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# Capturing the Adjective

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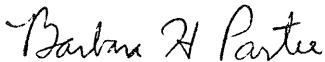
CAPTURING THE ADJECTIVE

A Dissertation

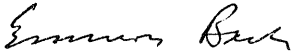
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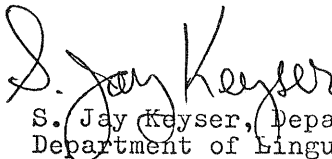
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## ABSTRACT

## Capturing the Adjective

(April, 1976)

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Capturing the Adjective treats a well-known, intuitively accessible distinction between adjective types. Adjectives may be relative to common nouns they modify, or they may be free, absolute modifiers of individuals. The English sentence Marya is a beautiful dancer provides a good example of the phenomenon, since it can mean either that Marya is beautiful as a dancer (relative) or that Marya herself is generally beautiful (absolute). In Chapter I. the distinction is documented in English and Russian.

Chapter II. is a treatment of adjectives in Russian, where the relative/absolute distinction is morphologically marked as a distinction between long and short forms of each adjective. In section II.3. the categorially based Montague grammar is introduced. It is shown that, in terms of Montague grammar, the two kinds of adjective correspond to two different syntactic-semantic types. The relative adjectives are ad-common nouns, called CN/CN's. They combine with common nouns to form new common nouns.

Semantically, this means that they combine with characteristic functions of sets to form new characteristic functions. The absolute adjectives, on the other hand, are simple one-place predicates, called t///e's. The corresponding semantic type is simply a characteristic function.

A more detailed Montague analysis of Russian adjectives is presented. It is shown that assigning the long form of each adjective to the category CN/CN and the short form to t///e explains much of the puzzling syntactic and semantic behavior of Russian adjectives. The analysis is also converted into a more standard transformational version, and alternatives are considered.

Chapters III. and IV. deal with English, where, once again, adjectives do not form a unified syntactic-semantic category. Only if each English adjective is taken to be either a CN/CN, a t///e, or both, depending upon its behavior in certain diagnostic tests, does adjective behavior become largely predictable. Chapter IV. is a discussion of measure adjectives like tall and fast. They are shown to be special cases of the simple predicate t///e adjectives, not to be distinguished from them in grammatical structure. Different proposals for dealing with their interpretation are discussed.

Chapter V., the conclusion, concerns the relationship between the two syntactic-semantic categories that prove so useful in analysing adjectives and the traditional

part of speech called "adjective". It includes a section on adjectives in Ngamambo, a Cameroonian language of a type usually considered to have very few adjectives. It is shown that Ngamambo does have only a few CN/CN adjectives, but that it has many t///e adjectives, which are not related at all to the CN/CN ones.

Clearly, the relationship of the two syntactic-semantic categories to the part of speech "adjective" varies across languages. In Russian, the memberships of the pair of categories and the part of speech nearly coincide. Most adjectives can be of both categories. In English the categories structure a range of different kinds of words that could be called adjectives. Many are exclusively of one category or the other. Even more are of both categories. In Ngamambo, one set of words is exclusively of one adjective category, while another, non-intersecting set is exclusively of the other. Here there seems to be no basis for grouping the two sets of words together as adjectives.

The number of syntactic-semantic categories that comprise the part of speech, "adjective", then, varies across languages. However, the characteristics of the two categories whose members may be adjectives are fairly constant. Verblike syntax is paired with absolute semantics, and ad-common noun syntax is paired with relative semantics. The

kind of categorial-based syntax and compositional semantics found in Montague Grammar provide a framework in which these semantic characteristics of each category follow automatically from their syntactic roles. The question of how to provide a separate characterization of part of speech in grammar with a categorial base and of the relationship in general of parts of speech to syntactic-semantic categories is left for further research.

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## C H A P T E R I.

## INTRODUCTION: THE TWO-FACED ADJECTIVE

## I.0 Introduction.

How the traditional part of speech, the adjective, should be defined is not very clear. It is usually said that an adjective is a word that can modify a noun and appear either next to the noun as part of the noun phrase or in the predicate. However, the words that satisfy this condition do not constitute a single, unified linguistic category. Whatever an adjective is, its semantic role, at least, is dual.

