvage a multiple case assignment construction which also violates the Anti-Pun Ordinance:

(45) \*I[sic] habe den Dozenten gesehen und geholfen (German)  
I have seen the docent (sg acc) and helped the docents (pl dat)

(46) \*Vaimoni voi ja täytyy siivota (Finnish)  
my wife(sg nom/sg gen) can and must clean

In (45), the verb 'see' takes an accusative object and the verb 'help' takes a dative object. The syncretic form den Dozenten is can accommodate both accusative singular and dative plural, yet the sentence is ungrammatical. In (46), the auxiliary 'can' requires nominative, while the auxiliary 'must' requires a genitive. The subject 'wife' is ambiguous over nominative and genitive, and should be able to accommodate the multiple case assignment.

Further evidence that the Anti-Pun Ordinance operates independently of accommodation comes from constructions in which coordination fails even when the same abstract case is required in each conjunct. Zaenen & Karttunen cite sentence (47), in which both conjuncts require an objective clitic, l(e) 'him', and sentence (48), in which both verbs take an illative object, Kaliforniaan 'California'.

(47) \*je l'ai fait embrasser à Marie et sortir (French)  
I had Mary kiss him and (made) him leave

(48) \*Hän ihastui ja muutti Kaliforniaan (Finnish)  
She fell in love with and moved to California

Here there is no conflict in abstract case requirements. Zaenen & Karttunen claim that the Anti-Pun Ordinance rules these examples out on the basis of a distinct semantic role in each conjunct.

The Anti-Pun Ordinance may reflect a requirement of Grammatical Function matching in coordination of arguments. Note that the Anti-Pun Ordinance does not affect syncretic resolution in relative clauses, which involve movement to a non-argument position.

Zaenen & Karttunen claim that syncretic resolution may fail in the presence of separate but homophonous lexical entries. This is exemplified in sentence (29), repeated here.

(29) \*/Hän stjal og bordädi köku (acc/dat)  
He stole and ate a cookie.

We noted above that, for some speakers, köku resolves the accusative/dative multiple case assignment. For these speakers Zaenen & Karttunen postulate a single lexical entry,

(41) köku: N CASE = {dat | acc}

For other speakers, however, (29) remains ungrammatical. Zaenen & Karttunen suggest that these speakers have distinct lexical entries:

- (42) köku: N CASE = dat  
 köku: N CASE = acc.

Pullum & Zwicky (1986) also suggest that syncretic resolution will succeed if there is one lexical entry, but it may fail if there are two lexical entries. They claim that there will be one lexical entry if the syncretism is systematic, two if it is accidental. In their terms: a systematic **neutralization** creates single lexical entries; an accidental homophony creates dual, **ambiguous** lexical entries. Unlike Zaenen & Karttunen, Pullum and Zwicky believe that resolution can occur even for ambiguous lexical entries. This kind of resolution, which they term "phonological", depends on a distinction between **intrinsic** features and features which are syntactically **imposed** (by agreement or government). Only imposed features are eligible for phonological resolution. Table 1 summarizes their classification:

Table 1

	grammatical features		
	intrinsic	imposed	
neutral (1 entry)	OK	OK	} morphological resolution
ambiguous (2 entries)	*	OK	} phonological resolution

Phonological resolution takes place in the German sentence, (80), in which two morphologically distinct lexical entries fall together phonologically.

- (80) Er findet und hilft Frauen.  
 he finds and helps women

in which the underlying morphological forms are dative plural /Frau-en-n/ and accusative plural /Frau-en/. Degemination of the final n leads to phonological resolution. Zaenen & Karttunen's Finnish example (33) is also an example of phonological resolution: The forms underlying kirjansa are genitive singular /kirja-n-nsa/ and nominative plural /kirja-t-nsa/.<sup>3</sup>

(33) He lukivat hänen uusimman \_ ja me hänen parhaat \_ kirjansa  
they read his newest (sg gen) and we his best (pl nom) book/books.

The dialectal variation in sentence (29) presents a problem for Pullum & Zwicky's analysis. Since case is imposed, (29) should be grammatical with either of the lexical entries proposed by Zaenen & Karttunen. If there is one neutral lexical entry, the conflict is resolved morphologically. If there are two ambiguous entries, the conflict can be phonologically resolved. Pullum & Zwicky attempt to explain dialectal variation in such situations by claiming that speakers allow different levels of "syntactic distinctness."

Appendix B (Polish data) and Appendix C (Russian data) include some additional examples of the failure of syncretic resolution.

Finally, we should note that an analysis which allows multiple case assignment in the syntax, subject to appropriate morphological/phonological realization, predicts that multiple case assignment will be well-formed in languages which do not distinguish abstract cases morphologically. This means that multiple case assignment

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<sup>3</sup>The possessive suffix -nsa might be considered an instance of case layering (see Appendix A).

cannot be cited as an explanation for ungrammatical sentences in languages which do not express morphological case. Consider English free relatives. We find that what can occur in subject(subject, object(object, subject(object, and object(subject environments, as expected for a syncretic form.

- (54) ✓ what arrived in the mail astounded me
- (55) ✓ he caught what she dropped
- (56) ✓ what you cooked repulses me
- (57) ✓ the doctors cured what was troubling her

We might expect the nominative form, who, to be restricted to subject(subject environments, since it contrasts with the (admittedly limited) use of whom for objective case. However, we find that the restrictions on the use of who do not correspond to a conflict in abstract cases. Rather, who seems to be subject to independent constraints. In general, who is worse than what in free relatives. This might relate to the difference in specificity between what and who: since who is necessarily a count noun, it is less suited to the frequently indefinite or generic nature of the free relative.<sup>4</sup>

- (58) \* who danced with her loved her
- (59) ? I met who you interviewed
- (60) \* who she admired rejected her
- (61) \*? he cursed who broke into his store

## 2.3 Representations

### 2.3.1 Case Feature Analysis

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<sup>4</sup>The use of *whoever* and *whatever* seems to neutralize a case conflict. The suffixation of *-ever* creates a morphologically neutral word which can accommodate both nominative and objective.

The Case Feature analysis set out in Chapter One can describe the syncretic resolution of multiple case assignment. If two case assigners assign two distinct values to a position, it accumulates positive values for two distinct case features, say [+A, +B]. Such a position may be filled only by a lexical item whose case feature values are compatible with this multiple case assignment. But such forms need not be fully specified [+A, +B]; the lexical entry need only be non-distinct from [+A, +B]:

- (62) Lexical entries compatible with assignment of [+A, +B]:  
[+A, +B], [+A, 0B], [0A, +B], [0A, 0B]

We adopt the suggestion of Franks (1981), who proposes that "words [be] entered into the lexicon fully spelled out" with "[i]tems participating in a syncretism ... only listed once." Suppose that syncretic forms are underspecified for certain cases. We can then explain the data of case syncretism by postulating appropriate lexical entries. For the German data in (4)-(10), we claim that the lexical entries are

- (63) wer [+nom, -acc]  
wen [-nom, +acc]  
was [0nom, Cacc]

Only was is compatible with the assignment of [+nom, +acc]. Similarly, for the Polish examples in (11)-(16) we require the following lexical entries (suppressing extraneous case features):

- (64) co [0nom, 0acc, -gen]  
czego [-nom, -acc, +gen]

Neither *co* nor *czego* is appropriate to the [+acc, +gen] multiple case assignment of sentences (14) and (15); *co*, and not *czego*, can handle the [+nom, +acc] multiple case assignment in (16).

For Norwegian, we postulate the lexical entries:

- (65) *Per* [0nom, 0obj]  
*jeg* [+nom, -obj]  
*meg* [-nom, +obj]  
*dere* [0nom, 0obj]

The words *Per* and *dere* are compatible with the [+nom, +obj] multiple case assignment created in Taraldsen's topicalization examples (17)-(21); the words *jeg* and *meg* are not.

### 2.3.2 Paradigmatic Analysis

The appropriateness of a case feature analysis is called into question by the fact that other grammatical properties such as person, number, and gender also participate in syncretic resolution. We could expand the analysis to include features for person, number, gender, etc. Such an expansion is necessary if we are to use morphological features as input to the phonological component. But we cannot simply add features for each grammatical property we wish to encode. As Pullum & Zwicky point out, the interactions between grammatical properties rule out a simple underspecification treatment of syncretism. For example, in sentence (33), repeated here,

- (33) ✓He lukivat hänen uusimman \_ ja me hänen parhaat \_ kirjansa  
they read his newest (sg gen) and we his best (pl nom) book/books.

kirjansa (nom. sg., nom. pl., gen. sg.) cannot be [0 nom, 0 gen, 0 sing, 0 pl]; such a feature matrix would overgeneralize to accommodate genitive plural (and many other combinations).

(66) syntactic feature assignments accommodated by lexical entry [0 nom, 0 gen, 0 sing, 0 pl]:

nom	gen	sing	pl	
+	-	+	-	nominative singular (=kirjansa)
+	-	-	+	nominative plural (=kirjansa)
-	+	+	-	genitive singular (=kirjansa)
-	+	-	+	genitive plural
+	+	+	+	nom/gen, sing/pl (as in 33)
+	+	+	-	nom/gen sing
+	+	-	+	nom/gen pl
+	-	+	+	nom sing/pl
-	+	+	+	gen sing/pl

Instead, our analysis must express the interaction of case and number.

With this in mind, we suggest a formalization of the traditional concept of paradigm. Perhaps it would be more appropriate to think of lexical entries as, not possessing features, but occupying a certain grammatical space.

Visualize the lexical entry as a form in n-dimensional space, each dimension corresponding to a grammatical property such as case, person, number, etc. Note that the case feature analysis contains an implicit partitioning of grammatical space: each word is represented by one or more lexical entries which correspond to the traditional "nominative", "accusative", etc. forms:

(67) Implicit partitioning by lexical entries in Case Feature Model

	"he"	"student"
"nominative"	he[+nom, -obj]	student[0nom, 0acc]
"objective"	him[-nom, +obj]	



In fact, this implicit reference to the traditional cases must be made explicit if we are to characterize generalizations among case-feature values (see Comrie 1986). For example, we cannot express the generalization that English common nouns do not distinguish nominative and objective without referring to the implicit labels, nominative and objective.

The paradigmatic analysis rids us of the need to appeal to an intermediate notion of "nominative case" which must later be spelled out in the morphology. The case "nominative" in the traditional sense exists as a coordinate of the case dimension. As such, its location may be picked out by a certain syntactic requirement; that syntactic requirement will be met by an entry which occupies that location. A lexical entry may or may not occupy "nominative" exclusively of an adjacent coordinate (such as "accusative"). A lexically syncretic form occupies more than one coordinate of a dimension, and hence can meet conflicting syntactic requirements. In German, for example, we have the entries:

(69) German lexical entries

	nominative	accusative
animate	wer	wen
inanimate	was	

Given this conception of lexical entries as forms in grammatical space, we can adopt the Jakobsonian concept of contiguity to constrain the representation of syncretic forms: a lexical entry must be contiguous. Syncretism across multiple dimensions may involve non-contiguous, hence distinct, lexical entries. Homonymy between contiguous cells may reflect a

single neutral lexical entry or two separate entries; homonymy between non-contiguous cells entails separate entries:

(69) Contiguity constraint on syncretism

	sing	plural
1st p.	alpha	alpha
2nd p.		
3rd p.		

	sing	plural
1st p.	alpha	
2nd p.		alpha
3rd p.		

A paradigmatic representation of lexical entries thus provides a principled way of determining which homonyms must be ambiguous. Contiguous homonyms may or may not be neutral; Pullum & Zwicky's systematic/accidental distinction could be used to distinguish among them.

The concept of contiguity is not easily expressed in case features. For binary-valued properties such as singular/plural, any feature set picks out a contiguous set of entries; but for multiply-valued properties such as case, the contiguity of elements depends on the arrangement of the coordinates. For example, the case feature values [0nom, 0gen, -acc, -dat] specify contiguous entries if nominative and genitive specify adjacent coordinates; if nominative and genitive are not adjacent coordinates, then the feature specification [0nom, 0gen, -acc, -dat] selects non-contiguous entries.

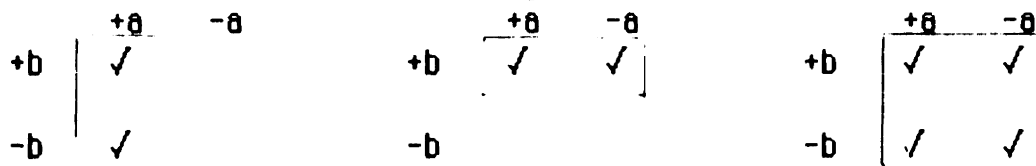
(70) Organization of coordinates affects contiguity

nom	✓
gen	✓
acc	
dat	

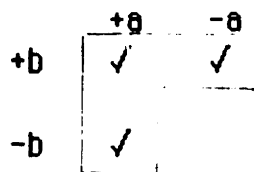
nom	✓
acc	
gen	✓
dat	

The paradigmatic analysis differs crucially from the case feature analysis in another respect: the paradigmatic analysis, and not the case feature account, allows the definition of irregularly shaped lexical entries. That is, within a grid or space of grammatical properties, features can only define rectangular shapes; the paradigmatic analysis allows lexical entries to be arbitrarily irregular, within the constraints of contiguity. Thus features may pick out an entry which is [+a, 0b], or an entry which is [0a, +b], or [0a, 0b], but they may not be used to designate an entry which encompasses  $\{(+a, -b), (+a, +b), (-a, +b)\}$ :

(71) Case Features Define Rectangles:

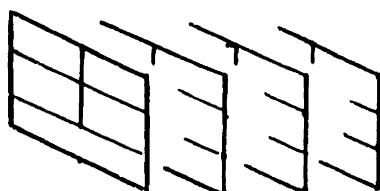


(72) The Paradigmatic Analysis Can Define Irregular Shapes:



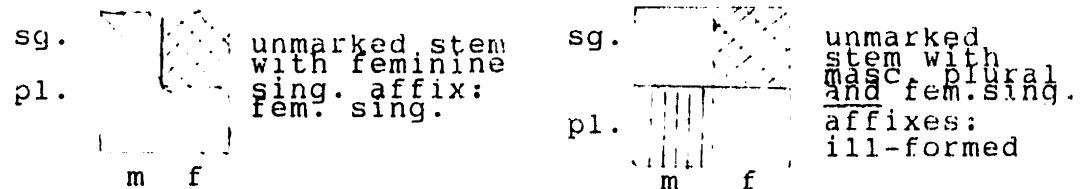
We can now give a spatial definition of paradigm: a paradigm is a partitioning of the grammatical "space" across one or more grammatical dimensions. Different paradigms might be represented as different planes in the grammatical space.

(73) Paradigms as planes in grammatical space



Suppose that affixation consists of the intersection of the grammatical spaces of the stem and the affix. Only non-empty intersections are well formed, as illustrated in the following diagrams.

(74) Intersection constraint on affixation

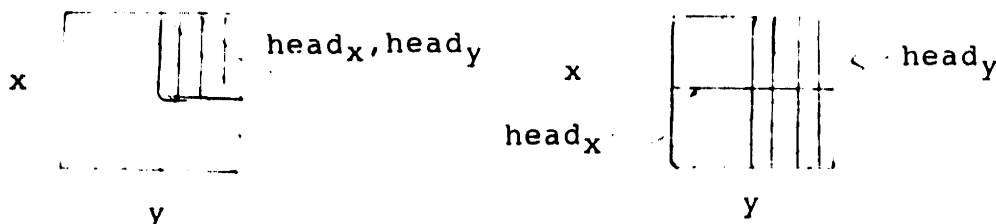


The intersection constraint on affixation accomplishes two things. First, it permits us to characterize declension class by postulating that members of a declension class are those words which exist on the same plane as the affixes of that class. Second, it subsumes Williams & diS's notion of "relativized head". Following Williams (1981), diSciullo & Williams (1967) argue that the rightmost affix is the head affix, and that the head affix determines the part of speech. Thus, suffixes and not prefixes may affect category. Only head properties are accessible to the syntax, so inflectional affixes must be rightmost.<sup>5</sup> To explain apparent counter-examples to their claim that the only rightmost element is the head, they say that the head with respect to a given feature is the rightmost element which is marked for that feature. This permits the properties of two or more inflectional affixes to be visible to the syntax. In the paradigmatic model, the head with respect to x is that affix which most restricts the options for the dimension x. If one affix is (spatially) contained within the others, then

<sup>5</sup> In particular, this theory predicts the predominance of case suffixes as opposed to case prefixes; a desirable result, since we find case-final morphology even in languages which are strongly head-initial syntactically.

that affix is the head for all dimensions. See diagram (74). If two affixes overlap, then they may each be a head in a separate dimension, as in (75). There need be no formal notion of head in the paradigmatic analysis.

(75) Most restrictive affix is the "head"



This accounts for the effect of "head" affixes for inflectional properties. What about derivation? The requirement that inflections be heads explains, diSciullo & Williams claim, the apparent ordering of derivational and inflectional affixes. What is derivation in the paradigmatic analysis? Prior to derivation, a certain set of affixes is available. After the addition of a derivational affix, we find a different set of eligible affixes. This suggests that derivational affixes, themselves occupying a part of the grammatical space, move the entire stem to another part of the grammatical space. Part of speech could be a dimension in grammatical space; or, perhaps each part of speech should be considered a separate space. For example, certain affixes might exist in noun space, while others might exist in verb-space. Derivational affixes exist in the space of the category to which they attach, but perform a transformation on the composite lexical entry which creates a stem in another space.<sup>6</sup> We could claim that only material in the last/most recent space is visible to the syntax.

Table 2: Summary  
Paradigm Analysis

Case Features

<sup>6</sup>Admittedly, derivational affixes do not fit neatly into the spatial metaphor.

unifies case, person, #, gender	case separate from other grammatical properties
lexical entries may be spatially irregular	lexical entries correspond to "rectangles"
contiguity constrains syncretism	no concept of contiguity
coordinates of case dimension play role of traditional cases	need intermediate concept of cases to link form and distribution
paradigm has natural expression as a (single) partitioning of n-space	

Table 2 summarizes the ways in which the the paradigmatic analysis analysis differs from the case feature analysis. Of these, irregularity and contiguity can be tested. We noted above that the case/number syncretism of sentence (33) suggests that there are "irregular" lexical entries (i.e., lexical entries which take the form  $\{(+a,-b) \cup (+a,+b) \cup (-a,+b)\}$ ). The lexical entry for kirjansa in sentence (33) might take the form:

(76) lexical entry for kirjansa

	sing	plural
nom	kirjansa	kirjansa
gen	kirjansa	

However, we should note that kirjansa derives from underlying singular /kirja-n-nsa/ and plural /kirja-t-nsa/ (see below); this may complicate the analysis of the lexical entry.

Evaluation of the contiguity constraint depends upon the supposed organization of the grammatical coordinates in the lexicon (recall the diagram given in (70). The clearest instances will be in syncretisms

involving multiple dimensions: diagonally related cells will not be contiguous. For example, Pullum & Zwicky cite a conflict between German kauft 3sing and kauft 2pl:

(77) [= Pullum & Zwicky's 50]

- a. ✓...weil ihr das Haus kauft und Franz den Garten kauft
- b. ✓...weil ihr das Haus und Franz den Garten kauft  
'...because you (pl.) buy the house and Franz buys the garden.'

Pullum & Zwicky report that "[their] German consultants regularly reject the phonological resolution in cases like 50b, but Z&K have privately reported that at least one of their speakers accepts it" (p. 771). Since third person singular and second person plural cannot be adjacent, the contiguity constraint predicts the ungrammaticality of example (77).

(78) lexical entries for kauft

	sing	plural
2nd		<u>kauft</u>
3rd	<u>kauft</u>	

(Diagonally related cells may, however, become contiguous if the syncretism extends to a common neighbor.)

We must claim that first and third person are adjacent coordinates in German to explain Pullum & Zwicky's example (our (\*29)) of syncretic resolution with kaufen 1pl/3pl.

- (\*29) ✓...weil wir das Haus und die Muellers den Garten kaufen  
because we the house and the Muellers the garden buy

The 2nd person plural form is *kauft*, and so would force dual entries for *kaufen* if the person coordinates were ordered 1, 2, 3.

(79) Possible lexical entries for German *kaufen*

	(plural)		(plural)		(plural)
1	<u>kaufen</u>	1	<u>kaufen</u>	2	<u>kauft</u>
2	<u>kauft</u>	3	<u>kaufen</u>	1	<u>kaufen</u>
3	<u>kaufen</u>	2	<u>kauft</u>	3	<u>kaufen</u>

It seems that a few more examples might put the contiguity constraint to rest, by requiring conflicting adjacencies. If upheld, however, the contiguity constraint would provide a glimpse of the underlying order of the lexicon.

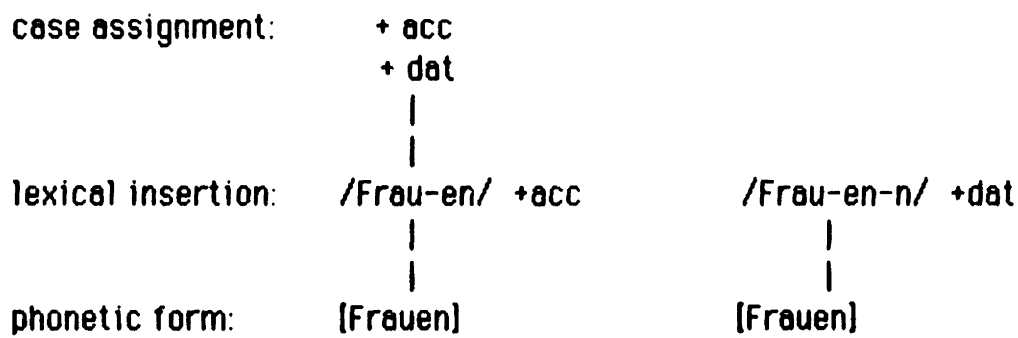
Finally, consider Pullum & Zwicky's phonological resolution. Recall that Pullum & Zwicky show that phonological resolution may resolve a feature conflict, even if the underlying morphological forms are not the same. The existence of morphological resolution shows that multiple case assignment cannot be ruled out in the syntax. The existence of strictly phonological resolution demonstrates that multiple case assignment cannot be ill-formed at the level of lexical insertion (or lexical checking). Since we cannot, therefore, rule out multiple case assignment at DS or SS, we are left with a PF filter of some sort. But what exactly happens at PF? Consider the generation of a construction such as (80), in which two distinct cases are assigned in the syntax. At the level of lexical insertion, we pick one of two lexical entries which are underlyingly distinct and which each instantiate only one of the two cases. Since we do not have morphological resolution of the multiple case assignment, and since the conflict must eventually be resolved, we must somehow keep track of the cases which were originally assigned. A phonological rule then neutralizes



the underlying distinctions. The resulting phonetic form is syncretic, and we have phonological resolution of the multiple case assignment.