Many linguists have pointed out an intuitively accessible semantic duality in adjectives. Writers who have noted this duality include some who work on Russian and Italian, as well as many who work on English. They include writers who make no reference to formal semantics (Babby, Berman, Bolinger, Conte, Danilenko, Fornaciari, Katz, Lunt, and Stilman and Harkins) as well as those who do (Bartsch and Vennemann, Kamp, Parsons, and Wheeler). It is the purpose of this thesis to show that the dual semantic roles of members of the adjective category are actually predictable from the dual syntactic roles that define the part of speech "adjective". In a categorically based grammar with compositional semantics like that presented in Montague (1974) and extended in Partee (1975b,1976), semantic type is a function of syntactic combinatory properties. Consequently,



the fact that adjectives are words that can serve either attributively as ad-common nouns or as predicates will predict that adjectives will play two different semantic roles as well. It happens that the two semantic roles predicted for adjectives in this way seem to formalize accurately the semantic distinction noticeable in so many languages. In Chapter I. this semantic distinction is pointed out in English and in Russian.

#### I.1 The two faces in English.

The semantic duality for adjectives can be stated this way: The property that an adjective represents may be bound to the meaning of a common noun it modifies in some way, or it may be free, a simple predicate. A fairly clear example of this distinction in English appears in (1).

(1) Marya is a beautiful dancer.

The reading of (1) where the meaning of beautiful is bound to that of dancer means that Marya is beautiful as a dancer. She dances beautifully, although she may not be beautiful to look at. The other reading of (1) means that Marya is beautiful and a dancer. She is a member of the intersection of the sets of beautiful things and dancers, and consequently must be beautiful in general. From now on I will call meanings of adjectives that are bound to the meanings of their common nouns in this way non-intersective

and those that are not so bound intersective.

The intersective reading must not be confused with a non-restrictive reading. Both readings of beautiful in (1) are restrictive. A non-restrictive reading can ordinarily be obtained only with a noun phrase with a specific referent. If (1) had read as in (1)a) below, then it could have yielded the non-restrictive interpretation in b), as well as the intersective restrictive interpretation in c) and the non-intersective restrictive interpretation in d).

- (1)a) Marya is the beautiful dancer; Karen is the strange comedian.
- b) Marya is the dancer, who, by the way, is beautiful.
- c) Marya is the one who is beautiful and a dancer.
- d) Marya is the one who dances beautifully.

(1)b), the non-restrictive reading, is very different from both c) and d), in that the adjective in b) plays no part in picking out the referent, as it does in c) and d).

A test for non-intersectiveness in adjectives is made available by the fact that the meaning of a non-intersective adjective is always relative to that of the common noun it modifies. This means that if something is in the class represented by CN<sub>1</sub> and it is also in the class represented by CN<sub>2</sub>, then, for the same non-intersective ad-

jective, that thing may be in the class represented by ADJ CN<sub>1</sub> but not in the class represented by ADJ CN<sub>2</sub>. This is true only for non-intersective adjectives, since for intersective ones sentences of the form "X is an ADJ CN<sub>1</sub>" entail "X is ADJ", absolutely. The test goes as follows:

(2) If, for some CN<sub>1</sub> and CN<sub>2</sub>, and for some noun phrase X and a determiner det<sub>i</sub>, the sentences

- i. X is det<sub>i</sub> CN<sub>1</sub>
- ii. X is det<sub>i</sub> CN<sub>2</sub>
- iii. X is det<sub>i</sub> ADJ<sub>j</sub> CN<sub>1</sub>
- iv. X is not det<sub>i</sub> ADJ<sub>j</sub> CN<sub>2</sub>

are consistent, that is, they could all be true at once, then ADJ<sub>j</sub> has a non-intersective reading of the kind we are looking for.<sup>1</sup>

Using (1) as an example, we can say that, given that "Marya is a woman" and "Marya is a dancer" are true, "Marya is a beautiful woman, but Marya is not a beautiful dancer" could still be true. Hence, the adjective beautiful has a non-intersective reading.

The test in (2) does not always proceed so smoothly, however. If one tries to apply it to intelligent, for instance, one might pick a perfectly good example like (3), which is analogous to the example based on (1).

(3) i. Sharon is an accountant.

- ii. Sharon is a mother.
- iii. Sharon is an intelligent accountant.
- iv. Sharon is not an intelligent mother.

In (3), Sharon might well be intelligent as an accountant but not intelligent as a mother. Intelligent must have a non-intersective reading. However, one might have picked an example like the following:

- (4) i. Mollie is a chimpanzee.  
 ii. Mollie is a philosopher.  
 iii. Mollie is an intelligent chimpanzee.  
 iv. Mollie is not an intelligent philosopher.