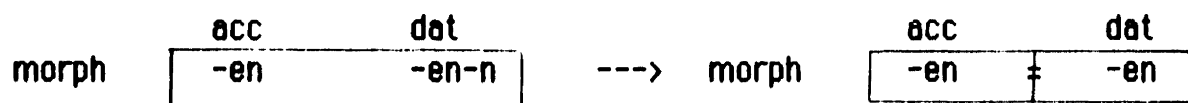
In a case feature analysis, since we choose only one of the morphological forms, we enter the phonology with only one of the case features. At PF we must somehow be able to backtrack and recognize that the syncretic phonetic form could have been associated with the other case feature.

(B1) Case feature analysis of phonological resolution



In an the paradigmatic analysis account, Frau-en and Frau-en-n (or -en and -en-n) occupy distinct morphological locations. Suppose phonology operates on the contents of morphological entries. Merger could be viewed as a linking or merging of the morphological cells. Lexical insertion of acc would then drag the dat location with it, by virtue of the phonological link.

(B2) The paradigmatic analysis analysis of phonological resolution



Alternatively, phonology might be a dimension adjacent to morphology; cells in phonological space would be related to cells in morphological space. In case of phonological merger, two distinct morphological cells would be related to one, merged phonological cell. Selection of either of the distinct morphological entries would also select the merged phonological entry.

(83) Paradigmatic analysis analysis of phonological resolution

	acc	dat
morphology	-en	-en-n
phonology	-en	

In either case, merger would be subject to the constraint of contiguity. In the Frauen example, accusative and dative would have to be adjacent coordinates of the case dimension.

### CHAPTER THREE: PERCOLATION-INDUCED MULTIPLE CASE

In this chapter we discuss the possibility of percolation-induced multiple case. Percolation may lead to multiple case assignment if case percolates from NP to an element within NP which already bears case, such as the complement of an NP-embedded case-assigner. Babby (1980, 1985, 1986) argues that percolation is a source of multiple case assignment in Russian numeral phrases. He shows that the resolution of this multiple case can be described by a case hierarchy:

(1) nom, acc < gen (qp) < dat, ins

That is, an NP which receives more than one case expresses the case which is highest on the case hierarchy. We review Babby's data and consider whether the hierarchical resolution of such multiple case assignment should be analyzed as accommodation, reduction, or prevention. We compare case hierarchy with case syncretism, and conclude that hierarchical resolution is not accommodation. We outline reduction and prevention analyses of hierarchical resolution, based on Babby's (1980, 1985, and 1986) analyses.

We discuss some problems for the percolation analysis. First, we note that percolation does not affect complements in possessor phrases, suggesting that percolation is generally limited to heads and their modifiers. Second, we note that case hierarchy is not applied to multiple case assignments in Russian relative clauses. Finally, we compare Russian with Polish. Polish numeral phrases exhibit some, but not all, of the case hierarchy effects

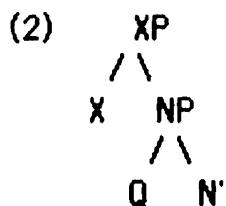
found in Russian; but Polish shows no evidence of case hierarchy in the resolution of multiple case assignment in relative clauses.

We close the chapter with a consideration of an alternative to the percolation analysis of case hierarchy. Pesetsky (1982) argues that the numeral phrase may take the form of either an ordinary NP with a numeral modifier, or a quantifier phrase with a quantifier head and a genitive (or dative) NP complement. He claims that quantifier phrases resist case assignment, and therefore cannot appear in contexts of inherent case assignment.

### 3.1 Percolation As a Source of Multiple Case in Russian Numeral Phrases

#### Genitive Case Assignment by a Q Modifier of a Nominal Head

Babby (1985) argues that Case Theory must include the concept of Case Hierarchy. Babby demonstrates the hierarchical resolution of case conflicts in Russian. He claims that, in the structure (2),



the case assigned by X to NP percolates to Q and to N'. Since a quantifier Q assigns genitive case in Russian, the noun receives a multiple case assignment. When nominative or accusative is assigned to NP, the multiple case assignment is resolved in favor of genitive. When X assigns an inherent





- (9) na ostanovke avtobusa  
       loc      gen  
 on stop      bus  
 'at the bus stop'

Babby (1986:105) suggests that Old Russian numeral phrases are headed by the quantifier, with the complement NP protected from case percolation:

- (10) s pjat'ju butylok  
       with five(ins) bottles(gen)

However, he claims that the N' in the Modern Russian numeral phrase is not a complement of the quantifier; rather, the quantifier is a modifier of the head noun.

### 3.2 Resolution of Percolation-Induced Multiple Case: Case Hierarchy

In this section we consider where case hierarchy fits in our system of resolution. We argue that case hierarchy is not accommodation. We consider a reduction analysis, a prevention analysis, and a combined reduction and prevention analysis. We argue that a reduction analysis makes incorrect predictions for the resolution of multiple case assignment in Russian free relatives.

#### 3.2.1 Case Hierarchy Is Not Accommodation

In Chapter Two we proposed a case feature analysis of accommodation, in which syncretic forms are unmarked for the relevant case features. For example, Polish co 'what' nom,acc is represented with the case feature matrix [0nom, 0acc, -gen, -dat, ...]. McCreight (1987) suggests that a case feature account can unify the phenomena of case syncretism and case

hierarchy. The hierarchical relations among cases could be encoded as combinations of case features in various lexical entries. To encode a nom<acc hierarchy, we would postulate the following case features:

- |      |                   |                   |
|------|-------------------|-------------------|
| (11) | nom lexical entry | acc lexical entry |
|      | + nom             | 0 nom             |
|      | - acc             | + acc             |

The nominative form, with the lexical feature value [-acc], is incompatible with an accusative assignment; the accusative form, with the lexical feature value [0nom], tolerates a nominative assignment. Thus, in this example a nom/acc conflict may be satisfied only by the accusative form.

The case features in this system are associated with specific lexical entries. To extend this approach to encompass language-wide case hierarchies requires the use of lexical redundancy rules, so that all forms for a given case share the same case feature values. To encode a structural<inherent hierarchy, for example, we might postulate the lexical redundancy rules:

- (12) [+ structural case X] --> [- all other case features]  
 [+ inherent case X] --> [- all other inherent case features]  
 [+ inherent case X] --> [0 all structural case features]

Structural case forms in this example are thus not compatible with any case conflicts. Inherent case forms are compatible with structural/inherent conflicts, but not with inherent/inherent conflicts. (Specific lexical entries would still be subject to idiosyncratic case feature markings, as in the case of case syncretism.)



In principle, nothing prevents case feature entries of the form [+structural, 0 inherent], which would allow a structural form to overrule an inherent form. In fact, the case feature analysis is would allow the encoding of circular hierarchies, in which  $a < b$ ,  $b < c$ , and  $c < a$ :

(13)	"a" form	"b" form	"c" form
	+ case a	0 case a	- case a
	- case b	+ case b	0 case b
	0 case c	- case c	+ case c

While redundancy rules can be constructed to capture the structural < inherent generalization, we still lack a reason for this constraint: Why should the lexical redundancy rules prefer inherent cases?

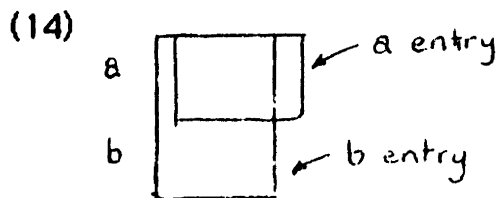
The analysis of case hierarchy as accommodation allows for different realizations among different lexical entries. Thus, we might find all feminine accusative forms taking precedence over feminine nominatives, with no corresponding relationship among the masculine nominative and accusative forms. With syncretic resolution, we did in fact find such idiosyncrasies. But case hierarchy does not seem to be lexically dependent; rather, hierarchy seems to be a property of the cases themselves.<sup>1</sup>

In Chapter Two we also considered a "paradigmatic" formalization of accommodation. The paradigmatic analysis does not really permit a

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<sup>1</sup>A possible exception: Herbert's (1983) discussion of nominatives in Greek. masc. and fem. nominatives do not attract into other cases, but neuter nom/acc forms do attract.

morphological expression of case hierarchy. Suppose we relax our claim that affixes within a paradigm partition n-space, and allow overlapping entries. Then we might have a situation in which a "larger" entry, b, contains the space of a "smaller" entry, a.



This creates a kind of hierarchy with  $b > a$ : Given a syntactic assignment of  $(+a, +b)$ , the entry b would be used. But note that if only  $(+a)$  is assigned, either a or b could be used. This does not capture the kind of case hierarchy under consideration. Within an n-space account, then, we are led to consider case hierarchy a non-morphological phenomenon.

### 3.2.2 Case Hierarchy As Reduction

#### 3.2.2.1 Analysis

Bobby (1985) argues that "case conflicts are resolved by a small set of precedence relations. These precedence relations form a case hierarchy, which can be viewed as a set of wellformedness conditions on the representation of a noun phrases's [sic] case structure." He distinguishes several types of cases. Configurational cases, such as Russian nom and acc, "are assigned to  $N^m$  on the basis of its syntactic environment", while lexical cases are assigned by a lexical item.<sup>1</sup> These roughly correspond to our structural and inherent classifications. The Russian genitive of

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<sup>1</sup>presumably: no definition is explicitly given in the article.

quantification falls between lexical and configurational case, so we get the hierarchy

(15) lexical case > gen(qp) > nom/acc [=Babby's 7]

Babby notes: "The case hierarchy in (7) makes the claim, which I believe to be a universal principle of case theory, that lexical case takes precedence over all other types of case marking, and all other types of case marking take precedence over configurational case ..." (p. 4)<sup>1</sup>

We can characterize Babby's (1985) analysis as resolution by reduction. All the cases percolate, so that N accumulates both the genitive of quantification and the case assigned to NP as a whole. The multiple case assignment is resolved by a reduction process which observes the hierarchy (15).

### 3.2.2.2 Problems

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<sup>1</sup>In addition to these syntactic cases, Babby argues that some languages have semantic case, "whose assignment is not determined by any other categories, and, therefore, does make a direct contribution to the sentence's semantic interpretation." Babby suggests that the case precedence relations hold of these types of cases, so that lexical case takes precedence over semantic case, which in turn takes precedence over configurational case.

(i) lexical case > semantic case > gen(qp) > nom/acc

### 3.2.2.2.1 Russian Relative Clauses

We will see in Chapter Four that a free (headless) relative is a source of agreement-induced multiple case. Given the reduction analysis of multiple case in Russian numeral phrases, we would expect the reduction hierarchy (15) to apply in Russian free relatives, as well. But Russian free relatives show no evidence of hierarchical resolution. In (16), both accusative and instrumental are assigned; the hierarchy predicts that accusative will be reduced in favor of instrumental. Instead, the construction is ungrammatical. Example (17) shows the same result with an accusative/dative multiple case assignment.

(16) acc[ins=ins  
\* ivan kupil (to) čem ja interesovalsja  
'Ivan bought what I was interested in'

(17) acc[dat=dat  
\* ivan kupil (to) čemu ja zavidovala  
'Ivan bought what I envied'

We argue in Chapter Four that, while some languages allow reduction in free relatives, Russian does not. We might still argue for a process of reduction which is somehow restricted to the numeral phrase, but we cannot maintain a reduction hierarchy as a general property of Russian case mapping.

### 3.2.2.2.2 Comparison with Polish

#### 3.2.2.2.2.1 Polish Numeral Phrases

Polish numeral phrases also exhibit case hierarchy. Swan (1983:62) observes that the "[n]umerals 5-900 follow adjectival syntax only in the GDIL; in the NAV these numerals are nouns and take the quantified noun in

the G pl. ..." (N=nominative, A=accusative, V=vocative, G=genitive, D=Dative, I=instrumental, L=locative.) This can be characterized with the reduction hierarchy,

(18) nom, acc, voc < gen(qp) < dat, ins, loc

However, the collective numerals differ slightly. A collective numeral occurs with a genitive nominal when the entire NP is assigned nominative, accusative, or instrumental. Swan (1983:85) gives the following paradigm for 'five chicks':

(19) Collective Numerals

N/A	pięcioro kurcząt	five(nom/acc) chicks(gen)
G	pięcioro kurcząt	five(gen) chicks(gen)
D	pięcioro kurcząt	five(dat) chicks(dat)
I	pięcioro kurcząt	five(ins) chicks(gen)
L	pięcioro kurcząt	five(loc) chicks(loc)

If we attempt to include the case patterns of collective numerals in our reduction hierarchy, we derive the following contradiction:

(20) instrumental < genitive < instrumental

#### 3.2.2.2.2 Polish Relative Clauses

Another problem with postulating a Polish reduction hierarchy is the fact that Polish free relatives do not exhibit the expected hierarchical resolution. For example, when both accusative and dative are assigned, the reduction hierarchy predicts that the accusative will be reduced in favor of

the dative. However, accusative/dative free relatives are ungrammatical in Polish.

(21) acc[dat  
marysia postanowiła kupić to, czemu Janek się przyglądał  
Maria decided to-buy it that Janek self stared-at  
'Maria decided to buy what Janek was staring at'

(22) acc[dat- dat  
\*\*marysia postanowiła kupić czemu Janek się przyglądał  
Maria decided to-buy what Janek self stared-at  
'Maria decided to buy what Janek was staring at'

### 3.2.3 Case Hierarchy As Prevention of Percolation

Babby (1980) formulates the Direct Case Condition: "If an NP is already marked with an oblique Case, it cannot receive additional Case marking." (p. 3) Since oblique cases are assigned before direct cases, the Direct Case Condition creates the hierarchical relation direct<oblique (roughly, our structural<inherent). We characterize this as a prevention analysis of case hierarchy.

Note that inherent case assignment must precede genitive case assignment, if genitive is to be prevented: If genitive case assignment applies first, the direct case condition will not prevent it. Franks (1981) argues that lexically-conditioned case assignment precedes case assignment by logical operators (e.g., genitive of negation), which in turn precedes syntactically conditioned case assignment. He uses this sequential analysis to explain the inst>gen(neg)>acc hierarchy in the Russian genitive of negation construction:

- (23) Ivan vidit knigu (acc)  
'Ivan sees a/the book'
- (24) Ivan ne vidit knigi (gen)  
'Ivan doesn't see a/the book'
- (25) Ivan upravljaet zavodom (instr)  
'Ivan manages a/the factory'
- (26) Ivan ne upravljaet zavodom (instr)  
'Ivan doesn't manage a/the factory'

Franks' analysis might be extended to the genitive of quantification, so that inherent case assignment and percolation precedes the assignment of genitive of quantification, which in turn precedes structural case assignment and percolation. This prevention analysis of hierarchical resolution requires us to inter-weave case assignment and case percolation:

- (27) Prevention of Percolation  
 DS: Assignment of inherent case to NP  
Percolation of inherent case to head Q and complement N  
 SS: Assignment of genitive case to N is prevented  
 by presence of inherent case  
Percolation of structural case

### 3.2.4 Case Hierarchy As a Combination of Prevention and Reduction

Babby (1986) presents an analysis of hierarchical resolution which combines prevention and reduction.

#### Reduction

When both structural and inherent cases are assigned, the multiple case assignment is reduced in favor of the inherent case. Bobby explains this reduction in terms of subcategorization: Since a case assigner is subcategorized for a given lexical case, Bobby argues, lexical case may not be overruled without violating subcategorization requirements. Thus lexical cases take precedence over configurational cases, which Bobby characterizes as default cases, "assigned to  $N^m$  on the basis of its overall structural environment; they are not assigned in Russian by specific lexical items." (p. 95) Reduction gives us the hierarchy,

(28) nom, acc, gen < dat, ins

#### Prevention

Bobby argues that the precedence of gen(qp) over nom, acc is derived by a locality principle: "direct assignment of a configurational case to  $N^n$  takes precedence over percolation of a configurational case to  $N^n$  ..." (p. 116). The structural case is prevented from percolating to the embedded  $N'$  by the presence of the genitive case.

Thus, Q always assigns genitive to  $N'$ . A structural case assigned to NP percolates to Q but is prevented from percolating to  $N'$ . An inherent case assigned to NP percolates to Q and N, creating a multiple case assignment on  $N'$  which is resolved by reduction of the genitive case. The combination of prevention and reduction derives the complete hierarchy,

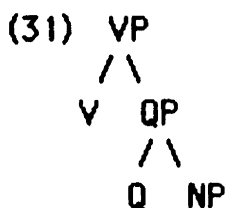
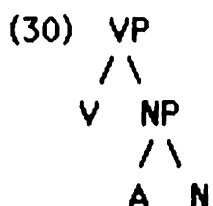
(29) nom, acc < gen (qp) < dat, ins



Note that this application of prevention involves only structural cases, and hence does not require DS percolation. However, the use of reduction faces the same difficulties noted above; in particular, it incorrectly predicts hierarchical resolution in Russian free relatives.

### 3.3 Alternative: Q Head and No Percolation

Pesetsky (1982) suggests an alternative to a percolation analysis of Russian numeral phrases. He claims that Russian numeral phrases take two forms, one in which the quantifier is an adjective modifying the head noun, and one in which the quantifier forms the head of a case-resistant quantifier phrase.



Pesetsky argues that the quantifier phrase resists case assignment. Thus, a quantifier phrase always assigns case to its complement NP, and there is no multiple case assignment. Pesetsky claims that inherent case must be assigned, so a case-resistant QP cannot occur in an environment of inherent case assignment. He notes that this is true even when the quantifier assigns the same case as the external case assigner. In example (32), the

verb 'help' assigns dative to the entire numeral phrase; the prepositional quantifier 'each' assigns dative to the nominal; yet the construction is ungrammatical.

(32) \* ja pomogal [ po devuške ] v den'  
I(nom) helped po girl(fem.dat.sg) in day  
'I helped a girl a day' [p. 72]

The object of an inherent case assigner must be an adjective-noun numeral phrase; inherent case percolates to both the adjectival quantifier and the head noun. There is no multiple case assignment in the adjective-noun numeral phrase, since the adjective does not assign case.

If Pesetsky's analysis is correct, then we no longer have an example of percolation-induced multiple case assignment. However, Babby (1986) offers evidence which contradicts Pesetsky's claim that the quantifier can be the head of the numeral phrase. Babby notes that modifiers agree in number and gender with the nominal, and not the quantifier:

(33) te pjat' butylok  
those(nom. pl.) five(nom) bottles(gen.pl.) [p. 105]

In contrast, Babby notes, modifiers in Old Russian agree with the numeral head:

(34) ta pjat' butylok  
that(nom.sg.fem) five(nom.sg.fem.) bottles(gen.pl.)

If the numeral were the head in Modern Russian, Babby argues, we would find the same agreement patterns as in Old Russian.

We might maintain the quantifier-head analysis by claiming that, in the absence of a specification on the head Q for the grammatical properties of number, gender, etc., the QP can inherit these properties from the complement NP.<sup>1</sup> The Old Russian modifier can agree with the head numeral, because Old Russian numerals are specified for the relevant grammatical properties. The Modern Russian agreement pattern reflects the defective nature of the Russian numeral.

### 3.4 Conclusion

In the first section of this chapter we reviewed Babby's (1980, 1984, 1986) claims that Russian numeral phrases constitute an example of what we call percolation-induced multiple case assignment. Babby shows that this multiple case assignment is resolved according to the case hierarchy,

(35) nom, acc < gen(qp) < ins

In the second section we argued that hierarchical resolution is not morphological accommodation. We considered two syntactic resolution options, reduction and prevention. We noted that a reduction analysis makes incorrect predictions for the resolution of agreement-induced multiple case assignment in Russian free relatives. A prevention analysis, on the other

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<sup>1</sup>This recalls our discussion of the "head of a word" in Chapter Two. There, we suggested that the affix which is most highly specified for a particular grammatical property X is the "head with respect to X", and determines the value of X for the entire word.

hand, requires percolation to take place both before and after structural case assignment, complicating our model of the case-mapping system:

(36) Case Mapping with Prevention of Percolation

DS: Assignment of inherent case to NP

Percolation of inherent case to head Q and complement N

SS: Assignment of genitive case to N is prevented

by presence of inherent case

Percolation of structural case

Considering the difficulties raised by the percolation analysis, we prefer the non-percolation alternative of Pesetsky (1982), in which numeral phrases may take either the form of nominals with adjectival quantifiers, or the form of quantifier phrases with quantifier heads and genitive nominal complements. The quantifier phrase resists case assignment, and hence is prohibited from the object position of an inherent case assigner.

## CHAPTER FOUR: AGREEMENT-INDUCED MULTIPLE CASE

### 4.1 Introduction

In the chapter we discuss the creation of multiple case assignments through case agreement. In the first section we discuss how case agreement can be a source of multiple case assignment. In the second section we discuss the possible ways to resolve an agreement-induced multiple case assignment. We claim that agreement-induced multiple case may be resolved by prevention, reduction, or accommodation. In the third section we discuss the creation and resolution of agreement-induced multiple case in relative clauses. We review various proposals explaining "case matching effects" and present an analysis in terms of prevention and reduction.

### 4.2 Agreement As a Source of Multiple Case Assignment

Case agreement is the sharing of case features among coindexed NPs. Case agreement does not always result in multiple case assignment: Agreement between a case-marked NP and a predicate or appositive nominal does not usually result in multiple case, since the predicate or appositive NP is not independently case-marked. Case agreement will be a source of multiple case if an independently case-marked NP must agree in case with an NP bearing a different abstract case. "Case Attraction" provides an example of such agreement-induced multiple case: In some languages, a relative pronoun may be "attracted" into the case of the head of the relative clause. Comrie (1981) gives the following example of case attraction in Ancient Greek.

- (1) ek tōn póleōn [hōn éxei]  
from the cities-GEN which-GEN he-has

'from the cities which he has'

The preposition ek 'from' requires genitive case. Comrie notes that éxei 'he-has' "would be expected to have an accusative object, but instead the relative pronoun has been attracted into the case of the noun phrase within the main clause." (p. 147)

Another source of agreement between case-marked elements is transmission of case from trace. Wh-traces must transmit case to their antecedents; if the wh-word is case-marked in its surface position, case transmission creates a multiple case assignment. We discuss the requirement that wh-traces transmit trace in Chapter Five.

### 4.3 Resolution of Agreement-Induced Multiple Case

Agreement-induced multiple case assignment can be resolved by accommodation, reduction, or prevention.

#### 4.3.1 Accommodation

We gave examples of the accommodation of agreement-induced multiple case in Chapter Two. For example, we claim a relative pronoun must agree in case with the pro head of a free relative (see below). This creates a multiple case assignment on the relative pronoun, which may be accommodated by a morphologically appropriate form. In example 2(6), repeated here, the German relative pronoun was 'who' nom/acc is able to accommodate the assignment of accusative in the matrix clause and nominative in the embedded clause.

- (2) acc[nom=nom/acc  
✓ich zerstöre was mich ärgert  
I destroy what me annoys  
'I destroy what annoys me'

#### 4.3.2 Prevention

Since case agreement is usually an optional phenomenon, potential agreement-induced multiple case may usually be resolved by prevention of the case agreement. However, in certain situations case agreement is forced to apply. These include transmission of trace from wh-trace, and agreement between a relative pronoun and a pro-head for the purpose of identifying pro.

#### 4.3.3 Reduction

When agreement cannot be prevented, the resulting multiple case assignment may be resolved by reduction. We claim that reduction is a language specific rule, subject to variation. Some languages lack reduction rules completely. When reduction does apply, it is subject to a semantic constraint of recoverability. This creates the effect of case hierarchy: the less informative cases are reduced in favor of the more informative cases. We discuss the reduction of agreement-induced multiple case in detail in the next section.

#### 4.4 Agreement-Induced Multiple Case In Relative Clauses

The main source of agreement-induced multiple case is the free (headless) relative clause. In Chapter Two we simply noted that the absence of an antecedent somehow allows two abstract cases to pile up on the relative pronoun, causing case conflicts. In this section we will examine the

structure of the free relative to see how the multiple case assignment arises.

We first review various proposals about the structure of relative clauses with overt heads. One type of analysis postulates a base-generated head, external to the relative clause. Proponents of the "external-head" analysis differ in their claims about the structural relationship between the head and the relative clause. We review arguments for adjoining the relative clause to the head at the NP level or at the N' level. In contrast to the external-head analyses, the internal-head analysis claims that the head of the relative clause is extracted from within the relative clause.

Turning to free relatives, we discuss the data of case matching and case attraction (case agreement between an overt head and the relative pronoun) in Greek, Gothic, and Finnish. We introduce new data from Polish and Russian free relatives, showing that case-matching effects exist in both languages.

We next review various proposals about the structure of free (headless) relatives. Various external-head proposals have been made to account for the existence of matching effects (requirements that the wh-phrase match the entire relativized phrase in category or case). We adopt the structure proposed by Suñer (1984, 1985), in which the free relative is headed by t', empty pronominal, pro:

(3) [NP pro [CP wh<sub>i</sub> [IP ... t<sub>i</sub> ... ] ] ]



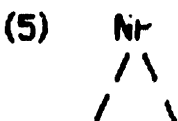
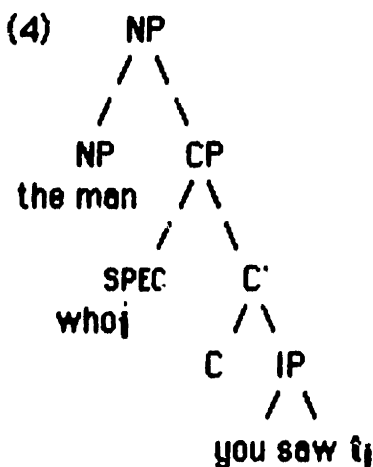
Finally, we present an analysis of the case matching and case attraction data in terms of prevention and reduction of the agreement-induced multiple case.

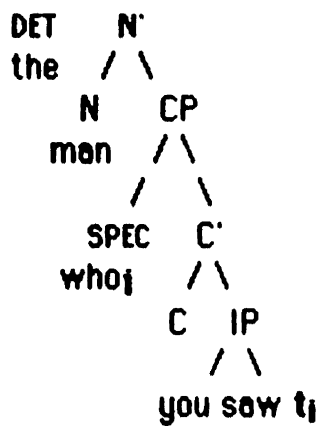
#### 4.4.1 Structure of Headed Relatives

A variety of structures have been proposed for headed relative clauses. In this section we briefly review some of these proposals. We first consider external head analyses, in which the head is base-generated external to the relative clause. These contrast with the internal-head approach, in which the head is assumed to originate within the relative clause.

##### 4.4.1.1 External Head Relatives

We consider two structures for externally headed relatives similar to those which have been proposed in the literature, (4) and (5). These roughly translate the "NP-S" and "Nom-S" of Bach & Cooper (1978), using the functional categories  $C_i$  and IP as defined in Chomsky (1986).





In each of the proposed structures, the relative pronoun occupies the spec of CP. In (4), the C<sup>o</sup> is adjoined to NP; in (5), the CP is the complement of N (or possibly N').

#### 4.4.1.1.1 Scope of the Determiner

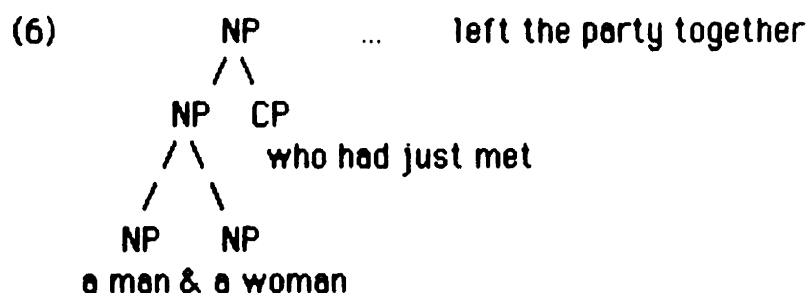
Partee (1975) argues for a relative-as-nominal-complement structure on the basis of semantics: The determiner in a relative clause is understood to modify or restrict the entire construction, not just the head NP. Bach & Cooper (1976) counter with the argument that an interpretive rule giving this meaning must be available for relative clauses in Hittite, in which the restricting or quantifying element cannot dominate the relative clause, since the relative clause is adjoined to the entire sentence. This interpretive rule can then be applied to English relative clauses, deriving the desired meaning in an NP-adjoined structure.

It may not make sense to compare Hittite and English relatives. Lehmann (1986) characterizes Hittite relatives as internally headed, adjoined, and preposed, and gives a Hittite example in which the relative clause "displays the full syntax of independent clauses and thus shows no sign of

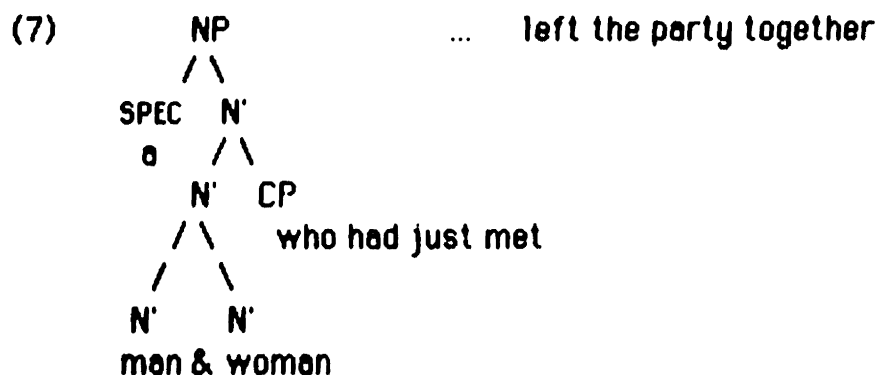
nominalization." (p. 671) English, and, in fact, most of the languages we discuss here, has relative clauses with external heads (at SS, at least), showing some degree of nominalization. Thus the interpretive possibilities for Hittite may not find direct parallels in English. I leave the structure and interpretation of internally headed relative clauses as an open question.

#### 4.4.1.1.2 Conjoined Heads

The fact that a restrictive relative may modify a conjoined head suggests a structure involving NP conjunction:



This seems to argue against the nominal-complement analysis. However, the conjoined heads might also be analyzed as conjoined at the N' level, with only one determiner position at DS:



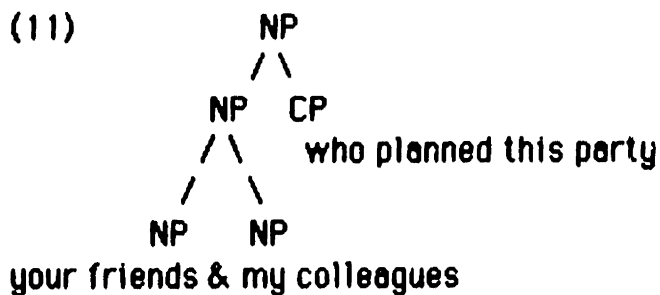
The determiner later may spread across the conjuncts, or it may remain peripheral, as in

- (8) [The [ [seven men and two women] [who left early] ] ]  
had to go to another meeting

When nouns with different determiners are conjoined, the restrictive relative reading is ruled out.

- (9) Your friends and (your) colleagues (,) who planned this party (,)  
must like you very much. (restrictive or appositive)
- (10) Your friends and my colleagues, who planned this party,  
must like you very much. (appositive only)<sup>1</sup>

An appositive reading might be possible if the appositive relative clause were adjoined at the NP level, allowing conjunction of full NPs:



The single determiner analysis of conjoined head restrictive relatives is confirmed by Jackendoff's stacking test for restrictive vs. appositive relatives. Jackendoff notes that only restrictive relatives can be followed

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<sup>1</sup> ruling out the interpretation in which the relative clause only modifies "my colleagues"

by another relative. Applying this test to conjoined heads, we see that the restrictive reading is indeed ruled out when different determiners are used.

- (12) The men and women who arrived late, who you met, used to live on my street  
(stacked: not appositive)
- (13) This man and that woman, who arrived late, used to live on my street  
(different determiners: not restrictive)
- (14) \*This man and that woman who arrived late, who you met, used to live on my street  
(stacked: not appositive; different determiners: not restrictive)

#### 4.4.1.3 Stacking

The existence of stacked restrictive relatives suggests an NP-adjoined structure, since the outer relative is taken to modify the combination of the inner relative and the head NP:

- (15)
 

	NP	
	/ \	
	NP	CP
	/ \	who left early
	NP	CP
	the man	who you met

  
 (modifies "the man who you met")  
 (modifies "the man")

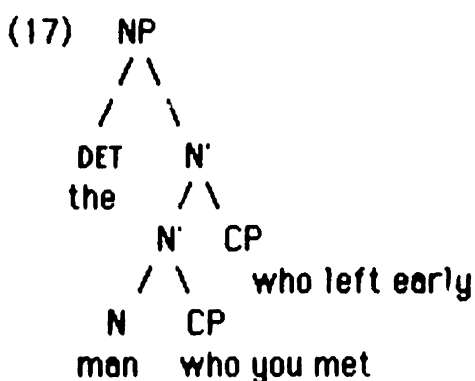
Jackendoff explains the semantics of stacked relatives in terms of presupposition and focus, noting that focus can make the inner clause modify the outer clause:

- (16) the men who came to DINNER who hated lox left early, but that wasn't true of the men who arrived after eight o'CLOCK who hated lox.

(= J. 7.44)

In unstressed form, we would expect (13) to be interpreted with the outer clause, "who hated lox" modifying the inner clause "the men who came to dinner". But, under focus, the inner clause modifies the outer clause: of the men who hate lox, the subset who came to dinner left early.

A structural analysis might be maintained by deriving stacked relatives from N' adjunction:



#### 4.4.1.2 Internal Head Relatives

Vergnaud (1974) suggests that the head of the relative clause originates within the relative clause. He claims that the relative clause originates in the specifier of the (empty) head NP. A head-extraction process removes the head from the relative clause, leaving a relative pronoun in COMP. The relative clause is then extraposed.

Vergnaud's placement of the relative clause in spec reflects the semantic contribution of the relative clause to the relativized NP. Extraction of the head from within the relative clause explains the existence relativized

idiom chunks, such as (18), in which the head must be associated with the embedded verb:

(18) I was impressed by the headway that they made

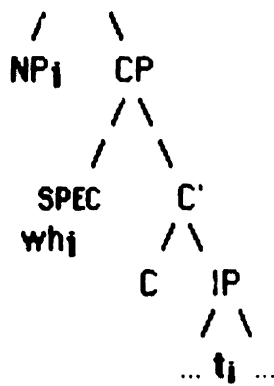
There are some theoretical objections to the process of head extraction. Chomsky (1986) claims that movement must be either from head to head or from phrase to phrase. This means that we cannot extract an NP and put it in the position of the head N. Additionally, movement of the head NP from its embedded argument position, to COMP, and then to the head position of the entire NP creates a movement chain of the form (A, A', A). Movement from an A-position to (ultimately) another A-position creates a violation of the theta-criterion, which requires each chain to have just one theta-marked position.

Andrews (1985:12) notes the existence of conjoined heads which cannot be derived from separate conjuncts.

(19) The man and the woman who were related got married

He concludes, "[i]t is immediate that if one extracts, one must extract NP rather than a sub-constituent of NP; and that the NP → NP S' analysis can generate the constituent structure of these examples while the Det → Art S', NOM → NOM S' and N → N S' analyses cannot." We might adopt an NP-adjunction analysis:

(20) NP1  
      / \



This NP-adjunction process avoids the problem of illicit XP-to-X° movement. The theta-criterion might be satisfied if we assume that NP1, and not NP<sub>i</sub> bears the external theta-role.

#### 4.4.2 Free Relatives

##### 4.4.2.1 Data: Case Matching and Case Attraction

The term "case matching" refers to a requirement that a relative pronoun agree in case or category with the head of the relativized NP. The term "case attraction" applies to a relative clause in which the relative pronoun agrees in case with the head, instead of occurring in the case required by the lower clause. We review case matching and case attraction in Greek, Gothic, Finnish, Polish, and Russian.

##### 4.4.2.1.1 Greek

Groos and Kicnsdijk (1981) discuss case attraction in Classical Greek, defining it as "the term referring to situations in which the wh-phrase agrees in case with its antecedent (the head), or--in the case of free relatives--receives its case marking from the matrix clause." They cite the following examples (from an unpublished paper by Hirschbühler):



(21) pro tōn kakōn ha/hōn oida  
gen acc/gen  
'instead of the evils which I know'

(22) phoboimen an tōi hegemoni hōn/hōi doie hepesthai  
dat acc/dat  
'I should fear the leader whom he might give to follow'

Additional examples (again from Hirschbühler) show that Greek free relatives may be non-matching, expressing only the internally assigned case.

(23) stugōn hē m'etikten  
nom  
hating who to-me gave birth

(24) egō kai hōn egō kratō menoumen para soi  
nom gen  
I and whom I commend will remain with you

Case attraction may apply to a free relative, so that the relative pronoun exhibits the externally assigned case.

(25) ... ekpiein sun toutois hous malista phileis  
dat acc

(26) ... ekpiein sun hois malista phileis  
dat  
to drink with whom you best love

Groos and Riemsdijk observe that

(27) i) only accusative direct objects are attracted

to the matrix case in headed relatives, . . .

- ii) . . . we may tentatively conclude that case attraction in free relatives is limited to "oblique" contexts . . . (p. 209)

This distribution suggests some kind of hierarchical resolution of a case conflict: A direct case may be overruled by an oblique case when both are present due to the (for now unspecified) mechanism of case attraction. Case attraction which creates an oblique/oblique conflict is ungrammatical.

Harbert (1983) argues that Greek case attraction follows the case hierarchy,

(28) acc<dat<gen

in both headed and free relatives, so that an accusative, for example, may be attracted into dative, but a dative may not be attracted into accusative. He assumes that case is assigned to the entire NP, percolates to the (lexical or empty) head NP, and then "is transmitted by attraction from that head to the relative pronoun in COMP, subject to a hierarchical restriction on case replacement . . ." (p. 246).

Further examples are cited by Harbert (1983), who observes that case attraction can take place when a lexical head is present (29), as well as in a free relative (30).

- (29) áksioi [NP tēs eleutheriās [S' [COMP hēs<sub>i</sub>] kéktēsthe t<sub>i</sub> ]]  
worthy the freedom-Gen WH-Gen. you-possess  
'worthy of the freedom which you possess.'  
[Harbert's 12a, (X.A.1.7.3, cited in Smyth, 1920:567)]



(31), suppressing either the internal or the external case. In this interpretation, Gothic would provide the purest example of hierarchical resolution in free relatives.

#### 4.4.2.1.3 Finnish

Finnish is not a case-attracting language: the internally-assigned case must always be expressed. In addition, Finnish observes a hierarchical restriction on the formation of free relatives. Carlson (1977) observes that, in a multiple case assignment, it is possible to leave an "unmarked" case unexpressed, where unmarked refers to nominative, accusative, and partitive. For example, partitive case gives way to relative case in (34), where the embedded verb pidää 'like' assigns relative and the matrix verb valitsee 'choose' assigns partitive.

(34) valitsen mistä sinä pidät  
          elat  
          choose-I what you like-you  
          'I choose what you like'

Since Finnish requires expression of the internally-assigned case, Carlson notes, a conflict between matrix relative and relative partitive cannot be resolved: partitive must be expressed, because it is assigned within the relative clause; relative must be expressed, because it is not one of the unmarked cases.

(35) \*pidän mistä/mitä sinä valitset  
          elat/part  
          like-I what/what you choose-you  
          'I like what you choose'

We can express the differences between the marked and unmarked cases with the case hierarchy

(36) nominative < other cases  
accusative  
partitive

A multiple case assignment involving two unmarked cases remains unresolved (example courtesy P. Kiparsky):<sup>2</sup>

(37) \*tapoit kenet/ketā rakastin  
acc/part  
killed who/who loved  
'you killed whom I loved'

Were the unmarked cases simply optional, we would expect the accusative assigned by the matrix verb in (37) to give way to the partitive assigned in the relative clause.

#### 4.4.2.1.4 Polish

Unlike many case-rich languages, Polish requires case matching in its free relatives. Thus, free relatives may be formed in Polish when the abstract cases match, but non-matching free relatives create case conflict phenomena. Matching relatives are illustrated in sentences (38) and (39).

(38) nie kupuje tego czego nie lubie  
gen gen

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<sup>2</sup>The use of an animate relative pronoun may affect the grammaticality of this construction. We note below that Russian and Polish tend not to allow animate free relatives.



(41) kupuje to czego nie lubie  
acc gen  
buy it what not like  
'I buy that which I don't like'

(42) ?kupuje czego nie lubie  
gen  
buy what not like  
'I buy what I don't like'

This effect can be seen most clearly with the more oblique cases. For example, an instrumental/accusative multiple case assignment cannot be accommodated:

(42) acc[ins  
✓marysia postanowiła kupić to, czym Janek się zachwycił  
Maria decided to-buy it that Janek self became-fascinated  
'Maria decided to buy what Janek became fascinated with'

(43) acc[ins=ins  
\*marysia postanowiła kupić czym Janek się zachwycił  
Maria decided to buy what Janek self became-fascinated  
'Maria decided to buy what Janek became fascinated with'

We have seen above that some languages resolve such conflicts according to a case hierarchy. Hierarchical resolution, however, is not available in Polish free relatives. In the absence of syncretic resolution, the case conflict remains unresolved. (See Appendix B for more examples.)

We must, of course, distinguish various sources ofagrammaticality. Two important considerations for Polish are case attraction and animacy.

**Polish lacks case attraction: the internally assigned case must be expressed, and may not be attracted into the form of the externally assigned case.**

**For free relatives, this may or may not be an independent constraint; the failure of case attraction in free relatives might be subsumed under a general case matching requirement.**

**The effect of animacy is easier to distinguish: Polish animate relatives are generally resistant to the formation of non-matching free relatives. This holds true even when a syncretic form of the relative pronoun is available.**

**(44) acc[nom  
✓uderzył~~am~~ tego, kto krzyczał  
'I hit the one who shouted'**

**(45) acc[nom=nom  
\* \*uderzył~~am~~ kto krzyczał  
'I hit who shouted'**

**(46) gen[acc  
✓janek nienawidzi tego, kogo maria lubi  
'janek hates the one whom maria loves'**

**(47) gen[acc=gen/acc<sup>3</sup>  
\* janek nienawidzi kogo maria lubi  
'janek hates whom maria loves'**

---

<sup>3</sup>In Appendix B we note that preposing this relative clause improves the acceptability of the construction.



Therefore, in determining the status of hierarchical resolution in Polish, we must set aside examples involving animate relative pronouns or relative pronouns which are attracted into the externally-assigned case. Given these considerations, the only candidates for hierarchical resolution are inanimate free relatives in which the relative pronoun exhibits the internally assigned case. In the absence of hierarchical resolution, we expect such non-matching, non-syncretic, internal-case free relatives to be ungrammatical. The data generally support this prediction.

Free relatives may, however, be formed when the relative clause is the subject of the matrix clause, as in (48) and (49). In this situation, the externally assigned nominative case is suppressed, yet the construction remains grammatical.

(48) nom/gen

✓to czego Janek oczekiwał w końcu zdarzyło się  
'that which Janek expected finally happened'

(49) nom/gen=gen

✓?czego Janek oczekiwał w końcu zdarzyło się  
'what Janek expected finally happened'

This suppression of externally-assigned nominative is reminiscent of hierarchical resolution. Note, however, that externally-assigned accusative may not be suppressed.

(50) acc/dat

marysia postanowiła kupić to, czemu Janek się przyglądał  
Maria decided to-buy it that Janek self stared-at  
'Maria decided to buy what Janek was staring at'

- (51) **acc[dat=dat**  
 \* \* **marysia postanowiła kupić czemu Janek się przyglądał**  
 Maria decided to-buy what Janek self stared-at  
 'Maria decided to buy what Janek was staring at'

Thus, the suppression of nominative in (48) and (49) cannot be the result of a general structural<inherent hierarchy, although we might postulate a nom<all-others hierarchy.

The possibility of suppressing nominative case forces us to reconsider the example of syncretic resolution given in (40). It is possible that these are also derived by whatever process underlies nominative suppression in (48) and (49). In nom[acc constructions, we simply suppress the external nominative, and the relative pronoun appears in the (accidentally syncretic) accusative case. In acc[nom constructions, we suppress the internal nominative, allowing the relative pronoun to appear in the externally-assigned accusative case. (This account would require us to relax the constraint against case attraction.) However, in the ins/nom examples, we have observed suppression only of an externally-assigned nominative. An internally-assigned nominative apparently cannot be similarly suppressed:

- (52) **ins[nom=ins**  
 \* \* **on staje się czym jej się nigdy podobało**  
 'he is becoming what she never liked'

Nominative suppression, therefore, could only account for the nom[acc=nom/acc examples; we would still have to invoke syncretic resolution to explain the grammaticality of the acc[nom=nom/acc examples.