In (4) Mollie is said to be an intelligent chimpanzee, but not an intelligent philosopher. What this would most likely mean is that she's intelligent for a chimpanzee, but not intelligent for a philosopher. This difference in paraphrase is crucial. If one says that Sharon is intelligent as an accountant, then the meaning of the adjective is relative only to the meaning of the common noun accountant. If, on the other hand, one says that Mollie is intelligent for a chimpanzee, then the meaning of the adjective is relative, not so much to the meaning of chimpanzee, but more to how intelligent the speaker happens to think chimpanzees normally are. Chapter IV. is devoted to an analysis of such ADJ+CN sequences that can be paraphrased as 'ADJ

for a CN'. There I show why these for a adjectives should, for the purposes of the grammar proper, be considered as closely allied to the intersective adjectives, not to the non-intersective ones that the test given in (2) is supposed to identify. In order to qualify as a positive result in the non-intersectiveness test, then, the four consistent sentences required for the test must behave in one of the following three ways:

1. They can be understandable (although not necessarily grammatical) as 'X is ADJ as a, or in the role of, CN':

Marya is a  $\left\{ \begin{array}{l} \text{good} \\ \text{crack} \end{array} \right\}$  painter, but not a  $\left\{ \begin{array}{l} \text{good} \\ \text{crack} \end{array} \right\}$  plumber.

2. They can be paraphrasable only by an adverb:  
Sherwin is a present employee, but not a present resident.

'Sherwin is presently an employee, but he isn't presently a resident.'

3. They may not be paraphrasable at all:

Music is his prime activity, but it's not his prime interest.

This is sheer genius, but it's not sheer inspiration.

Specifically, sentences that are paraphrasable as 'X is ADJ for a CN, or as CN's go' do not satisfy the conditions for the test:

She's a tall woman, but she's not a tall basketball player.

She's an aged mother, but she's not an aged grandmother.

Unfortunately, there is no positive test like (2) that will identify intersective readings. The closest thing to such a test would be to ask whether, for instance, "Marya is a beautiful dancer" could entail that Marya is beautiful in some absolute sense. If so, then beautiful would surely have an intersective reading, but such judgements are hard to make. Even a negative result on the test for non-intersectiveness does not ensure that the adjective has an intersective reading. The failure to find appropriate consistent sentences could be due to factors other than the semantics of the adjective. One problem might be in finding plausible common nouns CN<sub>1</sub> and CN<sub>2</sub> for sentences i. and ii. in (2). Appropriate common nouns may not even exist in the language.

Nevertheless, we can usually identify non-intersective adjective meanings fairly readily; a positive result on test (2) always indicates a non-intersective reading. However, we are left to rely on our intuitions as to what properties can be non-relative in order to identify intersective

readings of adjectives. Examples (5) - (8) show the pairs of consistent conjunctions that prove veteran, utter, former, and rightful to have non-intersective readings.

- (5)a) Helga Riddle is a salesperson and a manager.  
 b) Helga Riddle is a veteran salesperson, but she's not a veteran manager.
- (6)a) Vivian is a scoundrel and a fool.  
 b) Vivian is an utter scoundrel, but she's not an utter fool.
- (7)a) Ms. Goshly was a star, and Ms. Goshly was a songstress.  
 b) Ms. Goshly is a former star, but she's not a former songstress.
- (8)a) You are treated as the head of the household, and you are treated as the mother.  
 b) You are the rightful head of the household, but you are not the rightful mother.

Since these adjectives seem to have no uses different from the ones here, it seems safe to suppose that they are exclusively non-intersective.<sup>2</sup> Some common adjectives that seem to be exclusively intersective on the basis of informal examination are fresh, nearby, asleep, and rancid. Appendix I sets out classes of adjectives according to this inter-

sective/non-intersective distinction. The divisions have been made by means of test (2) and other tests to be developed in section III.31. Lists A and B in Appendix I contain additional exclusively intersective adjectives; lists C, D, and E, more exclusively non-intersective ones. Lists F, G, H, and I contain adjectives that can have both kinds of readings. Appendix I also gives, for each adjective listed, possible paraphrases of ADJ+CN sequences containing it, and its behavior in relation to the rules and meaning postulates to be presented.

This variety among adjective interpretations that results in the ambiguity of beautiful dancer and that of so many other ADJ+CN expressions in English (old friend, true lover, bad violinist...) is the sort of thing that a grammar of a natural language should capture. My claim is that this semantic ambiguity directly reflects the double syntactic role of adjectives, that the semantic information is gleaned from syntactic structure. However, although I show in section III.31 that the adjective duality figures in syntactic rules as well as in semantic interpretation, a grammar would not necessarily have to treat the semantic ambiguity as being tied to underlying syntactic structure at all. Interpretive rules operating on surface structures as in Jackendoff (1972) could probably supply the correct interpretations. However, I believe that the fit between the syntactic and semantic facts is so close for adjectives that such interpretive

rules would have to have the effect of reconstructing underlying syntactic structure.