A nominative-least hierarchy would correctly predict the grammaticality of both nom|acc=nom/acc and acc|nom=nom/acc constructions, but would incorrectly predict instrumental resolution of the ins|nom conflict in (52). We see below that the pro-head hypothesis explains the suppression of externally-assigned nominative case.

#### 4.4.2.1.5 Russian

Harbert (1983) characterizes Russian as a non-matching language, noting that Russian does not require category matching in (53):<sup>1</sup>

- (53) on isčēt [NP e [S s kem [S poexat' ] ] ]  
 He seeks with whom to go  
 'He is looking for someone to go with'  
 [Harbert's 34=Leed and Paperno 1982]

As a purported non-matching language, Russian should also be free of case matching requirements. But there is evidence that both abstract cases must be accommodated in the formation of Russian free relatives. Free relatives may usually be formed when the abstract cases match, as in (54)- (56):

- (54) ✓ nom|nom=nom  
 (to) čto bylo v magazine, sliškom dorogo  
 'what was in the store was too expensive'
- (55) ✓ acc|acc=acc  
 ja kupila (to) čto ja uvidela  
 'I bought what I caught sight of'

---

<sup>1</sup> Unfortunately, Harbert's example uses an infinitival free relative; Suñer ( ) argues that matching effects are alleviated in infinitival free relatives in the Romance languages. A corresponding finite free relatives is unacceptable: on isčet s kem ivan poexal 'he (say, a detective) is looking for whoever ivan left with' (C.Chvany, pc).

- (56) ✓ ins{ins=ins  
on sejčas zanimaetsja (tem), čem ja tak interesovalas' god nazad  
'he now studies what I was so interested in a year ago'

Syncretic resolution is possible when the abstract cases do not match:

- (57) ✓ acc{nom=nom/acc  
ja kupila (to), čto bylo v magazine  
'I bought what was in the store'

- (58) ✓ nom{acc=nom/acc  
(to) čto ja kupila, ležit na stole  
'what I bought is lying on the table'

Russian generally lacks case attraction: When no syncretic form is available, the relative pronoun must usually express the case assigned within the relative clause.

- (59) \* nom{dat=nom  
u menja est' čto on zaviduet (headed: to, čemu)  
'I have what he envies'

- (60) \* ins{dat=ins (headed: tem, čemu)  
na rabote on sejčas zanimaetsja čem ja tol'ko učus'  
'now at work he is engaged in what I am only learning'

However, case attraction is possible with the genitive of negation. When the relative construction involves a case conflict between accusative and a genitive of negation, either accusative or genitive may be used:

- (61) ✓ acc{gen=gen  
ona podarila emu čego ne xotela sama (headed: to, čego)

'she gave him what she herself didn't want'

- (62) ✓ acc[gen=acc  
ona podarila emu čto ne xotela sama  
'she gave him what she herself didn't want'

Further examples are given in Appendix C.

Let us set aside the genitive/accusative alternation, and consider free relative formation using internal, non-matching case. If Russian were truly non-matching, we would expect such constructions to be well-formed. The data are complicated. First, we note that Russian appears to share with Polish a prohibition against animate free relatives:

- (63) \* dat[gen=gen  
ja podčinjajus' (tomu) kogo on vynašit  
'I obey (the one) whom he cannot stand'
- (64) \* ins[gen=gen  
ja rukovozu (tem) kogo on nenavidit  
'I lead (the one) whom he hates'
- (65) \* gen[dat=dat  
on ne ljubit (togo) komu ja podčinjajus' na rabote  
'he does not like (the one) whom I obey at work'

Regarding inanimate free relatives, we find a variety of judgements. The following sentences were judged unacceptable:

- (66) \* ins[nom=nom  
on stanovitsja (tem) čto ej vseгда ne nravilos'  
'he is becoming what she never liked'  
[lit: what to-her always not was-pleasing]

(67) \*     ins[acc=acc  
ja zanimajus' (tem) čto on delal ran'se  
'I am studying/doing what he did earlier'

(68) \*     acc[ins=ins  
ivan kupil (to) čem ja interesoval'sja  
'Ivan bought what I was interested in'

(69) \*     acc[dat=dat  
ivan kupil (to) čemu ja zavidovala  
'Ivan bought what I envied'

But some internal-case sentences were judged grammatical.

(70) ✓     ins[dat=dat  
sejčas on na rabote zanimaetsja (tem) čemu ja tol'ko učus'  
'now he at work is engaged in what I am only learning'

(71) ✓     gen[ins=ins  
ona ne pila (togo) čem on tak napilsja včera  
'she did not drink that with which he got so drunk yesterday'

The unacceptability of examples (66)- (69) casts doubt on the characterization of Russian as a non-case-matching language. The externally-assigned case does seem to affect the grammaticality of the construction. Thus, both Polish and Russian constitute counter-examples to the claims of Groos and Riemsdijk (1981) and Herbert (1983) that matching effects are correlated with rich case systems. Second, the pattern of case marking does not support the case hierarchy established by Babby for Russian quantifier phrases (Chapter Two). According to the hierarchy

(72) nom, acc<gen(qp)<dat, ins, loc

we would expect a dat/acc conflict to yield dative, and an ins/acc conflict to yield instrumental. This prediction is not upheld.

#### **4.4.2.2 Structure of Free Relatives**

In this section we review various proposals about the structure of free relatives and the derivation of "case matching" effects. All of the proposals reviewed here presuppose an external-head structure for the corresponding headed relative clauses.

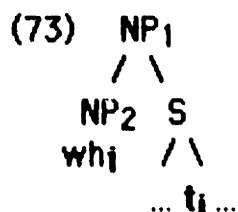
An internal-head analysis could explain case attraction effects between an overt head and a relative pronoun, since the relative pronoun is a trace of the head. The free relative might be analyzed as failure to extract a head, leaving a bare CP argument. The relative pronoun in specifier position would be accessible to external case assignment, creating case matching effects. However, we review evidence below that supports the existence of a pro head in the free relative. We adopt an external head analysis.

Much of the literature on matching effects ascribes a headed structure to the free relative. When the antecedent is missing, there are thus two potential landing sites for the wh-phrase: the head position or the COMP (i.e., specifier of CP) position. Each of these landing sites has its advocates in the literature.

##### **4.4.2.2.1 The Head Hypothesis**

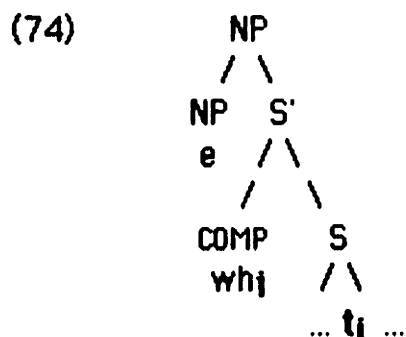
Bresnan & Grimshaw (1978) derive matching effects in English by placing the wh-phrase in the head (the "head hypothesis"). The head hypothesis derives matching effects from the X-bar properties of heads: the head (NP<sub>2</sub>)

of the relativized phrase (NP<sub>1</sub>) must share the case and category of that phrase.<sup>1</sup>



#### 4.4.2.2.2 The COMP Hypothesis

Groos & Riemsdijk (1981) prefer to place the wh-phrase in COMP, while the head position, they claim, is "devoid of lexical material" (the "COMP hypothesis"). The governing element's case marking and subcategorization requirements must then be met by the wh-phrase in COMP. To support the COMP hypothesis, Groos & Riemsdijk cite extraction data that show that the wh-phrase must be in COMP in Dutch and German, languages which nevertheless exhibit matching effects.



A COMP accessibility parameter determines which languages allow a verb or preposition to have access to the COMP of its free relative complement.

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<sup>1</sup> Bresnan & Grimshaw claim that free relatives are formed through Controlled Pro Deletion, in which a [+pro] element in the relative clause is deleted under coindexation with the head position.



Groos & Riemsdijk offer two ways to parameterize COMP accessibility. One option is to make COMP accessibility itself a parameter: languages with matching effects have the COMP position accessible; language without matching effects have non-accessible COMPs. Another option is to claim that COMP is accessible in the free relatives of all languages, and that the rules of case marking and subcategorization may be sensitive either to lexical material (matching languages) or to structural position (non-matching languages).

Groos & Riemsdijk note that all the non-matching languages they cite are classical or archaic (e.g., Archaic German, Classical Greek). They attribute this correlation to the strongly case-inflected character of the classical languages. If a case inflecting language chooses COMP accessibility (which they propose to be the unmarked option), then few free relative survive the case matching requirement. They suggest that "such a situation creates a pressure on the grammar to opt for the marked value of the parameter in order to turn the free relative construction into a productively utilizable sentence type." (p. 214)

We observed above that some languages with rich case inflection (e.g., Russian, Polish) are nonetheless matching languages. The markedness analysis of Groos & Riemsdijk allows for this variation. The COMP accessibility parameter, however, seems somewhat arbitrary. More recent discussions of the COMP hypothesis have tried to explain the matching parameter in terms of the nature of the empty head.

#### 4.4.2.2.3 The Role of Subcategorization

Hirschbühler & Rivero (1981) show that Catalan free relatives must be matching in subcategorized positions, but may be non-matching in non-subcategorized positions such as subject and topic. This is expected under their assumption that matching effects derive from the accessibility of COMP to subcategorization. For example, the verb invitar is subcategorized by an NP object. A free relative complement to invitar must be introduced by an NP:

(75) *invito qui has invitat*  
I-invite who you-have invited

(76) \**invito amb qui t'en anirás*  
I-invite with whom you-will-leave (H&R p. 114)

Subcategorization does not apply to subject position, however, and a free relative in subject position need not be introduced by an NP:

(77) *a qui has parlat està malalt*  
to who you-have spoken is sick (H&R p. 118)

In the COMP accessibility framework, this structure is allowed because there is no subcategorization which may affect the wh-phrase. French, however, does not allow non-matching free relatives in subject position:

(78) \**de qui j'ai parlé vient de partir*  
about whom I spoke just left (Hirschbühler (1976), p. 138)

#### 4.4.2.2.4 The PRO/pro-Head Hypothesis

Harbert (1983) and Suñer (1984, 1985) explain the difference in matching effects between pro-drop and non-pro-drop languages by postulating a pro

head for the free relative. Harbert argues that free relatives may be headed either by pro [+pronominal, -anaphoric] or by PRO [+pronominal, +anaphoric]. Non-anaphoric pro may be used when the NP is in subject position of a pro-drop language such as Spanish or Catalan. In that case, pro is licensed by AGR. The (empty) head satisfies the case and subcategorization requirements; no matching is required of the wh-phrase.

(79) [<sub>NP</sub> pro [<sub>S</sub> wh- [<sub>S</sub> ] ] ] ... AGR

When pro cannot be licensed by AGR (German, French, English, and non-subjects in the pro-drop languages), the pronominal anaphor, PRO, must be used instead.

(80) [<sub>NP</sub> PRO [<sub>S</sub> wh- [<sub>S</sub> ] ] ]

Harbert goes on to argue that, since PRO must not be governed, the external governor of the relativized NP must bypass PRO and govern the wh-phrase. In this case, the wh-phrase must satisfy the case and subcategorization requirements of the external governor.

We suggest that Harbert's analysis errs in treating government as a licensing which may be fulfilled by one governee or another, rather than as a primary, structural relationship. The resulting alternation between pro and PRO is not necessary, as shown by Sufer's (1985) analysis, below.

Harbert also suggests that pro may be licensed by rich case inflection; hence case inflecting languages like Greek and Gothic are simply non-matching. He notes that case alone is insufficient to license pro; pro must also be determined with respect to person and number. Thus, case inflection alone cannot license pro objects. In a free relative, the relative pronoun determines the person and number features of pro.

We have seen that there are rich case languages which do not appear to license pro in non-matching relatives. For the Finnish prohibition against an internal structural case in an oblique context ( $\text{part|el=el}$ ,  $*\text{part|el=part}$ ,  $*\text{el|part=part}$ ,  $*\text{el|part=el}$ ), Harbert argues that Finnish requires overt realization of oblique case ( $*\text{el|part=part}$ ), and that in general a wh-phrase cannot disagree in case with its trace at LF ( $*\text{el|part=el}$ ). Harbert notes that this requires that case attraction be postponed until PF: If case attraction applied in the syntax, the wh-phrase would fail to agree with its trace at LF.

#### 4.4.2.2.5 The pro-Head Hypothesis

Suñer (1984, 1985) identifies the empty head as pro [+pronominal, -anaphoric] and derives matching effects from the requirement that pro be identified by agreement with the relative pronoun. As in Harbert's analysis, pro may be identified by AGR when the relative clause occupies the subject position of a pro-drop language. In other environments, pro is identified by case matching between the head and the relative pronoun.<sup>2</sup>

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<sup>2</sup>Suñer considers category matching to be an instance of case-matching.

Finally, Suñer notes that a single COMP accessibility parameter cannot explain the non-matching character of infinitival free relatives. Spanish and Catalan allow non-matching infinitival free relatives in positions which would normally require case matching.

(81) \*Briana no encuentra con quien tñ puedas salir  
Briana can't find with whom you could go-out

(82) Briana no encuentra con quien salir  
Briana can't find with whom to go-out

(83) \*Andrea tiene de quien María tanto se burlaba en su clase  
Andrea has of whom María so-much made-fun in her class

(84) Andrea tiene de quien burlarse en su clase  
Andrea has of whom to-make-fun in her class

Hirschbühler & Rivero (1981) note similar data in French:

(85) \*j'ai acheté où il habite  
I have bought where he lives

(86) il n'a où dormir  
He not has where sleep

(87) il n'a avec qui parler  
He not has with who talk

Suñer derives the non-matching character of the infinitives by making INFL the head of the entire S' (our CP). This allows the [ $\pm$  tns] character of INFL to determine properties of the COMP position (our Spec and C). She claims

that "pro through a [+tense] INFL can require that the specifier position of INFL<sup>max</sup>, (i.e., COMP) fulfill certain conditions such as Case-matching."

Hirschbühler & Rivero (1981) note that Spanish verbs of knowledge and perception take non-matching interrogative clauses:<sup>3</sup>

(88) Vueràs del que (=de el que) hem parlat  
you-will-see of what we-have spoken  
'You will realize what we discussed'

(89) \*Veuràs del que hem parlat dins la caixa  
you-will-see of what we-have spoken in the box  
'You will see the object under discussion inside the box'

An interrogative, we claim, is not assigned case, and hence need not observe case matching. It is tempting to assign a concealed question interpretation to the infinitival free relatives. But we must then explain why the interrogative reading is absent in the corresponding finite free relatives. We leave this question for future research.

#### 4.4.2.3 Prevention and Reduction Analysis

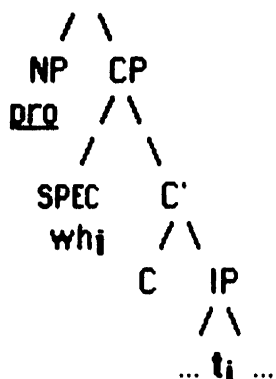
In this section we present our analysis of the case-matching and case-attraction data. We assume that the free relative consists of a pro NP adjoined to CP.

(90) NP

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<sup>3</sup>But Suñer (1985) argues that referential readings are possible. For example:

(1) Sí, ya vi con lo que te protegiste. Me sorprende que aún estés viva  
Yes, I already saw (the thing) with which you protected yourself.  
'I'm surprised you're still alive'



We assume that *wh*-trace must transmit case, for reasons which we discuss in Chapter Five. We assume, with Sufer, that the pro head of the relative clause must be identified, either through case agreement with the relative pronoun or through agreement with AGR in a pro-drop language. We claim that the specifier position of CP is always accessible to this agreement process. These assumptions prohibit resolution by prevention of case agreement, except when the relative clause is a subject in a pro-drop language.

So far, our assumptions give us the following range of data:

(91)	<u>pro-drop languages</u>	<u>non-pro-drop languages</u>
	nom[X=X	nom[X=*
	Y[X=*, Y≠nom	Y[X=*, Y≠nom

This describes the case-matching languages. For the non-matching languages we must make additional assumptions.

We assume that the non-matching languages allow reduction of the agreement-induced multiple case. We claim that this reduction is subject to a semantic constraint of recoverability, so that the least informative

case is reduced. This gives us case hierarchies of the general form, structural<inherent. We now can account for the following range of data:

(92)	Language	pro-drop	reduction	results
	German	no	no	strictly case-matching
	Polish	yes	no	nom<else
	Gothic	yes	yes	nom<acc<inherent

This is the general picture; we must add a few sub-classifications. Since reduction is a language-specific process, it is subject to language-specific constraints. Finnish, for example, allows reduction of the external case, but not the internal case. Languages which allow reduction of the internal case are case-attracting languages. Gothic allows reduction of the internal case with a pro head, but not with an overt head. Greek allows reduction of the internal case with both pro-heads and overt heads.

(93)	Language	pro-drop	reduction external	reduction internal with pro	reduction internal with overt head
	German	no	no	no	no
	Polish	yes	no	no	no
	Finnish	yes	yes	no	no
	Gothic	yes	yes	yes	no
	Greek	yes	yes	yes	yes

[case attraction]

Some variation remains undetermined by this system. The recoverability constraint on reduction ensures that case hierarchy takes the general form, less informative < more informative, but it does not determine the precise form of the case hierarchy.



## CHAPTER FIVE: ASSIGNMENT-INDUCED MULTIPLE CASE

### 5.1 Introduction

The model of case mapping outlined in Chapter One allows for the accumulation of multiple cases through assignment, adjustment, or percolation. Chapters Three and Four discuss evidence that both percolation and agreement are, in fact, sources of multiple case assignment. In this chapter we consider whether multiple case can ever arise directly from case assignment, without the mediation of agreement or percolation. We use the term, assignment-induced multiple case, to refer to a multiple case assignment which does not depend on case agreement or case percolation.

In the first section of this chapter we consider the evidence for the existence of assignment-induced multiple case. We distinguish two sources of assignment-induced multiple case. First, we consider constructions in which an NP is assigned two cases in its base position. Second, we consider constructions in which an NP moves from one case-marked position to another case-marked position. We observe that NP-movement preserves inherent case, but loses structural case. This contrasts with wh-movement, which preserves both structural and inherent case (see Chapter Four).

In the second section of this chapter we derive the case-transmission differences between NP-movement and wh-movement from cyclic application of the Case Filter. We maintain the theta-criterion, but reject the Chain Condition requiring a chain to have only one case-marked position. These assumptions allow us to derive the case-marking relations of wh-

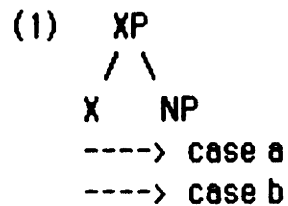
movement, passive movement, and subject-to-subject raising. Our analysis raises some problems for control structures and exceptional case marking.

## 5.2 Sources of Assignment-Induced Multiple Case

### 5.2.1 Without Movement

#### 5.2.1.1 Redundant case assignment

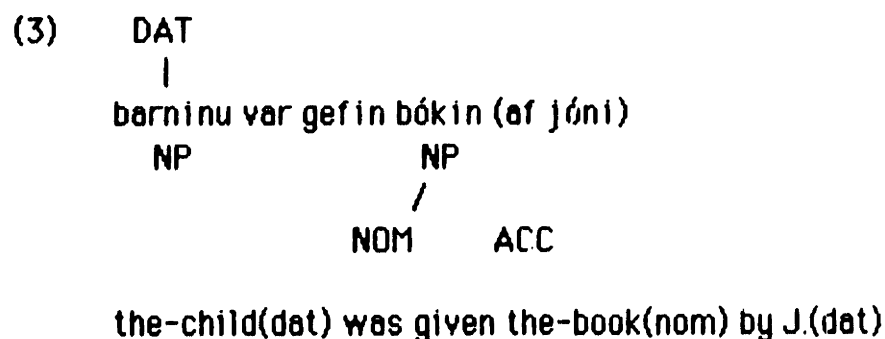
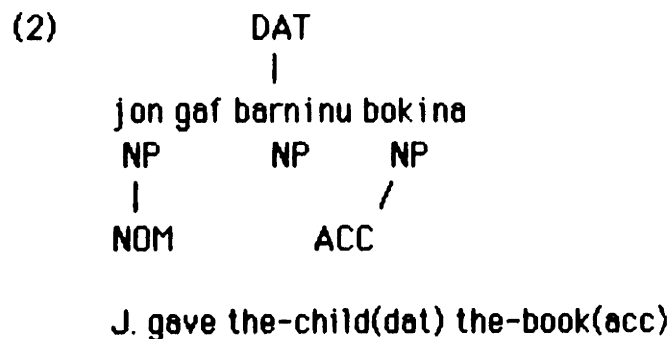
The simplest case of non-movement multiple case assignment would be the assignment of more than one case to an object NP by its case assigner, X:



We will refer to this as redundant case assignment. We do not find evidence of redundant case assignment. For example, a verb which assigns an inherent case to its object show no symptoms of also assigning structural accusative case to that same object.

We assume that structural case assignment is optional, and thus a multiple case assignment may be resolved by prevention of a structural case assignment. This is often implicitly assumed; explicit formulations of this idea have been given by Babby (1980) and by Yip, Maling, and Jackendoff (1987). Babby (1980:3) formulates the Direct Case Condition, which states that "[i]f an NP is already marked with an oblique Case, it cannot receive additional Case marking." Yip, Maling, and Jackendoff (1987) suggest that cases be represented in tiers, similar to phonological tiers. Association

rules then link cases to NPs. Inherent cases are lexically associated with certain arguments, and the presence of an inherent case prevents the association of a structural case. In support of this analysis, they note that the prevented structural case associates to the next available NP. For example, the Icelandic verb *gefa* 'give' takes a dative object. In the active, the presence of the dative on the first object prevents assignment of structural accusative; the accusative associates instead to the second object. If the dative object becomes the subject through passivization, the nominative case is prevented from associating to the subject, and associates instead to the object.



Given our system of resolution, we do not need to explicitly exclude the assignment of structural case to an inherently case-marked NP. If an

inherently case-marked NP is governed by a structural case assigner, there is a potential multiple case assignment. Since structural case assignment is optional, the potential multiple case assignment can always be resolved by the prevention of structural case assignment (in which case the structural case might become available to another element, as Yip, Maling, & Jackendoff suggest). If, however, the structural case is assigned, then the multiple case assignment can be resolved by reduction or accommodation. Reduction is subject to recoverability, and so would retain the inherent case at the expense of the less informative structural case. Accommodation can resolve the multiple case assignment only if the morphological form is the same for both cases; if resolution is accomplished by accommodation then we cannot tell, morphologically, that the structural case is present. We thus do not expect to find any evidence of structural/inherent redundant case assignment.

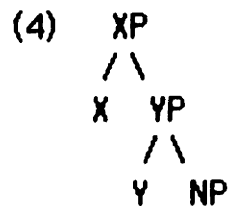
We assume that inherent case assignment is not subject to prevention. Babby (1986:116) suggests that this restriction follows from subcategorization requirements: "... lexical case [i.e., inherent case] must be specified as part of the lexical case assigner's subcategorization information. Lexical case therefore takes precedence over configurational case [i.e., structural case] (which is not subcategorized for) when they come into conflict in order to avoid a violation of the case assigning category's subcategorization restrictions ..." Thus, the presence of an inherent case does not prevent the assignment of another inherent case. We might therefore expect to find examples of redundant case assignment involving

two inherent cases.<sup>1</sup> How would such inherent/inherent multiple case assignments be resolved? Our three methods of resolution are prevention, reduction, and accommodation. We have argued that inherent case assignment cannot be prevented. Reduction is limited by recoverability, and thus not likely to delete an informative inherent case. Morphological accommodation is the most likely resolution. So we might expect to find an example in which a verb with the ability to assign two theta-related, inherent cases assigns them both to a single argument, just in case that argument is morphologically neutral in form for the two cases. We have no examples of such a construction.

### 5.2.1.2 Non-minimal Case Assignment

#### 5.2.1.2.1 Structures and Issues

We might expect multiple case assignment to occur in a structure like (4), in which the object NP is c-commanded by two case assigners, X and Y.



Case is assigned to NP by Y under usual assumptions; multiple case assignment occurs if X is also able to assign case to NP. We will refer to this as non-minimal case assignment, since it involves case assignment by a non-minimal governor (see below).

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<sup>1</sup>The assignment of two inherent cases to a single NP argument might be ruled out by the theta criterion (see below).

The claim that the higher governor assigns case directly to the object NP violates the adjacency constraint on case assignment and the minimality constraint on government. Of these, the minimality violation is more serious. Chomsky (1981:94) suggests that the adjacency constraint is "an unmarked option for Case-assignment", subject to parameterization. Therefore, lack of adjacency may prevent non-minimal case assignment in some languages, but will not rule it out in principle. The minimality constraint, in contrast, is cast as a universal condition on government which prevents government across a closer (minimal) governor (Chomsky 1986:42):

- (5) Minimality  
 $\alpha$  does not govern  $\beta$  in the structure ...  $\alpha$  ... [ $\gamma$  ...  $\delta$  ...  $\beta$  ... ]  
 if  $\gamma$  is a projection of  $\delta$  such that no segment of  $\gamma$  dominates  $\alpha$

By this definition, X cannot govern NP in (4); Y is the minimal governor of NP. Since we assume that all case assignment is under government, the minimality condition prohibits non-minimal case assignment.

#### 5.2.1.2.2 Alternatives to the Assignment Analysis

In this section we consider two alternatives to the direct assignment of case by the non-minimal case assigner. The first involves a percolation mechanism instead of direct assignment; the second involves a reanalysis by which X and Y combine to effect a single case assignment.

##### 5.2.1.2.2.1 Percolation to NP

Suppose that X assigns case to NP by means of YP. That is, X assigns case to YP, and that case percolates from YP to NP. This analysis conforms to adjacency and minimality requirements, but runs into problems with case resistance and restrictions on the domain of percolation. Case resistance is the inability of some categories to receive case (Stowell 1981). For example, PP may resist case assignment in some languages. This would prevent X from assigning case to NP via YP when Y=P. However, case resistance does not rule out non-minimal case assignment by percolation in principle: NP does not resist case assignment, and PP and CP do not resist case assignment in all languages. More serious are the restrictions on the domain of percolation. Recall our claim in Chapter Three that percolation affects the head and its modifiers, but not complements of the head. Thus, case assigned by X to YP would percolate to Y, but not to the NP complement of Y. The prohibition of percolation to complements, if correct, rules out a percolation analysis of non-minimal case assignment.

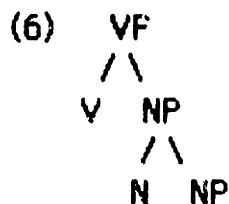
#### 5.2.1.2.2.2 Reanalysis of X and Y As a Single Case Assigner

A third possibility is that X and Y combine to form one case assigning element. This could be accomplished either through reanalysis of X and Y to form a complex element, X-Y, or through some process in which X empowers Y with its case-assigning ability, such as co-superscripting (see Kayne (1983:58), Choe (1985)). Reanalysis is beyond the scope of our current study and we will not pursue it here.

#### 5.2.1.2.3 Possible Examples of Non-Minimal Case Assignment

##### 5.2.1.2.3.1 NP Possessor Complements

We might expect to find non-minimal case assignment in NP-complement possessor phrases. That is, we might expect the case assigned by a verb or a preposition to combine with the adnominal genitive:



However, such effects are not found. NP-complement possessors are simply marked with the adnominal genitive; the case assigned to the main NP does not interfere.<sup>2</sup> For example, Russian possessor complements appear in genitive, and do not exhibit any influence of the case assigned to the main NP.

(7) na ostanovke avtobusa  
       loc      gen  
       on stop   bus  
       'at the bus stop'

### 5.2.1.2.3.2 PP Possessor Complements

The Norwegian possessor construction might be analyzed as the combination of two case assigners (Torald Toraldsen, pc). The Norwegian preposition til 'to' assigns accusative case and may normally be used with both nouns and pronouns. Til is also used in a PP adnominal complement to express possession:

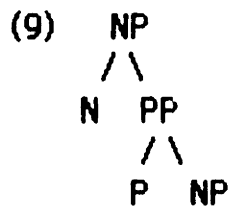
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<sup>2</sup>Case-agglutinating languages allow stacking of the possessor case and the external case, but we argue in Appendix A that this does not reflect assignment of the external case to the possessor NP.



- (8) [<sub>NP</sub> bok en til Per ]  
 book the to Peter  
 'Peter's book'

The possessive reading is lost if the til phrase is not adjacent to the N'. We assume the following structure:



Interestingly, til may not occur with pronouns in the possessive construction:

- (10) \* [<sub>NP</sub> bok en til ham ]  
 book the to him(acc)  
 'his book'

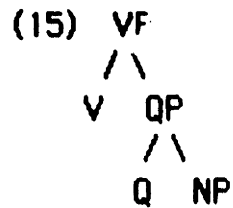
Instead, possession with pronouns is expressed by a adnominal genitive.

- (11) [<sub>NP</sub> bok en hans ]  
 book the his(gen)  
 'his book'

Taken together, these facts suggest that til assigns accusative case to its NP object, while the head N assigns genitive case to the object of til. The proper noun, Per, has one morphological form for both cases and thus accommodates the genitive/accusative multiple case assignment. The



However, we noted in Chapter Three that an alternative analysis is available, following Pesetsky (1982), in which the prepositional quantifier forms the head of a case-resistant quantifier phrase.



Under this interpretation the object NP receives only the case assigned by the quantifier. Pesetsky argues that QPs cannot occur in environments of oblique case assignment, since inherent case must be expressed. This explains the ungrammaticality of (14) without postulating a multiple case assignment.

#### 5.2.1.2.3.4 PP Goal of Motion Complements

The Russian verb of motion construction is another candidate for the interaction of verb and preposition in assigning case to the NP object. When used with a verb of motion, the preposition *v* 'in, at' may occur with locative case, expressing the location of the action, or it may occur with accusative case, expressing the goal of motion:

(16) *on pošel v gorode*  
 he walked in city(loc)  
 'he was walking in the city'

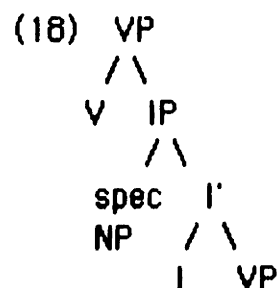
(17) *on pošel v gorod*  
 he walked in city(acc)  
 'he was walking to the city'

This could be analyzed as the object NP receiving locative case from the preposition and, when the PP is a subcategorized goal of motion, accusative case from the verb. This locative/accusative multiple case assignment would then somehow be resolved in favor of accusative. However, the analysis is not compelling: not all prepositions exhibit an interaction with the verb of motion (k 'to' invariably assigns dative to its object); also, the preposition v 'in, at' occurs with accusative in other constructions (e.g., time expressions), suggesting a prepositional source for the accusative marking on the goal of motion.

### 5.2.1.3 Case Assignment to Spec: Exceptional Case Marking

Exceptional Case Marking provides an example of a different kind of base-generated, assignment-induced multiple case. The structural relations required for exceptional case marking do not violate minimality.

Exceptional case marking occurs when a matrix verb takes an IP complement (in older terminology, deletes S'). Since the specifier of a complement is accessible to government (Chomsky 1986 ; Massam (1984)), the matrix verb governs and is therefore able to "exceptionally" assign case to the embedded subject position.



In (19), the verb expect exceptionally case marks the embedded subject, Eric.

(19) Rana expected Eric to retrieve the lost paddle

(20)

			<--- θ --->	
NP1	V	[ <sub>IP</sub>	NP2	to-VP ]
		-----case----->		

Exceptional case marking is required to case-mark NP2, since the infinitive is (usually) unable to assign case to its subject. If the infinitive were able to assign case to the subject of the embedded clause, exceptional case marking would create a base-generated, assignment-induced multiple case:

(21)

			<--- θ --->	
			<-- case -->	
NP1	V	[ <sub>IP</sub>	NP2	to-VP ]
		-----case----->		

The fact that the infinitive fails to assign case to its subject has been taken to be the core property of infinitives in Universal Grammar.<sup>3</sup> But there are languages which allow infinitives to have case-marked subjects. We examine two situations in which the infinitive occurs with a case-marked subject.

### 5.2.1.2.1 Quirky Subjects of Infinitives

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<sup>3</sup>Riemsdijk and Williams (1986:227) claim that this is "... a general fact about infinitives, namely, that they do not have overt subjects. This is true not only of English but also of human languages in general; ..."

The subject of an infinitive may bear "quirky" case in Icelandic. Quirky case is non-nominative case assigned by a verb to its subject, or non-accusative case assigned by a verb to its object. Quirky case is maintained under movement rules such as passive; quirky case is also maintained on the subject of the infinitive in exceptional case marking constructions. The following examples are from Levin & Simpson (1981). Sentences (22) and (23) demonstrate exceptional case marking of a nominative subject; sentences (24) and (25) demonstrate exceptional case marking of a quirky dative subject.

(22) álfur kom  
an-elf (nom) arrived

(23) hann telur álf komið  
he (nom) believes an-elf (acc) arrived

(24) bátnum hvolfdi  
the-boat (dat) capsized

(25) hann telur bátnum hafa hvolft  
he (nom) believes the-boat (dat) to have capsized

Genitive quirky subjects are also preserved under exceptional case marking. This construction raises two questions: First, how can the quirky case be maintained in an infinitive clause? Second, how is the multiple case assignment resolved?

Massam (1984:64) proposes an answer to the first question. She suggests a two-step process of case assignment: at DS, a governor can specify a case

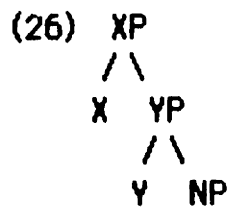
(the quirky case), regardless of the governor's status as [ $\pm$  Case Assigner]; at SS, the specified case must be realized under government by a [+ Case Assigner] governor. Since infinitives are [-Case Assigner], the matrix verb serves as the [+Case Assigner] governor. With regard to the second question, Massam leaves open the status of case assignment by the matrix verb. We might assume that the quirky case specification prevents the assignment of the matrix accusative case.

#### 5.2.1.2.2 Case-Assigning Infinitives

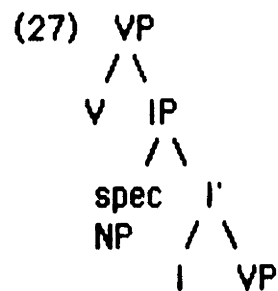
Some languages use a special case for the subject of an infinitive. For example, Latin infinitives may occur with accusative subjects; Portuguese infinitives take nominative subjects; and Russian infinitives may have dative subjects. We do not, however, have any examples of exceptional case marking of these case-assigning infinitives. We return to the topic of case-assigning infinitives below, in our discussion of raising-to-subject constructions.

#### 5.2.1.4 Summary

In this section we argued that structural case assignment is optional, hence subject to prevention. In contrast, we argued, inherent case assignment is obligatory, and not subject to prevention. We considered three sources of base-generated, assignment-induced case: redundant case assignment, non-minimal case assignment, and case-assignment to spec. We argued that redundant case assignment, in which one case assigner assigns to cases to one object NP, is not a significant source of multiple case assignment. We noted that non-minimal case assignment, in which both Y and X assign case to NP in the structure (26), violates minimality and adjacency requirements.



We found no evidence of non-minimal case assignment when Y=N (i.e., in adnominal possessor complements). The situation is less clear when X=V and Y=P: We discussed three constructions which could be analyzed as non-minimal case assignment by V to the object of the prepositional phrase. Finally, we argued that case assignment to the specifier of an IP complement (27) is a valid source of multiple case assignment, since NP is accessible to case assignment by both I and V.



We examined exceptional case marking of Icelandic quirky subjects as an illustration of this possibility. We suggested that assignment of accusative by the matrix V is prevented by the presence of a quirky case specification.

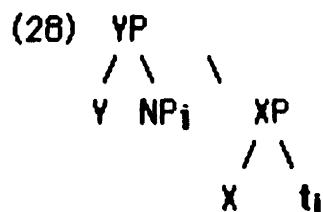
## 5.2.2 With Movement

### 5.2.2.1 NP-movement as (+case, -case)

The second source of assignment-induced multiple case involves movement. If NP originates in a case-marked argument position and then moves to a



different case-marked argument position, it is subject to multiple case assignment. For example, in (28) we show a NP which originates as the object of a case-assigner, X, and moves to the position of object of another case assigner, Y:



In this situation, NP may accumulate case from both X and Y.

#### 5.2.2.1.1 Theoretical Objections

There are two major theoretical problems with this kind of movement. First, movement from an argument position to an argument position may violate the Theta-Criterion (Chomsky 1981:36), which constrains the relationship between arguments and thematic ("theta") roles:

- (29) **Theta Criterion**  
 Each argument bears one and only one  $\theta$ -role,  
 and each  $\theta$ -role is assigned to one and only one argument.

Chomsky (1986:97) reformulates the theta-criterion in terms of positions in argument chains, where a chain is a history of movement.

- (30) **Theta Criterion**  
 Each argument  $\alpha$  appears in a chain containing a unique visible  $\theta$ -position P, and each  $\theta$ -position P is visible in a chain containing a unique argument  $\alpha$ .

This definition allows assignment of more than one theta role to a single position, but prohibits the assignment of theta roles to more than one position in the chain.

If one  $\theta$ -role is assigned to NP in its DS position, and another  $\theta$ -role is assigned to NP in its SS position, then the resulting chain bears two  $\theta$ -roles and violates the theta-criterion. Simple movement from one theta-marked argument position to another is thus ruled out as a source for movement-derived multiple case assignment. The projection principle (Chomsky 1981: 29) enforces the theta-criterion at DS, so that an argument NP cannot originate in a non-theta-position. Thus, NP-movement can only take place from a theta-position to a non-theta position.

Second, movement from a case-marked position to another case-marked position is specifically prohibited by the Chain Condition. Chomsky (1986:135-137) suggests that an A-Chain (i.e., a chain formed by movement to an argument position) must have exactly one case-marked position. Together with the theta-criterion, this requirement forms the Chain Condition:

(31) Chain Condition

If  $C = (\alpha_1, \dots, \alpha_n)$  is a maximal CHAIN<sup>4</sup>, then  $\alpha_n$  occupies its unique  $\theta$ -position and  $\alpha_1$  its unique Case-marked position.

That is, well-formed A-chains will take the form:

---

<sup>4</sup>The term CHAIN refers to A-Chains and chains formed by argument-expletive linking.

(32) ( NP<sub>i</sub> , t<sub>i</sub> )  
       case θ

The Chain Condition ensures that NP-movement will originate in a non-case-marked position and terminate in a case-marked position, ruling out any possibility of assignment-induced, movement-derived multiple case.

Finally, note that the Chain Condition defines a configuration in which NP-movement is forced by the Case Filter: NP would lack case if it remained in its base position.

#### 5.2.2.1.2 Examples

According to standard analyses, these conditions for NP movement are met in unaccusatives, passives, and raising to subject constructions.

##### 5.2.2.1.2.1 Unaccusatives

Unaccusative verbs are generally assumed to have the property of assigning case but no theta-role to their subjects, while assigning theta-role but no case to their objects.

(33)                                    -- θ -->  
       NP<sub>i</sub>                    V                    t<sub>i</sub>  
                                  <-- nom ---

As discussed above, a well-formed chain requires a terminal theta-position and a head case-position. Therefore, it has been assumed that unaccusative verbs like appear require either movement of the object to subject position, or linking of the object with an expletive in subject position.

- (34) \* appeared three men
- (35) three men appeared
- (36) there appeared three men

5.2.2.1.2.2 passives

LGB Account of Passive

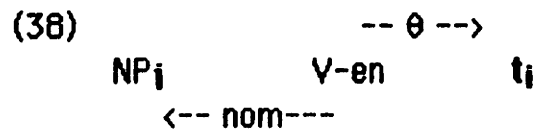
Chomsky's (1981:124) account of passivization relies on the Case Filter.<sup>5</sup>

Chomsky claims that the crucial properties of the passive are:

- (37) I. [NP, S] does not receive a  $\theta$ -role
- II. [NP, VP] does not receive Case within VP,  
          for some choice of NP in VP

Since, by II, no case is assigned to the object position of a passive verb, the object must move to the subject position or violate the case filter. This movement cannot be to a  $\theta$ -marked position without violating the theta-criterion (see above). Property I ensures that movement to subject position will not violate the theta-criterion.

We thus have the following structure for passive:




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<sup>5</sup>Cliticization treatments of passive such as those of Roberts ( ), Baker ( ), and others are beyond the scope of this chapter. Roberts' analysis is intricate: He argues that both actives and passive assign subject and object theta-roles. He takes the passive morpheme -en to be a clitic, generated in INFL and linked to an empty category in subject position. The empty subject gets the subject theta-role, and the overt object gets the object theta-role. The clitic -en obligatorily adjoins to the verb, where it takes the ACC case, as required to make the subject theta-chain visible. Meanwhile, the empty subject adjoins to the VP, leaving the subject position free for the DS object, which must move to get case.

### 5.2.2.1.2.3 raising to subject

The case filter is used to explain the absence of overt subjects with English infinitives. For example, the constructions in (39) - (40) are said to be ungrammatical because the subject of the infinitive lacks case.

- (39) \* The canoe to sink now would be unfortunate
- (40) \* I hope the police to ignore me
- (41) \* seems Gretchen to like archery

If another means of case assignment is provided, the infinitive can have an overt subject:

- (42) For the canoe to sink now would be unfortunate
- (43) I want the police to ignore me
- (44) Gretchen seems to like archery

The preposition for assigns case to the canoe in (39). The verb want in (43), unlike the verb hope in (40), can exceptionally case mark the embedded subject of the infinitive. In (44), NP-movement puts Gretchen in the domain of nominative case from the INFL of seems.<sup>6</sup>

The case filter analysis of infinitives explains the absence of overt subjects by claiming that a [-tns] INFL is unable to assign nominative case.

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<sup>6</sup>An additional function of the case filter which should be noted here is distinguishing between NPs, which require case, and clauses, which do not require case. Thus, the case filter analysis derives the contrast between (i) and (ii), and between (iii) and (iv):

- (i) \* it seems the fact that the earth is flat
- (ii) it seems that the earth is flat
- (iii) \*it was generally believed the fact that the earth is flat
- (iv) it was generally believed that the earth is flat

Sentences like (45) are analyzed as subject-to-subject raising.

(45) Diane seems to underestimate Stephanie

The structure for (45) is thus (46):

(46)

NP <sub>i</sub>	I	''	[ <sub>IP</sub>	t <sub>i</sub>	to-VP	]
<--nom--					<--- θ --->	

A raising verb like seem takes an IP complement (in earlier terminology, deletes S'), and is thus able to govern the embedded subject position. The raising verb does not, however, assign case to the embedded subject position; the subject NP must raise to the matrix subject position, where it is assigned nominative case by INFL.

### 5.2.2.2 NP-movement as (+case, +case)

In the last section we reviewed the standard analyses of NP-movement in unaccusatives, passives, and raising to subject constructions. These analyses conform to the Chain Condition requirement that NP-movement must originate in a non-case-marked position. In this section we will examine evidence that NP-movement can originate in a case-marked position. Such movement creates the potential for multiple case assignment, and we observe that inherent case is retained under NP-movement. We note that the assignment of case to the base position undermines the Case Filter explanation of movement in these constructions.

### 5.2.2.2.1 unaccusatives

Belletti (1988) argues that, while an unaccusative verb lacks the ability to assign structural case to its object, it retains the ability to inherently case-mark an object. She claims that all verbs have the option of assigning inherent partitive case; unaccusatives retain this partitive case-marking ability, so that the objects of unaccusatives must be indefinite.

(47) \*there appeared the three men

If the unaccusative verb retains an ability to assign inherent case, NP-movement from the object position of an unaccusative creates a multiple case assignment.

(48)

			--- $\theta$ --->	
			-- part-->	
NP <sub>i</sub>	I	V		t <sub>i</sub>
	<-- nom---			

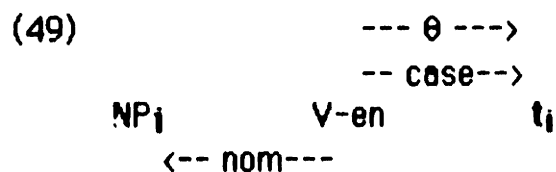
Belletti claims that inherent case can "combine" with structural case in such constructions; she does not discuss how this combination results in a particular morphological form.

Several questions come to mind about this analysis. First, why is partitive the only inherent case observed in this situation? Why don't we find unaccusatives with dative objects, for example? Second, is partitive really an inherent case? We noted in Chapter Four that partitive case in Finnish patterns with nominative and accusative in the formation of free relatives. Third, if accusative is a structural case, assigned by default, how can

unaccusativity be a lexical property of certain verbs? We leave these questions open.