Moreover, it is my claim that there exist these dual syntactic-semantic adjective roles in the grammars of many, if not all, languages. The syntactic importance of the two adjective categories is quite clear in Russian, where they correspond to the same absolute and relative readings as in English. In Russian, though, the distinction is part of an oft-treated problem, since the two types of adjective differ systematically in both syntax and morphology.

### I.2 The two faces in Russian.<sup>3</sup>

In Russian there are two forms of qualitative adjective - the long form and the short form. The short form is used in predicate position only, while the long form may be used in predicate position or prenominally as an attributive adjective. The morphological process which relates the two forms is so transparently productive that nearly every qualitative adjective may be said to have both forms, although one or the other may rarely or never be used, due to semantic considerations.<sup>4</sup> To form a short adjective from a long one, one drops the regular long adjectival endings - yj (masculine), aja (feminine), oe (neuter), and ye (plural) - and adds instead no ending for the masculine (but sometimes an epenthetic vowel), a for the feminine, o for the neuter, and y for the plural.

(9)		Short Form (SF)		gloss
Long Form (LF)	masc.	masc.	fem.	
novyj		nov	nova	'new'
umnyj		umen	umna	'intelligent'
trudoljubivyj		trudoljubiv	trudoljubiva	'industrious'

Semantically, the long and short forms seem to have the non-intersective and intersective meanings, respectively. The Russian sentences in (10) and (11) are identical, except that (10) contains a long form of the adjective, while (11) contains the corresponding short form.

(10) Studentka umnaja (LF).  
'(The) student (is) intelligent.'

(11) Studentka umna (SF).  
'(The) student (is) intelligent.'

(11) means that the student is intelligent in general, absolute terms. (10) is most likely to mean that she is intelligent in her role as a student, that is, 'The student is intelligent as a student.'

One might wonder how a Russian sentence with the long form adjective will be understood if the subject is not something like 'student,' of whom it makes sense to say that someone is an intelligent one. I asked an informant about sentences (12) and (13).

(12) Oleg umnyj (LF).  
'Oleg (is) intelligent.'

(13) Oleg umen (SF).  
'Oleg (is) intelligent.'

(13), he said, is much like (11). Oleg is just plain generally intelligent ("You can tell by looking at him"). But in (12), Oleg must have somehow actively shown himself to be an intelligent something. ("Maybe he is painting pictures while reciting the pledge of allegiance backwards in Coptic.") This something that the adjective is relative to is unspecified in the syntax, but understood uniquely in any given utterance.

The idea of the semantic distinction between long and short form adjectives in Russian being a matter of relative versus absolute modification helps to explain the fact that predicate adjectives in scientific laws and in sentences with certain kinds of abstract subjects must be in short form. Sentences (14) - (16) would all be anomalous if their short form adjectives were replaced with the corresponding long forms.

(14) Prostrantsvo beskonechno (SF).  
'Space is infinite.'

(15) Vse jasno (SF).  
'Everything (is) clear.'

(16) PRIXODIT' domoj ochen' priyatno (SF).  
'To come home (is) very pleasant.'

In (14) we can see that the relative reading, 'Space is infinite, as space', is impossible; in such scientific laws, the subject exhausts the class to which it belongs.

'Everything' in (15) and 'To come home' in (16) similarly fail to admit of a superset to which they belong.

This absolute/relative distinction in Russian seems to be the same one that we encounter in English. A closer look at the behavior of the long and short form adjectives in Russian will help to identify the nature of this distinction that, I believe, figures less obviously in many other languages.

FOOTNOTES  
CHAPTER I.

1. I am not sure of the restrictions on  $\text{det}_1$ . For most adjectives, one gets the most grammatical sentences and the clearest readings with a. So I use a wherever possible. However, there are some adjectives with which it is impossible to use a. (See example (8)).

The is that appears in the clauses of (2) is also problematic. What it seems that we want it to mean in i. and ii. is "belonging to the field of sorting" in the sense given in Provence (1973) for the particular adjective applied to the common noun. If this is correct, then in testing most adjectives (Provence's standard predicate modifiers) the is can be read simply as "belonging to the extension of" the common noun, as in (5)a) and (6)a). But there are non-standard modifiers like former and fake. (Those listed in Appendix I are marked with a \*.) According to Provence, "The field of sorting for P (non-standard predicate modifier) applied to X (primary sorting expression [common noun]) is the set of all objects for which a good reason can be given for calling one of them X." Consequently, I have replaced the is of (2)i. and ii. with was and are treated as in (7)a) and (8)a), respectively.