5.2.2.2 passives--inherent case retained

If the passive verb retained its ability to case-mark its object, passive movement would create a chain with two case-marked positions:



At DS, the passive verb would assign case to NP. At SS, INFL would assign nominative case to NP. We discuss evidence from German and Latin that some passive verbs do retain the ability to case-mark their objects.

German

In German, accusative objects become nominative when passivized, but dative objects remain dative. In the following examples, the verb *lieben* 'love' takes an accusative object, while the verb *helfen* 'help' takes an inherent dative object.<sup>7</sup>

(50) er wird geliebt  
he(nom) is loved

(51) \*ihn wird geliebt  
him(acc) is loved

---

<sup>7</sup>Zaenen, Maling, and Thráinsson (1985) argue that, in contrast to Icelandic non-nominative subjects, the retained oblique NPs in German passives are not syntactic subjects. This would remove them from the domain of the nominative case assignment.



(52) \*er wird geholfen  
he(nom) is helped

(53) ihm wird geholfen  
him(dat) is helped  
[Belletti (1988) p. 7]

### Latin

Inherent case is also retained in Latin impersonal passives.<sup>8</sup> The following examples are from Jensen (1983):

(54) amici nostri nobis persuaserunt  
friends our us(dat) persuaded  
'our friends persuaded us' [Jensen p.2]

(55) nobis ab amicis persuasum est  
us(dat) by friends(abl) persuaded(neuter) is  
'we were persuaded by our friends'  
[Jensen p.2, "adapted from Colebourne 1948:81"]

(56) \*nos persuasi sunt ab amicis  
we(nom) persuaded(pl) are by friends(abl) [Jensen p. 20]

Data from Latin ditransitive verbs suggests that passivization effects only structural case. Jensen notes that the verb gogo 'present' "takes either the

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<sup>8</sup>Jensen also notes that Latin deponents, active verbs with passive morphology, violate Chomsky's (1981:126) "uniformity" condition, which requires morphological processes to uniformly assign, block, or transmit theta-roles. Jensen (1983), p.4 argues that passive morphology and the assignment of a subject theta-role are independent lexical properties of verbs, with deponents assigning theta-roles to both subject and object. Thus, passivization of deponent verbs is blocked by the theta criterion.

(i) Cicero Caesarem sequitur  
(nom) (acc)

'Cicero follows Caesar'

(ii) \*Caesar sequitur a Cicerone

dative of the person and the accusative of the thing ... , or else the accusative of the person and the ablative of the thing, ..." (p. 17) In either case, only the accusative argument may passivize:

- (57) donat coronas suis  
'he presents wreaths to his men'
- (58) coronae donantur militibus  
'wreaths are presented to the soldiers'
- (59) donat suos coronis  
'he presents his men with wreaths'
- (60) milites donantur coronis  
'the soldiers are presented with wreaths'  
[Jensen pp. 17-18, "Allen and Greenough 1901:220"]

The observation that structural and not inherent case is affected by passivization can be formalized in a variety of ways.<sup>9</sup> Belletti (1988) argues that passivization absorbs only structural case, leaving inherent case intact. Franks (1981) derives the German dative passives by levels of case assignment: inherent dative case is assigned to the NP object at DS, prior to passive movement, and is therefore retained. Structural assignment of accusative case to the NP object is prevented, since it follows passive movement.

Chomsky (1981:55) notes the resemblance of passive participles (John was killed) to predicate adjectives (John was sad). English passive participles

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<sup>9</sup>accusative is retained in Ukrainian passivization (see below).

share the adjectival quality of failing to assign case to an object.<sup>10</sup> In general, adjectives and nouns tend to be unable to govern structural cases, although they may sometimes govern inherent cases. However, there are some exceptions to this generalization: some Swedish adjectives govern accusative case (Platzack (TLR 2)), and Icelandic nominalizations do not retain quirky case (Yip, Maling, and Jackendoff (1987)).

### 5.2.2.3 infinitives

If the infinitive were able to assign case to its subject in the embedded clause, raising to subject position would create a multiple case assignment:

(61) <--- θ --->  
<-- case -->  
 NP<sub>i</sub>          INFL          V I<sub>IP</sub>    t<sub>i</sub>          to-VP ]  
<----- inherited case ----->  
<--nom-->

#### 5.2.2.3.1 infinitives--raising of quirky subjects

We saw in section \_\_\_\_ that the subject of an Icelandic infinitive may bear quirky case in exceptional case marking constructions. Yip, Maling, and Jackendoff (1987:240) show that a quirky case is also maintained in Icelandic raising to subject constructions.

(62) barninu batnaði veikin  
 the-child(dat) recovered-from the-disease(nom)

---

<sup>10</sup>Chomsky distinguishes truly adjectival lexical passives such as untaught from syntactically derived passive participles like killed, suggesting that "syntactic passive participles are not adjectives ([+N, +Y]) but rather neutralized verb-adjectives with the feature structure [+Y]. ... Thus syntactic passive participles are sometimes treated as adjectival and sometimes as verbal. ..."

(63) barninu i virtist trace batna veikin  
the-child(dat) seemed to-recover-from the-disease(nom)

#### 5.2.2.3.2 infinitives as case assigners

In some languages, infinitives may have overt subjects in non-quirky case.

#### Latin

Latin infinitives may appear with overt subjects. The subject of a Latin infinitive stands in accusative case:

(64) puerōs esse bonōs volumus  
acc acc  
'we want the boys to be good' (Ullman p. 493)

In this example, we may argue that the matrix verb volere 'want' assigns accusative case to the subject of the infinitive. Thus, sentence (64) would parallel the exceptional case marking (ECM) by want in English:

(65) we want them to be good

Maraldi (1981) suggests that ECM underlies all instances of accusative-with-infinitive in Latin. But the presence of an accusative subject cannot always be attributed to exceptional case marking. Jensen (1983) notes that "[i]n Latin, the subject of an infinitive is always in the accusative, whether or not that subject appears in a position that can be governed by a higher verb .... Specifically, such clauses appear in object position, ... as the subject

of the matrix verb, ... and as predicate nominative, ..." (p. 26) He gives the following examples:<sup>11</sup>

- (66) *Caesarem adesse nuntiavit*  
'he reported that Caesar was present'
- (67) *Caesarem adesse nuntiatum est*  
'it was reported that Caesar was present'
- (68) *rumor erat Caesarem adesse*  
'there was a report that Caesar was present'

Maraldi (1981), in arguing against a raising-into-object-position analysis, offers further evidence that the matrix verb cannot be responsible for the accusative of subjects.<sup>12</sup> Maraldi points out that accusative-with-infinitive constructions occur as complements to passive verbs and intransitive verbs, which cannot take accusative objects, and that

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<sup>11</sup>from Allen and Greenough (1901:287). Note that the corresponding English infinitives are odd, even when the complementizer *for* is used:

(i) \**for Caesar to arrive was announced*

In general, English infinitives do not refer to specific events. Contrast (i) with the nominalization in (ii).

(ii) *Caesar's arrival was announced*

In certain circumstances, either a nominal or an infinitive may be used:

(iii) *for Caesar to leave was unexpected/unprecedented/shocking/rude*

(iv) *Caesar's departure was unexpected/unprecedented/shocking/rude*

However, (iii) and (iv) have slightly different meanings. In (iii), the fact that Caesar left was considered rude, etc. In (iv), it may be the manner of his departure which was considered rude or shocking.

In a non-thematic position, only the infinitive may be used.

(v) *it was impossible for Caesar to leave*

(vi) \**it was impossible Caesar's departure*

Only the nominal may be used in a clearly thematic context.

(vii) \**for Caesar to leave shocked the Senators*

(viii) *Caesar's departure shocked the Senators*

<sup>12</sup>Maraldi fails to note that these data pose as much trouble for the ECM analysis as for the raising analysis.

**accusative-with-infinitive constructions also co-occur with accusative objects of transitive verbs:**

**(69) dicitur eos venisse**  
**'it is said that they have come'**

**(70) manifestum est eum abisse**  
**'it is clear that he has gone'**

**(71) constat te bonum esse**  
**'it is certain that you are good'**

**(72) eam admoneo eos profectos esse**  
**'I warn her that they have left'**

**In addition, Jensen (1983) notes that we find verbs taking accusative-with-infinitive complements which normally take objects in an oblique case:**

**(73) animus meminit praetertorum (gen pl)**  
**'the soul remembers the past' (Jensen p. 27: C. Div 1, 30)**

**(74) memini Pamphylum ... mihi narrare**  
**acc dot inf.**  
**'I remember that Pamphylus told me ...' (Jensen p. 27: Verr. 2,4 S32)**

**All of these constructions suggest that the accusative subject of Latin infinitives must be assigned by the infinitive itself.**

Why does Latin allow overt subjects with infinitives? Perhaps the infinitive Latin INFL is "rich" enough to license a subject.<sup>13</sup> Latin

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<sup>13</sup>Haegeman (1985) observes that INFL may contain [ $\pm$ Tense] and [ $\pm$ AGR], creating four possible combinations, of which [+Tense, +AGR] represents finite, tensed clauses, and [-Tense, -AGR] represents "pure" infinitivals. A [-Tense, -AGR] infinitive may not assign nominative case to its subject. Haegeman argues that a [+Tense, -AGR] INFL allows nominative case assignment in Flemish. For example, a nominative subject may appear with an infinitive clause following the preposition *mee* 'with':

- (i) *mee ik da te zeggen hee-se dat hus gekocht*  
with I that to say has-she that house bought  
'because of my saying that she has bought that house'

A [-Tense, +AGR] infinitive may be able to assign nominative case via AGR. This possibility is instantiated in European Portuguese. Raposo ( ) notes that the inflected infinitive shows person agreement but not tense. He suggests that Portuguese inflected infinitives assign nominative case via AGR, provided that AGR itself is case-marked.

- ( ) *será difícil [eles aprovarem a proposta]*  
'It will be difficult they to-approve-Agr the proposal'

In contrast, non-inflected infinitives do not allow overt objects:

- ( ) \**será difícil [eles aprovar a proposta]*

infinitives have tense and voice, as shown in the following paradigm (from Ullman, et al. (1930)):

	Active	Passive
Present	parāre 'to prepare'	parārī 'to be prepared'
Perfect	parāvīsse 'to have prepared'	parātus esse 'to have been prepared'
Future	parātūrus esse 'to be going to prepare'	(parātum īrī) 'to be going to be prepared'

In addition, the participial forms show agreement with the subject in case, number, and gender.

Latin and Greek infinitives occur with accusative subjects; Russian infinitives occur with dative subjects; Flemish and Portuguese infinitives occur with nominative subjects. We suggest below that these are structural cases; we do not address the question of why the infinitive assigns a non-nominative case.

#### 5.2.2.2.3.3 Raising with Case-assigning Infinitives

Saltarelli (1976:93) cites the following example of the Latin accusative-with-infinitive construction. We assume that no raising has taken place.

- 
- ( ) será difícil [PRO aprovar a proposta]  
'It will be difficult to-approve the proposal'  
[Raposo p. 86]



(75) traditur Homerum caecum fuisse  
is-said H(acc) blind(acc) to-be(perfect)  
'it is said that Homer was blind'

Saltarelli (1976:93) cites the following examples of the Latin nominative-with-infinitive construction. We assume that the embedded subject has been raised to matrix subject position.

(76) traditur Homerus caecus fuisse  
is-said H(nom) blind(nom) to-be(perfect)  
'Homer is said to have been blind'

(77) Homerus traditur caecus fuisse  
H(nom) is-said blind(nom) to-be(perfect)  
'Homer is said to have been blind'

Similar facts obtain in Classical Greek (Lieber 1978).

### 5.3 Explaining the contrast in case transmission from NP-t and wh-t

#### 5.3.1 Analysis

Recall that, in Chapter Four, we stipulated obligatory transmission of case from wh-trace to its operator. In the last section of this chapter, we saw that NP-trace does not share this requirement: Structural case is not transmitted by NP-trace (although inherent case is retained by a moved NP). Various proposals have been made to explain the wh-trace/NP-trace distinction. Siegel (1974), cited in Chomsky (1981:293), suggests that NP-movement leaves case behind on its trace.<sup>14</sup> Riemsdijk and Williams (TLR 1)

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<sup>14</sup>Lamontagne and Travis ( ) make quite different assumptions. They suggest that NP is dominated by a case-phrase, KP; move-@ may thus apply to either NP or KP. NP movement, in their view, is the movement of an entire KP: In a

postulate a separate syntactic level, NP structure, which intervenes between NP-movement and wh-movement. Case assignment, they claim, is "a property of NP-structure." They argue that all NPs "receive case according to their position after move NP. The case assigned to a wh-NP will simply be carried along under move wh. Thus there is no need for a convention to the effect that a wh-NP in COMP inherits the case from its trace." (p 175) Riemsdijk and Williams do not discuss the retention of inherent case under NP-movement.

Franks (1981) argues that case-transmission follows from the ordering of case checking and movement rules. He claims that inherent case checking precedes movement, which in turn precedes structural case checking. Finally, a feature passing mechanism transmits case features from empty nodes to coindexed nodes. This feature passing only has an effect on NPs which have not been subject to any other case checking; i.e., ungoverned NPs. He concludes that the fact "[t]hat wh-words always get their case from trace is an artifact of their always being moved to COMP, which is an ungoverned position." (p. 89).

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non-case-marked environment, K is empty; the entire KP must move so that K can be properly governed (through coindexation with INFL). Thus, the Case Filter reduces to the empty category principle, which requires proper government of empty categories. Wh-movement in English, they claim, is extraction of NP from within KP. The head, K, must remain behind in the case-marked position to get case features from the verb.

Our analysis is similar to that of Franks. We argue that inherent case assignment precedes movement, so that a moved NP retains inherent case. An NP which is not assigned inherent case may either move to a structurally case-marked position, or it may get case from its structurally case-marked trace. Wh-movement differs from NP-movement in that wh-movement is movement to a non-argument position; this means that the wh-word is not assigned case within its clause. We suggest that the Case Filter applies cyclically, after move- $\alpha$ . We assume that CP, but not IP, is a cyclic node. A wh-word in a non-argument position must either bear its own inherent case, or it must acquire case from its structurally case-marked trace. Either way, a wh-word must originate in a case-marked position. In contrast, an NP moved to an argument position will either have its own inherent case, or it will be assigned structural case in its derived position. NP-traces are thus free to occupy case-marked or non-case-marked positions.

We now consider the possibilities for movement and case-marking within one cycle. The theta-criterion ensures that movement of an argument is from a theta-position to a non-theta-position. An argument must be in a theta-position at DS to satisfy the projection principle. An argument cannot move from a theta-position to another theta-position without violating the theta-criterion.

The DS position of the moved element may be a structural-case position, an inherent-case position, or a non-case-marked position. The SS position of the moved element may be either an argument position or a non-argument position. The SS position of the moved element cannot be an inherent-case position, because it is not a theta-position. If the SS position is an

argument position, then it may be a structural-case position.<sup>15</sup> If the SS position is a non-argument position, then it may not be a structural-case position. (Note that any possible case marking of the NP from the higher clause does not take effect until the next cycle.) We chart the possibilities in (78). The assigned cases are underlined.

(78) Movement and Case Assignment Possibilities

	DS: A-Position θ-position	SS: A-position non-θ-position	SS: A'-Position non-θ-position
a.	<u>inherent case</u>		no case
b.	<u>structural case</u>		no case
c.	no case		no case
d.	<u>inherent case</u>	structural case	
e.	structural case	<u>structural case</u>	
f.	no case	<u>structural case</u>	

Possibilities a. and b. are the standard instances of wh-movement, with either structural or inherent case transmitted to the wh-element from its

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<sup>15</sup>Movement to a non-case-marked SS argument position would give us three additional possibilities:

(i) Additional Movement and Case Assignment Possibilities

	DS: A-Position θ-position	SS: A-position non-θ-position	SS: A'-Position non-θ-position
g.	<u>inherent case</u>	no case	
h.	<u>structural case</u>	no case	
i.	no case	no case	

We have no examples of such constructions; however, we predict that case transmission would be forced in possibilities g. and h., just as in the corresponding wh-movement possibilities, a. and b. (see below). Possibility i. would be ruled out by the case filter.

trace. Possibilities c. is ruled out by the case filter. Possibility f. is the standard instance of NP-movement, with the NP moving from a non-case-marked position to a structurally case-marked position.

The Chain Condition constrains movement to an A-position; it therefore applies to possibilities d., e., and f. Of these, the Chain Condition allows only possibility f., with movement from a non-case-marked position to a case-marked position. We suggest that the Chain Condition is invalid; in particular, we suggest that possibilities d. and e. are well-formed. In the next paragraphs we review our derivation of possibilities a. through f.

In the system of case-marking we propose, we do not distinguish NP-movement from wh-movement per se. In particular, we do not require or prohibit the transmission of case from trace. We characterize transmission from trace as a universally available, optional case agreement between a trace and its antecedent. We rely on the case-assigning properties of argument and non-argument positions to determine the case-marking and case-transmitting possibilities for move- $\alpha$ .

We claim that inherent case is assigned to NP at DS, and is carried along to the SS position.<sup>16</sup> An inherently case-marked NP may move to a non-case-marked position (possibility a.). An inherently case-marked NP may also move to a structurally case-marked position (possibility d.). We assume that structural case assignment is optional, so that the inherently case-marked

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<sup>16</sup>We assume that the trace is also marked with this inherent case; however, this assumption is not crucial to our analysis.

NP need not be assigned the additional, structural case-marking. The potential multiple case assignment is resolved by prevention of the structural case assignment.

If the NP originates in a structurally case-marked position, no case assignment takes place at DS. If the NP subsequently moves to a non-case-marked position (possibility b.), it receives no case marking. The trace of NP, however, receives the structural case marking of the DS position. In this situation, case must be transmitted from trace to avoid a violation of the case filter.

Next consider possibility e. If an NP moves from a structurally case-marked position to a structurally case-marked position, NP receives the structural case of the SS position, while its trace receives the structural case of the DS position. In this situation, transmission of case from trace is optional. Typically, case is not transmitted from trace, and NP exhibits the structural case assigned in its SS position.<sup>17</sup> The potential multiple case assignment is resolved by prevention of the case agreement between NP and its trace.

If NP originates in a non-case-marked position, it may move to a structurally case-marked position (possibility f.). The trace of NP remains

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<sup>17</sup>If case is transmitted from trace, NP accumulates both structural cases. If such a multiple case assignment is accommodated morphologically, we cannot distinguish it from its non-transmission counterpart. If such a multiple case assignment cannot be accommodated morphologically, it will be ungrammatical; however, the non-transmission counterpart provides a grammatical alternative.

un-case-marked. If the non-case-marked NP does not move to a case-marked position (possibility c.), neither NP or its trace receives case, and the construction is ruled out by the Case Filter.

### 5.3.2 Derivations

#### 5.3.2.1 Review of Wh-Movement

In Chapter Four we simply stipulated that wh-movement required case-transmission from trace. We now explain this requirement by cyclic application of the case filter, as outlined for (78)a. and (78)b., above. A wh-trace must transmit case because its antecedent is in an A'-position and cannot be assigned case. A wh-word in [spec, CP] is accessible to external case assignment, but not until after cyclic application of the case filter has forced case transmission from trace. External case marking therefore creates multiple case assignments.

External case marking occurs when a relative pronoun undergoes case agreement with the head of the relative clause. This case agreement rule is normally optional, and potential multiple case assignment may be resolved by preventing case agreement. If case agreement between the head and the relative pronoun is not prevented, the relative pronoun accumulates a multiple case assignment, as shown below:

(79) agreement-induced multiple case

First Cycle

[ <sub>NP</sub> NP	[ <sub>CP</sub> wh <sub>i</sub> [	[ <sub>IP</sub> ... t <sub>i</sub> ... ]	]	
SS: Assignment				<u>case X</u>
Transmission				<u>case X</u>

Second Cycle

	$[_{NP}$ NP	$[_{CP}$ wh <sub>i</sub> [ $[_{IP}$ ... t <sub>i</sub> ... ] ]	
SS: Assignment	<u>case Y</u>	case X	case X
Transmission		<u>case Y</u>	

We argued in Chapter Four that such multiple case assignment to the relative pronoun may be resolved by language-specific reduction rules. Reduction rules are subject to the constraints of recoverability, so that the least informative case is the one removed, and highly informative cases may be impossible to remove. This creates case hierarchies of the form, less informative < more informative.

We noted above that case agreement between the head NP and the relative pronoun is normally optional and preventable. However, if the head NP is pro, case agreement may be required for pro-identification. Thus, the derivation in (79) is representative of both case attraction in headed relatives and case matching in free relatives.

The case-in-COMP phenomenon, in which a wh-phrase picks up a case as it moves through COMP, can be explained in the same terms.

(80) Case in COMP

First Cycle

	$[_{CP}$ [ $[_{IP}$ v [ $[_{CP}$ wh <sub>i</sub> [ $[_{IP}$ ... t <sub>i</sub> ... ] ] ] ] ] ]	
SS: Assignment		<u>case X</u>
Transmission	<u>case X</u>	

Second Cycle

$[_{CP}$ [ $[_{IP}$ v [ $[_{CP}$ wh <sub>i</sub> [ $[_{IP}$ ... t <sub>i</sub> ... ] ] ] ] ]
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Subject-to-subject raising requires clause reduction (i.e., the absence of a CP node). The subject of the infinitive is not case-marked, and must move to a case-marked position. The raising verbs provide a suitable [+case, -T] subject position. Since the embedded clause is an IP, not a CP, movement to the subject position of the matrix clause takes place within one cycle. Nominative case is assigned, and the case filter is satisfied.

(90) subject-to-subject raising

	NP <sub>i</sub>	I	V	[	IP	t <sub>i</sub>	I[-tns]	...	]
SS: Assignment	nom					---			

(91) Dianne seems to underestimate Stephanie

If the embedded clause were not reduced (i.e., if the embedded clause were a full CP), the case filter would apply before movement to the subject position of the matrix clause. The presense of the complementizer, that, indicates the CP status of the embedded clause.

(92) illicit subject-to-subject raising

First Cycle	I	V	[	CP	that	[	IP	NP	I[-tns]	...	]	]
SS: Assignment											---	
Case Filter											*	

(93) \* It seems that Dianne to underestimate Stephanie

(94) \* Dianne seems that to underestimate Stephanie

The same restriction applies to wh-movement:

(95) illicit wh-raising

First Cycle

	I	V	[ <sub>CP</sub> that [ <sub>IP</sub> wh I(-tns) ... ] ]
move to [spec, CP]	I	V	[ <sub>CP</sub> wh that [ <sub>IP</sub> t <sub>i</sub> I(-tns) ... ] ]
SS: Assignment			---
Case Filter			*

(96) \* it seems who that to dislike this conclusion

(97) \* who seems that to dislike this conclusion?

### 5.3.2.3.1 Raising with Quirky-Case Subjects of 5.3.2.3.2 Infinitives

Recall that a quirky case is maintained under subject-to-subject raising. The raising verb takes an IP complement, so the assignment of case to the subject of the infinitive and the assignment of case to the subject of the matrix verb take place on the same cycle.

(98) raising a quirky-case subject

	I	V	[ <sub>IP</sub> NP I(-tns) ... ]
DS: Assignment			<u>case X</u>
	NP <sub>i</sub>	I	V [ <sub>IP</sub> t <sub>i</sub> I(-tns) ... ]
	case X		case X
SS: Assignment	(nom)		
	(prevented)		

The construction is analogous to the quirky passive. The inherent case is carried along with NP to subject position. Structural case assignment of nom is optional, so the potential multiple case assignment case be prevented. Again, as with the quirky passive, there is no case filter motivation for movement.

### 5.3.2.3.3 Raising with Case-assigning Infinitives

We assume that the case-assigning infinitives assign a structural case to their subjects. The raising verb takes an IP complement, so the assignment of case to the subject of the infinitive and the assignment of case to the subject of the matrix verb take place on the same cycle. There is no case filter motivation for movement; raising is optional. If no movement takes place, the NP is assigned (special) structural case by the infinitive.

(99) case-assigning infinitive, no movement

I V [IP NP I[-tns] ... ]

SS: Assignment case X

For example, Saltarelli (1976:93) cites the following example of the Latin accusative-with-infinitive construction. We assume that the embedded infinitive assigns accusative case to its subject.

(100) traditur Homerum caecum fuisse  
 is-said H(acc) blind(acc) to-be(perfect)  
 'it is said that Homer was blind'

If raising takes place, the infinitive assigns (special) structural case to the trace, while the raising verb assigns nominative case to the raised NP. Transmission of case from trace is unnecessary, and would typically be prevented. This is an example of construction (78)e.

(101) raising from a case-assigning infinitive

NP<sub>i</sub> I V [IP t<sub>i</sub> I[-tns] ... ]

SS: Assignment nom case X  
 Transmission (case X)  
 (prevented)

For example, Saltarelli's (1976:93) cites the following examples of the Latin nominative-with-infinitive construction. We assume that the embedded subject has been raised to matrix subject position.

(102) traditur Homerus caecus fuisse  
is-said H(nom) blind(nom) to-be(perfect)  
'Homer is said to have been blind'

(103) Homerus traditur caecus fuisse  
H(nom) is-said blind(nom) to-be(perfect)  
'Homer is said to have been blind'

#### 5.3.2.3.4 A Problem: Control Structures

The analysis we have given for case-marking infinitives raises problems for control structures. The evidence from predicate adjectives suggests that the infinitive assigns case to its (empty) subject in object control sentences, but not in subject control sentences. This creates two problems. One, how can the empty subject receive case; and, two, what distinguishes the subject control constructions from the object control constructions.

First, note that the predicate adjective in an object control sentence appears to agree with the (empty) subject of the case-marking infinitive. For example, Russian infinitives can have dative subjects (Comrie (1974)). When a predicate adjective is used in an object control structure, it appears in dative case.<sup>1</sup>

(104) *my poprosili ivana pojti odnomu/\*odnogo*

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<sup>1</sup>The predicate adjective *odin* 'alone' is used because it must agree in case with its subject. Other Russian predicate adjectives may stand in instrumental case.

we asked Ivan(acc) to-go alone(dat/\*acc)  
'we asked Ivan to go alone' [Comrie (1974:129)]

The dative on the predicate adjective suggests the presence of a dative subject. Subject control constructions, however, show no evidence of a case-marked empty subject. Predicate adjectives in subject control constructions exhibit only nominative case.

(105) vanja mozet prijti odin/\*odnomu  
Vanja(nom) can to-come alone(nom/\*dat)  
'Vanja can come alone' [Comrie (1974:127)]

An object control structure in English is assumed to contain a PRO subject:

(106) NP1 I V NP2 [<sub>IP</sub> PRO I[-tns] ... ]

However, PRO must be ungoverned, and hence, not case-marked. We could instead postulate a small pro subject for the case-marking infinitives. But then we might expect predicate adjectives to agree with a pro subject in subject control constructions, as well. We could suggest that subject control constructions lack an embedded subject altogether; this runs into other problems which we will not pursue here.

#### 5.3.2.4 Exceptional Case Marking

Exceptional Case Marking also requires clause reduction in our analysis. Exceptional case marking verbs subcategorize for IP complements. The subject of the embedded infinitive fails to get case in its own clause, but since there is no CP, the first cycle includes the matrix verb. The subject



position is [spec, IP], and therefore accessible to case marking by the matrix verb.

(107) Exceptional case marking

	I	V	[ <sub>IP</sub>	NP	I[-tns]	...]
SS: Assignment				acc		

(108) Xilla expected me to misspell her name

However, another Exceptional Case Marking construction presents a problem for our analysis. Kayne (1983:111) gives the following French examples.

(109) \*je crois Jean être le plus intelligent de tous

(110) quel garçon crois-tu être le plus intelligent de tous?

Sentence (109) suggests that the verb croire 'believe' does not take an IP complement. If this is true, then our analysis will incorrectly rule out sentence (110), since, as Kayne notes, the wh-phrase does not receive case on the first cycle.

(111) ECM fails if V takes a CP complement

First Cycle

	I	V	[ <sub>CP</sub>	[ <sub>IP</sub>	wh	I[-tns]	...]
move to [spec, CP]	I	V	[ <sub>CP</sub>	wh	[ <sub>IP</sub>	t <sub>i</sub>	I[-tns]
SS: Assignment					---		
Case Filter					*		

We have no solution to this problem.

## 5.4 Conclusion

Our observations of percolation-, agreement-, and assignment-induced multiple case suggest a revised model of case mapping:

### (112) Revised Model of Case Mapping

#### I. DS

Inherent Case Assignment

#### II. SS (Cyclic)

Move- $\phi$

Structural Case Assignment (**prevention**)

Case Agreement--includes transmission from trace (**prevention**)

Case Filter

#### III. SS (Post-cyclic)

**Reduction**

#### IV. PF

a. Case-Inflecting Languages

Percolation to head and modifiers

**Accommodation**

b. Case-Agglutinating Languages

Case Spell-Out

Cliticization: peripheral, capital, or radical

We suggest that inherent case assignment is obligatory. This requirement derives from the association between inherent case and thematic roles. Thus, there is no prevention of inherent case assignment. We assume that inherent case is retained under movement. We leave open the question of whether the trace of movement retains inherent case.

We claim that the case filter operates cyclically, and forces transmission of case from an A-bar bound trace. We suggest that movement, case

assignment, and case agreement are in principle optional. Thus structural case assignment may be prevented, and typically is prevented in the presence of inherent case (although we claim that there is no principle which forces this prevention). Movement and case agreement may be forced to apply in order to satisfy certain requirements of the grammar. Movement from a non-case-marked position to a case-marked position is required to satisfy the Case Filter. Case agreement between an NP in an A-bar position and its trace is required to satisfy cyclic application of the Case Filter. Case agreement between a relative pronoun and a pro head of a relativized NP is required in order to properly identify pro (unless pro can be otherwise identified as the subject in a pro-drop language).

We suggest that reduction is a post-cyclic process (although it could perhaps be characterized cyclic). We claim that reduction is subject to a semantic constraint of recoverability, and hence operates to remove the less informative case in a multiple case assignment. We also claim that reduction is subject to language-specific constraints, and is not universally available.

We claim that the morphological character of case-inflecting languages requires percolation of case features from NP to N and its modifiers. We argue that there is no percolation of case to the complement of the head; hence percolation is not a source of multiple case assignment. We suggest that the morphological accommodation of grammatical features is a general morphological process, not specific to Case Theory. We suggest that accommodation involves lexical features and underspecification; we

consider a possible alternative to lexical features which formalizes the traditional concept of paradigm.

We suggest that case-agglutinating languages do not require percolation of case features, but rather spell out case features as a case category, K. We suggest that case layering is caused by the cliticization of this case category, rather than by multiple case assignment.

## APPENDIX A: LAYERED CASE

We distinguish case-inflecting and case-agglutinating languages. Realization proceeds differently for case-inflecting and case-agglutinating languages. Case-inflecting languages use case morphemes which are tightly bound to a nominal stem, so that case cannot be realized directly on a phrasal constituent but must be percolated to the  $X^{\circ}$  level. The input to the realization stage in a case-inflecting language therefore consists of an  $X^{\circ}$  category and its associated case features, which must be spelled out by a single lexical entry. Multiple case assignment is reflected at this stage as an accumulation of positive case feature values, and can only be accommodated if there is a lexical entry which is compatible with more than one positive case feature value.

In contrast, case-agglutinating languages use case morphemes which are more or less independent of nominal stems, so that case may be assigned and spelled out at the phrasal level. Case features are not percolated, but remain at the phrasal level. The input to the realization stage in a case-agglutinating language consists of an XP and its associated case feature values. The case features are spelled out as an independent case morpheme. We suggest that these languages have a distinct case-category K, which governs an NP complement to form a case phrase, KP (see Hale ( ), Lamontagne & Travis ( )). The case morpheme then cliticizes to the phrase at some level, according to the parameter of peripherality. When a nominal element occurs in multiple case assignment domains, the process of case-spelling and cliticization may be repeated, creating a layering of case morphemes.

A typical source of layered case in case-agglutinating languages is the possessor phrase. In many languages, possessors must be marked with genitive and with the case of the NP in which they occur, as in these examples from Old Georgian (Mel'c+uk (1986)):

- ( ) saxel-man mam-isa-man  
name ERG father GEN ERG  
'father's name'

and Dyirbal (Dixon (1969)):

- ( ) ... yara-nundjin-du guda-ngu ...  
man GEN ERG dog ERG  
'man's dog'

These constructions contrast with the Indo-European possessor phrase, in which the nominal complement is protected from any assignment or percolation of case from the external governor. The minimality condition (Chomsky 1986) in fact prevents government of the NP complement if the head N is considered to govern its complement. We suggest that the layering of case morphemes in possessor phrases is a morphological process of cliticization, not a multiple case assignment.

An important factor in the layering of case morphemes is peripherality. Hale (class lectures, 1986) distinguishes three types of case realization: radical, in which case appears on the head of NP and on its sisters; capital, in which case appears on the head alone; and peripheral, in which the case marking is external to the noun phrase. Radical case realization leads to

case layering as noted above. In peripheral realization, a possessor bears only the genitive case, as in this example from Huallaga Quechua (Weber (1983)):

- ( ) qam-pa waaka-yki-ta rikaa  
 you GEN cow 2p ACC I-see  
 'I see your cow(s)'

Peripherally realized case appears on the head noun in ( ), but it is actually attached to the entire phrase. The head noun may be moved or deleted, but the case marking remains. Deletion of the head noun causes a case layering:

- ( ) [qam-pa ø]-ta rikaa  
 you GEN ACC I-see  
 'I see yours'

Some layered case languages exhibit clausal case marking. Again, this may be peripheral, as in Huallaga Quechua:

- ( ) [juan-ta maqa-sha-n]-ta musya-:  
 John ACC hit SUB 3p ACC know-PAST-1  
 'I know that he hit John'
- ( ) [juan-ta maqa-sha-n]-pita aywa-ra-n  
 John ACC hit SUB 3p ABL go-PAST-3  
 'after he hit John, he left'

or it may be radical, causing layering within the clause, as in Kyardil (Evans (1985)):

- ( ) ngada murnmurdawa-th, [ngijin-inja thabuju-ntha thaa-thuu-nth]  
 I:NOM rejoice-ACT my-COBL E.Br.COBL return-FUT-COBL

'I am glad that my big brother is coming back'  
[COBL=complementizing oblique]

Raising creates layered case in Cuzco Quechua, according to Lefebvre & Muysken ( ). The subject of a subordinate clause receives genitive case; if this subject is raised into the matrix clause, it also receives accusative case marking.

( ) mariya xwancho-q-to-nj muna-n ej platanu ranti-mu-na-n-to  
Maria Juan-GEN-ACC want 3 banana buy NOM 3 ACC  
'Maria wants Juan to buy bananas'

Lefebvre & Muysken argue that this accusative case is assigned indirectly: the main verb assigns accusative case to the subordinate clause, and the raised NP gets this case as it passes through "a COMP-like CASE position on S'." They suggest that the raised NP does not occupy an argument position at SS.

Weber (1983) notes a similar phenomenon in noun phrases in Huallo Quechua. According to Weber,

( ) If a modifier is moved from an NP, it is marked  
with the case of that NP

The original, peripheral case marking remains:

( ) ... huk-wan warmin tiyakurkusha runa-wan  
other COM his:wife she:was:living man COM  
'... his wife was living with another man'



### Postpositions and Postpositional Case

Some "secondary" (bimorphemic) cases are historically derived from a postposition and a case inflection which had been governed by that postposition. It can be difficult to distinguish postpositional cases from true postpositions. Georgian postpositional cases seem to be only partially assimilated. In particular, the postpositional cases are semi-peripheral. The basic case form must be realized on both head and modifier, but the postpositional morpheme appears only on the head. Thus, the modifier in ( ) exhibits only the genitive case which forms the base of the prodeessive postpositional case, while the head exhibits the full form of the prodeessive:

- ( )    cem-i megobr-is(a)-tvis  
         my GEN friend GEN  
                                 PRODESSIVE  
         'for my friend'

Similarly, only the final member of a coordination need be marked with a secondary case:

- ( )    ded    -isa-(tvis)    da    mam -isa-tvis  
         mother GEN                    and father GEN  
                                 (PRODESSIVE)                    PRODESSIVE  
         'for mother and father' [Vogt ( ), p. ]

Some linguists claim that at least some of the "postpositional cases" are really postpositions in Basque (Wilbur (1979)) and in Finnish (Carlson (1977)). Nevis ( ) shows that Estonian postpositions differ in their degree of cliticization.

## APPENDIX B: POLISH DATA--RELATIVE CLAUSES

### 1.0 Introduction

This appendix contains the complete set of Polish examples summarized in Chapter Two and Chapter Four. The examples are divided into the following subsections:

- 2.1 animate
  - 2.1.1 matching (✓)
  - 2.1.2 non-matching
    - 2.1.2.1 syncretic (?)
    - 2.1.2.2 non-syncretic (\*)
- 2.2 inanimate
  - 2.2.1 matching
  - 2.2.2 non-matching
    - 2.2.2.1 syncretic (✓)
    - 2.2.2.2 non-syncretic
      - 2.2.2.2.1 external case used (\*)
      - 2.2.2.2.2 internal case used (mixed)
- 2.3 preposed relative clauses

The notations in parentheses summarize the grammaticality judgements for the free relatives in each section.

### 1.1 Case Notation

We term the case assigned to the head noun the "external" case; we term the case assigned to the relative pronoun the "internal" case. The external and internal cases are typically realized morphologically on the head and the relative pronoun, respectively. In headed relatives, we represent the case relations with the notation:

( ) external [ internal

In free (headless) relatives, the relative pronoun can only realize one of these two cases; we term this the "resolution" case. We represent the case relations of the free relative with the notation:

( ) external [ internal = resolution

Morphological syncretism is represented with a slash:

( ) nominative [ accusative = nominative/accusative

The following case abbreviations are used:

( ) nom nominative  
acc accusative  
gen genitive  
dat dative  
ins instrumental

Locative case examples are not included. Since the locative occurs only with prepositions, the use of the locative introduces category conflicts as well as case conflicts; we restrict our attention here to case conflicts.

## 1.2 Grammaticality Judgments and Notation

The following scale of grammaticality judgments is used:

( ) ✓ , ✓? , ? , \*? , \* , \*\*

## 2.0 Data

### 2.1 animate

#### 2.1.1 matching (✓)

(X5) nom[nom=nom

✓kto nie przeczytał tej książki , dostanie dwórkę

'whoever hasn't read this book will get failed'

[Giegjo ( 1981:50)]

(X8) gen{gen=gen  
✓? Janek nienawidzi kogo Jerzy boi się  
'Janek hates the one whom Jerzy fears'

(X6') acc{acc=acc  
✓? Janek zaprasza kogo lubi  
'Janek invites whom (he) likes'

(X7') acc{acc=acc  
✓? Janek zaprasza kogo Jerzy lubi  
'Janek invites whom Jerzy likes'

(A18) dat{dat  
✓? on się podoba temu komu ja się podobam  
he self pleases that whom I self please

(A19) dat{dat=dat  
✓ on się podoba komu ja się podobam<sup>1</sup>  
he self pleases that whom I self please

## 2.1.2 non-matching

### 2.1.2.1 syncretic (?)

5a) gen{acc  
✓Janek nienawidzi tego, kogo maria lubi  
'Janek hates the one whom maria loves'

5b) gen{acc=gen/acc<sup>2</sup>  
?Janek nienawidzi kogo maria lubi  
'Janek hates whom maria loves'

### 2.1.2.2 non-syncretic (\*)

8a) nom{acc  
✓ten, kogo uderzyłam, krzychał  
'the one whom I hit shouted'

8b) nom{acc=acc

---

<sup>1</sup>If a language allows free relatives at all, it will allow them in constructions with the same verb in each clause. The fact that the cases match must be considered secondary here; other examples of animate, matching free relatives should be examined.

<sup>2</sup>But see section 2.2.2.3, below, on preposed relative clauses.

\*? kogo uderzyłam krzyczęłam  
'whom I hit shouted'

(8c) nom[acc=nom  
\*\* kto uderzyłam krzyczęłam  
'who I hit shouted'

6a) nom[acc  
✓ten kogo maria lubi nienawidzi janka  
'the one whom maria loves hates jank'

6b) nom[acc=acc  
\*\*kogo maria lubi nienawidzi janka  
'whom maria loves hates jank'

6c) nom[acc=nom  
\*\* kto maria lubi nienawidzi janka  
'the one whom maria loves hates jank'

IIIa) nom[dat  
✓? ten komu jan zazdrości sukcesu zostanie wybrany do komitetu  
'the one whom jan envies success will be elected to the committee'

IIIb) nom[dat=dat  
\*? komu jan zazdrości sukcesu zostanie wybrany do komitetu  
'whom jan envies success will be elected to the committee'

IIIc) nom[dat=nom  
\*\* kto jan zazdrości sukcesu zostanie wybrany do komitetu  
'whom jan envies success will be elected to the committee'

IVa) nom[ins  
✓? ten kim jan pogardza lubi marię  
'the one whom jan holds in contempt loves maria'

IVb) nom[ins=ins  
\* kim jan pogardza lubi marię  
'whom jan holds in contempt loves maria'

IVc) nom[ins=nom  
\*\* kto jan pogardza lubi marię  
'who jan holds in contempt loves maria'

9a) acc[nom]

✓uderzyłam tego, kto krzychał

'I hit the one who shouted'

9b) acc[nom=nom]

\*uderzyłam kto krzychał

'I hit who shouted'

(9c) acc[nom=acc]

\*\* uderzyłam kogo krzychał

'I hit whom shouted'

(A20) ins[dat]

✓? maria zajmie się tym komu Jan odmówi pomocy

Maria will take care self that whom Jan will refuse help

(A21) ins[dat=dat]

\* maria zajmie się komu Jan odmówi pomocy

Maria will take care self that whom Jan will refuse help

(A22) ins[dat=ins]

\*\* maria zajmie się kim Jan odmówi pomocy

Maria will take care self that whom Jan will refuse help

## 2.2 inanimate

### 2.2.1 matching

12a) acc[acc]

✓znalazłam to co Janek zgubił

'I found that which Janek lost'

12b) acc[acc=acc]

✓? znalazłam co Janek zgubił

'I found what Janek lost'

A1 ins[ins]

✓ on się teraz zajmuje tym czym ja się interesowałam rok temu

'he now studies what I was so interested in a year ago'

A2 ins[ins=ins]

? on się teraz zajmuje czym ja się interesowałam rok temu

'he now studies what I was so interested in a year ago'

(8) gen|gen  
✓nie kupuje tego czego nie lubię  
not buy it what not like  
'I don't buy that which I don't like'

(9) gen|gen=gen  
✓nie kupuje czego nie lubię  
not buy what not like  
'I don't buy what I don't like'

(50) gen|gen=gen  
\*nie boje sie czego nie ma  
'I'm not afraid of what isn't there'

### 2.2.2 non-matching

#### 2.2.2.1 syncretic (✓)

(13) acc|nom=nom/acc  
kupiłam co było w sklepie  
bought what was in store  
'I bought what was in the store'

10a) acc|nom  
✓znalazłam to co zginęło  
'I found that which got lost'

10b) acc|nom=acc/nom  
✓? znalazłam co zginęło  
'I found what got lost'

11a) nom|acc  
✓to co znalazłam zginęło znowu  
'that which I found got lost again'

11b) nom|acc=nom/acc  
? co znalazłam zginęło znowu  
'what I found got lost again'

3a) nom|acc  
✓to, co Janek zrobił, zmartwiło Marię  
'that which Janek did upset Marie'

3b) nom[acc=nom/acc  
✓? co janek zrobił zmartwiło marię  
'what janek did upset maria'

(51) dat[gen=dat/gen  
\*dalam spokoj której nie lubie  
'I don't bother with what I don't like'

### 2.2.2.2 non-syncretic

#### 2.2.2.2.1 external case used (\*)

The headed relatives corresponding to these constructions are found in the section with internal case free relatives (below). In each case, the corresponding headed relative is grammatical.

(11) acc[gen=acc  
\*\*kupuję co nie lubię  
buy what not like  
'I buy what I don't like'

1c) gen[acc=gen  
\*\*jerzy nienawidzi czego janek lubi  
'jerzy hates what janek likes'

2c) acc[gen=acc  
\*janek lubi co jerzy nienawidzi  
'janek likes what jerzy hates'

4c') nom[gen=nom  
\*co janek oczekiwał w końcu zdarzyło się  
'what janek expected finally happened'

1c) nom[dat=nom  
\*co janek się przyglądał z ciekawością marię  
'what janek looked, stared at interested maria'

11c) nom[ins=nom  
\*co janek się interesuje nudzi marię  
'what janek is interested in bores maria'

A14 ins[nom=ins



**\*\* on staje się czym jej się nigdy podobało**  
**'he is becoming what she never liked'<sup>1</sup>**

**A11 ins[acc=ins**

**\*\* ja zajmuję się czym on studiował wcześniej**  
**'I am studying what he did earlier'**

**A8 acc[gen=acc**

**\*\* ona dała mu co sama nie chciała**  
**'she gave him what she herself did not want'**

**A17 gen[ins=gen**

**\*\* ona nie piła czego on się tak upił wczoraj**  
**'she did not drink that with which he got so drunk yesterday'**

**A5 dat[ins=dat**

**\*\* przyglądaliśmy się czemu on się zajmuje**  
**(we) looked self at that which he self occupies-with**

#### 2.2.2.2 internal case used

##### 2.2.2.2.1 with external nominative (√?)

**4a') nom[gen**

**√to czego Janek oczekiwał w końcu zdarzyło się**  
**'that which Janek expected finally happened'**

**4b') nom[gen=gen**

**\*? czego Janek oczekiwał w końcu zdarzyło się**  
**'what Janek expected finally happened'**

**1a) nom[dat**

**√to czemu Janek się przyglądał z ciekawością Marię**  
**'that to which Janek looked/stared at interested Maria'**

**1b) nom[dat=dat**

**√? czemu Janek się przyglądał z ciekawością Marię**  
**'what Janek looked/stared at interested Maria'**

**11a) nom[ins**

**√to czym Janek się interesuje nudzi Marię**  
**'that which Janek himself is interested in bores Maria'**

---

<sup>1</sup>example (A14) is considered worse than the ungrammatical ins[nom=nom counterpart (A13).

11b) nom|ins=ins

✓? czym jonek się interesuje nudzi marię

'what jonek himself is interested in bores maria'

2.2.2.2.2 with external accusative

2.2.2.2.2.1 acc|gen (?)

(10) acc|gen

✓kupuję to czego nie lubię

buy it what not like

'I buy that which I don't like'

(12) acc|gen=gen

?kupuje czego nie lubię

buy what not like

'I buy what I don't like'

2a) acc|gen

✓jonek lubi to, czego jerzy nienawidzi

'jonek likes that which jerzy hates'

2b) acc|gen=gen

?jonek lubi czego jerzy nienawidzi

'jonek likes what jerzy hates'

A6 acc|gen

✓ona dała mu to czego sama nie chciała

she gave him that which she herself not wanted

'she gave him that which she herself did not want'

A7 acc|gen=gen

?ona dała mu czego sama nie chciała

'she gave him what she herself did not want'

(49) acc|gen=gen

\*boję się czego nie ma

'I'm afraid c' what isn't there'

---

<sup>1</sup>The free relative formed in (A7) is marginally acceptable, despite the acc|gen conflict. This contrasts with the ungrammatical acc|gen free relatives in (2b) and (12), and with the ungrammatical gen|acc conflicts of (1b) and (5b). The greater acceptability of A7 is intriguing, but, in light of the other examples, cannot be taken as evidence for an acc|gen hierarchy in Polish.

### 2.2.2.2.1 acc/dat; acc/ins (\*)

(T1) r.c[dat]

✓ marysia postanowiła kupić to, czemu Janek się przyglądał  
Maria decided to-buy it that Janek self stared-at  
'Maria decided to buy what Janek was staring at'

(T2) acc[dat=dat]

\* \* marysia postanowiła kupić czemu Janek się przyglądał  
Maria decided to-buy what Janek self stared-at  
'Maria decided to buy what Janek was staring at'

(T3) acc/ins

✓ marysia postanowiła kupić to, czym Janek się zachwycił  
Maria decided to-buy it that Janek self became-fascinated  
'Maria decided to buy what Janek became fascinated with'

(T4) acc/ins=ins

\* marysia postanowiła kupić czym Janek się zachwycił  
Maria decided to buy what Janek self became-fascinated  
'Maria decided to buy what Janek became fascinated with'

### 2.2.2.2.3 with external genitive (\*/?)

1a) gen/acc

✓ Jerzy nienawidzi tego, co Janek lubi  
'Jerzy hates that which Janek likes'

1b) gen/acc=acc

? Jerzy nienawidzi co Janek lubi  
'Jerzy hates what Janek likes'<sup>1</sup>

(X1) gen/acc

✓ Jerzy boi się tego co Janek lubi  
'Jerzy fears that which Janek likes'

(X2) gen/acc=acc

\* Jerzy boi się co Janek lubi  
'Jerzy fears what Janek likes'

---

<sup>1</sup> See section 2.2.2.3, below, on preposed relatives.

A15 gen[ins

✓ ona nie piła tego czym on się tak upił wczoraj

she not drink that which he self so intoxicated yesterday

'she did not drink that with which he got so drunk yesterday'

A16 gen[ins=ins

? ona nie piła czym on się tak upił wczoraj

'she did not drink that with which he got so drunk yesterday'<sup>1</sup>

#### 2.2.2.2.4 with external dative (\*)

A3 dat[ins

✓ przyglądaliśmy się temu czym on się zajmuje

(we) looked self at that which he self occupies-with

A4 dat[ins=ins

\* przyglądaliśmy się czym on się zajmuje

(we) looked self at that which he self occupies-with

#### 2.2.2.2.5 with external instrumental (\*)

A9 ins[acc

✓ ja zajmuję się tym co on studiował wcześniej

I occupy self with-that what he studied earlier

'I am studying that which he did earlier'

A10 ins[acc=acc

\* ja zajmuję się co on studiował wcześniej

'I am studying what he did earlier'

A12 ins[nom<sup>2</sup>

✓ on staje się tym co jej się nigdy nie podobało

he becomes self that which her self never not liked

'he is becoming that which she never liked'

A13 ins[nom=nom

\*\* on staje się co jej się nigdy nie podobało

---

<sup>1</sup>The use of the related verbs drink, get drunk may increase the acceptability of A16, which we would expect to be ungrammatical.

<sup>2</sup>Note that this sentence is considered grammatical, although semantically odd, since co is inanimate. The contrast between the acceptable, if odd, headed relative (A12) and the ungrammatical free relative (A13) still holds.

'he is becoming what she never liked'

### 2.3 preposed relative clauses

Preposing the relative clauses alleviates a case-conflict to some degree. Ungrammatical constructions become merely questionable; questionable constructions become well-formed. It may be that preposing the relative clause removes it from the domain of the external case assigner. A similar claim is made by Hirschbühler and Rivero ( ) with regard to free relatives in topic position in Spanish and Catalan. They argue that topic position is not a subcategorized position, and that a relative clause generated in topic position thus escapes case and category matching effects. The Polish data given here are suggestive, but more research is needed. Note that we have one example (see end of section) in which preposing the relative clause fails to alleviate case conflict.

#### 2.3.1 animate

##### 2.3.1.1 syncretic

###### 5a) gen(ACC)

✓janek nienawidzi tego, kogo maria lubi  
'janek hates the one whom maria loves'

###### 5b) gen(ACC=gen/ACC)

?janek nienawidzi kogo maria lubi  
'janek hates whom maria loves'

###### 5c) gen(ACC=gen/ACC) (preposed)

✓kogo maria lubi janek nienawidzi  
'whom maria loves, janek hates'

##### 2.3.1.2 non-syncretic

[no examples tested]

#### 2.3.2 inanimate

##### 2.3.2.1 syncretic

[no examples tested]

##### 2.3.2.2 non-syncretic

###### (1a) gen(ACC)

✓jerzy nienawidzi tego, co jonek lubi  
'jerzy hates that which jonek likes'

(1b) gen[acc=acc  
?jerzy nienawidzi co jonek lubi  
'jerzy hates what jonek likes'

(1d) gen[acc=acc (preposed)  
✓ co jonek lubi jerzy nienawidzi  
'what jonek likes, jerzy hates'

2a) acc[gen  
✓jonek lubi to, czego jerzy nienawidzi  
'jonek likes that which jerzy hates'

2b) acc[gen=gen  
?jonek lubi czego jerzy nienawidzi  
'jonek likes what jerzy hates'

(X3) acc[gen=gen (preposed)  
✓ czego jerzy nienawidzi, jonek lubi  
'what jerzy hates, jonek likes'

(T1) acc[dat  
✓ marysia postanowiła kupić to, czemu jonek się przyglądał  
Maria decided to-buy it that Jonek self stared-at  
'Maria decided to buy what Jonek was staring at'

(T2) acc[dat=dat  
\* \* marysia postanowiła kupić czemu jonek się przyglądał  
Maria decided to-buy what Jonek self stared-at  
'Maria decided to buy what Jonek was staring at'

(T5) acc[dat (preposed & headed)  
✓ to czemu jonek się przyglądał marysia postanowiła kupić  
'what Jonek was staring at, Maria decided to buy'

(T6) acc[dat=dat (preposed)  
? czemu jonek się przyglądał marysia postanowiła kupić  
'what Jonek was staring at, Maria decided to buy'

(X1) gen[acc

✓ Jerzy boi się tego co Janek lubi  
'Jerzy fears that which Janek likes'

(X2) gen{acc=acc  
\* Jerzy boi się co Janek lubi  
'Jerzy fears what Janek likes'

(1d') gen{acc=acc (preposed)  
\* co Janek lubi Jerzy boi się  
'what Janek likes, Jerzy fears'

## **APPENDIX C: RUSSIAN DATA--RELATIVE CLAUSES**

### **1.0 Introduction**

This appendix contains the complete set of Russian examples summarized in Chapter Two and Chapter Four. The examples are divided into the following subsections:

#### **2.1 animate**

##### **2.1.1 matching**

##### **2.1.2 non-matching**

###### **2.1.2.1 syncretic**

###### **2.1.2.2 non-syncretic**

#### **2.2 inanimate**

##### **2.2.1 matching**

##### **2.2.2 non-matching**

###### **2.2.2.1 syncretic**

###### **2.2.2.2 non-syncretic**

###### **2.2.2.2.1 genitive/accusative**

###### **2.2.2.2.2 external case used**

###### **2.2.2.2.3 internal case used**

### **1.1 Case Notation**

The case notation used is the same as in Appendix B:

( ) external { internal = resolution

The corresponding headed relatives are all grammatical; the headed forms are indicated in parentheses.

### **1.2 Grammaticality Judgments and Notation**

Most of the Russian examples were tested with three or four informants. Since there was a certain amount of disagreement, the judgments of all informants are noted on the line preceding each example. A few sentences



were only tested with one informant. The following scale of grammaticality judgments is used:

( )    ✓ , ✓? , ? , \*? , \* , \*\*

The notation ✓+ is used with a free relative to indicate an informant's comment that use of the free relative is more natural than use of the corresponding headed relative.

## 2.0 Data

### 2.1 animate

#### 2.1.1 matching

9.    ✓                    ✓+    ✓        gen|gen=gen  
       ona ljubiti (togo), koga ja ljubiju  
       'she loves (the one) whom I love'
10.   ✓                    ✓+    ✓        gen|gen=gen  
       on ne obiditi (togo), koga ljubiti  
       'he does not offend (the one) whom he loves'
11.   ✓+                    \*        ?        gen|gen=gen  
       včera on opjat' posoril (togo), koga ja s takim trudom pomirit'  
       'yesterday he again quarreled with (the one) whom I  
       with such difficulty pacified'
3.     ✓<sup>1</sup>    ✓        ✓        \*        dat|dat=dat  
       on nraivitsja (tomu), komu ja nraivejus'  
       'he pleases (the one) whom I please'
4.     ✓<sup>1</sup>                    \*        \*        dat|dat=dat  
       on ne nraivitsja (tomu), komu ja prigljaniusja  
       'he doesn't please (the one) who took a liking to me'
5.     ✓<sup>1</sup>                    ✓?    \*        dat|dat=dat  
       on prinēs knigu (tomu), komu ja včera prodal šubu  
       'he brought a book to (the one) whom I yesterday sold a fur coat'

---

<sup>1</sup> Informant #1 finds the dat/dat sentences grammatical, but somehow "incorrect".



41. \* \* \* gen[dat=dat  
 on ne ljubit (togo) komu ja podčinjajus' na rabote  
 'he does not like (the one) whom I obey at work'
43. \* ✓? \* gen[dat=dat  
 on nenavidit (togo) komu ja včera ne smogla ponravit'sja  
 'he hates (the one) whom I yesterday was unable to please'
26. \* ✓ \* dat[ins=ins  
 ja podčinjajus' (tomu) kem on rukovodit  
 'I obey (the one) whom he leads'
48. \* ? \* gen[ins=ins  
 on vodit za nos (togo) kem ja vsegda interesovalas'  
 'he is tricking [lit: leading by the nose]  
 (the one) in whom I have always been interested'
- 49 \* \* \* gen[ins=ins  
 on ljubit radovat' (togo) kem ja dovol'na  
 'he likes to please (the one) whom I am pleased with'
45. ✓ ✓? ✓? dat[gen=gen  
 ja vsegda rada (tomu) kogo on priglašæt v gosti  
 'I am always pleased to see (those) whom he invites to visit'
42. ✓? ✓? ✓ gen[dat=dat  
 on priglašæt v gosti tol'ko (tex) kor.u ja vsegda rada  
 'he invites only (those) whom I am always glad [to see]'  
 (note: is there a number conflict here? tex=pl, komu=sg)
24. ✓ ✓ ✓ dat[ins=ins  
 my obradovalsja (tomu) kem ego cyn okazalsja  
 'we were glad at what [kind of a person] his son turned out to be'<sup>2</sup>

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<sup>2</sup>This may be an exclamative. When examining case matching effects it is important to distinguish true free relatives from sentential complements, such as interrogatives and exclamatives. The *wh*-phrase in a sentential complement, unlike a true relative pronoun, does not receive case from the matrix clause. Thus exclamatives and interrogatives may appear to be violations of case matching requirements.

The possibility of an interrogative or exclamative reading prevents us from relying on the following Russian examples in our analysis of case matching effects. The case markings found are consistent with an exclamative or interrogative reading: Only the internally-assigned case is used.

[lit: we were glad of (the one) whom his son turned out to be]

### 2.1.2.2 external used

19. \*? \* \* ins[dat=ins  
on rukovodit kem ja podčinjajus' (headed: tem, komu)  
'he leads whom I obey'
25. \* \* \* dat[ins=dat  
my obradovalsja komu ego syn okazalsja (headed: tomu, čem)  
'we were glad at what (kind of a person) his son turned out to be'

## 2.2 inanimate

### 2.2.1 matching

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- M12 ✓ ins[ins=ins  
my interesovalis' (tem) čem vy zanimalis'  
'we were interested in what you were studying'
- M8 ? dat[dat=dat  
my udivilis' (tomu) čemu studenty učilis'  
'we were surprised at what the students were studying'
23. \* \*? \* dat[ins=dat  
my udivilis' čemu on podrabatyvaet (headed: tomu, čem)  
'we were surprised at what he does for a living'
24. ✓ ✓ ✓ dat[ins=ins  
my obradovalsja (tomu) kem ego syn okazalsja  
'we were glad at what [kind of a person] his son turned out to be'  
[lit: we were glad of (the one) whom his son turned out to be]
22. ✓ ✓ ✓ dat[ins=ins  
my udivilis' (tomu) čemu on podrabatyvaet  
'we were surprised at what he does for a living'
36. ✓✓ ✓ ✓✓ ✓ nom[ins=ins  
mne nraivitsja (to) čem on sejčas zanimaejsja  
'I like what he is studying/engaged in now'

The judgments for example 16. are confused. Informant #1 suggested that the sentence was ambiguous.

16. \*? ✓? \*? dat[acc=acc  
on udivilejs (tomu), čto my delali v škole  
'he was surprised at what we were doing in school'

Russian delat' requires an object, forcing čto to be relative pronoun (m. b., pc).

- (49) acc{acc=acc  
 ✓on kupil cto ja uvidela  
 'he bought what I saw'
- (51) ins{ins=ins  
 ✓on cejčas zanimaetcja čem ja tak interesovalas' god nazad  
 'he now studies what I was so interested in a year ago'
- M1 ✓ nom{nom=nom  
 (to) čto bylo v magazine, sliškom dorogo  
 'what was in the store was too expensive'
- M2 ✓ acc{acc=acc  
 ja kupila (to) čto ja xotela  
 'I bought what I wanted'
- M3 ✓? gen{gen=gen  
 ja ne kupila (togo) čego ja ne xotela  
 'I didn't buy what I didn't want!'
- M10 ✓+ acc{acc=acc  
 ja kupila (to) čto ja uvidela  
 'I bought what I caught sight of'
1. ✓ ✓ ✓ ✓? acc{acc=acc  
 on kupil (to), čto ja uvidela  
 'he bought what I saw'
2. ✓ ✓ ✓ ✓ acc{acc=acc  
 on kurit (to), čto ja kupju  
 'he smokes what I buy'
6. ✓ ✓+ ? ins{ins=ins  
 on rukovodit (tem), čem ja ran'she rukovodil  
 'he leads what I earlier led'
7. ✓ \* \* ins{ins=ins  
 on usynovlen (tem) kem ja interesujus'  
 'he was adopted by (the one) in whom I am interested'
8. ✓+ ✓+ ✓ ins{ins=ins  
 on sejčas zanimaetsja (tem), čem ja tak interesovalas' god nazad

'he now studies what I was so interested in a year ago'

## 2.2.2 non-matching

### 2.2.2.1 syncretic

M4 ✓ acc[nom=nom/acc  
ja kupila (to), čto bylo v magazine  
'I bought what was in the store'

M5 ✓ nom[acc=nom./acc  
(to) čto ja kupila, ležit na stole  
'what I bought is lying on the table'

### 2.2.2.2 non-syncretic

#### 2.2.2.2.1 genitive/accusative

33. ? ✓+ ✓ ✓ gen[acc=acc  
ona ne xotela čto on xotel (headed: togo, čto)  
'she did not want what he wanted'

34. ✓ ✓ ✓ ✓+ gen[acc=gen  
ona ne xotela čego on xotel  
'she did not want what he wanted'

27. ✓+ ✓ ✓ ✓ acc[gen=gen  
on sdelal čego ona ne sdelala (headed: to, čego)  
'he has done what she has not done'

28. ✓ ✓+ ✓ ✓? acc[gen=acc  
on sdelal čto ona ne sdelala  
'he has done what she has not done'<sup>3</sup>

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<sup>3</sup>Note: could be explained as substitution of accusative for the (optional) genitive of negation, giving acc[acc=acc.

One additional example is

We also find one example of a governed genitive:

52. ✓? ✓ gen[acc=acc  
ona ne ljubila čto on dela  
'she does not like what [the thing] he does'

Note that 'to do' requires a direct object in Russian, so that čto must be a relative pronoun here.

29. ✓            ✓    ✓+    acc|gen=gen  
ona podarila emu čego ne xotela sama (headed: to, čego)  
'she gave him what she herself didn't want'
30. ✓            ✓    ✓    acc|gen=acc  
ona podarila emu čto ne xotela sama  
'she gave him what she herself didn't want'<sup>4</sup>
35.                    ✓    ✓    gen|acc=acc (headed: togo, čto)  
ona ne est čto on tak ljubit zakazyvat' v restoranax  
'she does not eat what he so loves to order in restaurants'
52.                    ✓?   ✓    gen|acc=acc  
ona ne ljubila čto on delal  
'she does not like what [the thing] he does'<sup>5</sup>
31. ✓    ✓    ✓    ✓+    acc|gen=gen  
ona ob"jasnjala čego ne ponimala tol'kom (headed: to, čego)  
'she explained what she did not understand clearly'
32. ✓    ✓+   ✓    ✓    acc|gen=acc  
ona ob"jasnjala čto ne ponimala tol'kom  
'she explained what she did not understand clearly'<sup>6</sup>
- M6a ?    acc|gen=gen            (headed: to, c+ego)  
ja kupila čego ja ne xotela  
'I bought what I did not want'
- M6b ?    acc|gen=acc

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<sup>4</sup>Note: could be explained as substitution of accusative for the (optional) genitive of negation, giving acc|acc=acc.

<sup>5</sup>Note that 'to do' requires a direct object in Russian, so that čto must be a relative pronoun here (n.b., pc).

<sup>6</sup>Note: could be explained as substitution of accusative for the (optional) genitive of negation, giving acc|acc=acc.

ja kupila što ja ne xotela  
'I bought what I did not want'

M7a ? gen[acc=acc (headed: togo, c+to)  
ja ne kupila što ja xotela  
'I didn't buy what I wanted'

M7b ? gen[acc=gen  
ja ne kupila čego ja xotela  
'I didn't buy what I wanted'

#### 2.2.2.2 external case used

13. \*\* \* \*\* nom[dat=nom  
u menja est' što on zaviduet (headed: to, čemu)  
'I have what he envies'

21. \* \* \* ins[dat=ins (headed: tem, čemu)  
na rabote on sejšas zanimaešja čem ja tol'ko učus'  
'now at work he is engaged in what I am only learning'

#### 2.2.2.3 internal case used

40. \* \* \* \* ins[nom=nom  
on stanovitsja (tem) što ej vseгда ne nraivos'  
'he is becoming what she never liked'  
[lit: what to-her always not was-pleasing]

39. \* \* \* \* ins[acc=acc  
ja zanimajus' (tem) što on delal ran'se  
'I am studying/doing what he did earlier'

M16 \* acc[ins=ins  
ivan kupil (to) čem ja interesovalsja  
'Ivan bought what I was interested in'

M15 \* acc[dat=dat  
ivan kupil (to) čemu ja zavidovala  
'Ivan bought what I envied'



12. ?            ✓? \*        nom(dat=dat  
u menja est' (to) čemu on zaviduet  
'I have what he envies'
37.                    ✓? \*        acc(ins=ins  
mama podarila mne (to) čem mne možno bylo dostavit' udovol'stvie  
'Mama gave me the things that could give me pleasure'
38. \*        ?        ✓        \*        acc(ins=ins  
ona ščitæet (to) čem ja zanimajus' glupost'ju  
'she considers what I am studying [to be] stupid'
20. ✓                    ✓        ✓?        ins(dat=dat  
sejčas on na rabote zanimæetsja (tem) čemu ja tol'ko učus'  
'now he at work is engaged in what I am only learning'
36. ✓+    ✓        ✓+    ✓        nom(ins=ins  
mne nraivsja (to) čem on sejčas zanimæetsja  
'I like what he is studying/engaged in now'<sup>7</sup>
47.                    ✓?    ✓        gen(ins=ins  
ona ne pila (togo) čem on tak napilsja včera  
'she did not drink that with which he got so drunk yesterday'

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<sup>7</sup>Possibly an exclamative or interrogative complement.

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