2. The fact that these adjectives are ungrammatical alone in the predicate affords more conclusive evidence that they are exclusively non-intersective. (See Section III.32 for a discussion of why this fact constitutes evidence.)

- i. \*Helga is veteran.
- ii. \*Vivian is utter.
- iii. \*Ms. Goshly is former.
- iv. \*You are rightful.

3. The material in section I.2 and that in Chapter II.

appears in a different version as "Capturing the Russian Adjective" in Partee (1976). Much of the Russian data was gathered in Leningrad in 1969. According to Robert Rothstein, the language is now changing, and short forms are used less, except in complement constructions.

4. There is a class of adjectives in Russian, sometimes called relational adjectives, which have no short forms. I will not discuss them in the chapter on Russian, Chapter II., although the analysis presented there accounts for some of them, such as byvshyj 'former,' in that it predicts that they will have no short forms, since they have no absolute meanings. See Chapter III., on English, for a full discussion of similar adjectives. Other words classed with the relational adjectives, such as kirpichnyj 'brick' are based on nouns and may require a separate analysis.

CHAPTER II.  
ADJECTIVES IN RUSSIAN

II.0 Introduction

In this chapter, I explore the conditions under which short and long form adjectives are appropriate (section II.1 and II.2) and present an analysis which treats adjectives as members of two distinct underlying syntactic-semantic categories. First, (in section II.3) I outline my solution within a framework based on the fragment of English in Montague (1972) as extended in Partee (1975b). Then (in section II.4) I sketch an equivalent solution within an analogous transformational framework like that in Chomsky (1965). In section II.5, I discuss briefly some problems encountered in systems in which adjectives in Russian form a single underlying category and the long and short forms are transformationally related, either to each other, or to the underlying category. Section II.6 is a summary.

II.1 Syntactic facts.

In this section, I present facts that I have found about the long-short distinction in predicate adjectives. Syntactically, it seems that the long forms act like constituents of noun phrases, while the short forms pattern with intransitive verbs. First, the long forms, like nouns, inflect fully for case and can appear after many different verbs.

(1)a) Ulitcy kazalis' ej ochen' shirokimi (LF).

b) \*Ulitcy kazalis' ej ochen' shiroki (SF).

'The streets seemed to her very wide.'

(2)a) Almazov vernulsja domoj veselyj (LF).

b) \*Almazov vernulsja domoj vesel (SF).

'Almazov returned home happy.'

The short forms, however, are like verbs in that they do not inflect for case at all and may occur only in the predicates of superficially verbless sentences such as (3) or after the verb byt' 'to be' in the past, future, or imperative forms, as in (4) (byt' has no overt present tense forms, and short forms do not generally appear after infinitive byt').

(3)a) Nasha molodezh' talantlivaja (LF) i  
trudoljubivaja (LF).

b) Nasha molodezh' talantliva (SF) i trudoljubiva (SF).

'Our youth (is) talented and industrious.'

(4)a) Zimnie nochi budut dolgimi (LF).

b) Zimnie nochi budut dolgi (SF).

'The winter nights will be long.'

Besides failing to inflect for case, short form adjectives exhibit one more morphological peculiarity in standard Russian. Russian uses the second person plural pronoun vy for second person singular in non-intimate



speech. Long form adjectives and predicate nouns agree in number with the referent of this pronoun. If the referent is singular, the adjective will be singular, despite the plural form of the pronoun.

- (5)a) Ivan, vy molodoj (LF). SINGULAR  
 b) \*Ivan, vy molodye (LF). PLURAL  
 'Ivan, you are young.'
- (6)a) Ivan, vy artist (noun). SINGULAR  
 b) \*Ivan, vy artisty (noun). PLURAL  
 'Ivan, you (are an) artist.'

In contrast, short form adjectives, like verbs, agree with the grammatical number of vy and, so, are always plural.

- (7)a) \*Ivan, vy molod (SF). SINGULAR  
 b) Ivan, vy molody (SF). PLURAL  
 'Ivan, you are young.'
- (8)a) \*Ivan, vy govoril (verb). SINGULAR  
 b) Ivan, vy govorili (verb). PLURAL  
 'Ivan, you were speaking.'

While it is important to remember that the long and short versions in (3), (4), and (5) and (7) are not quite synonymous, one can say that in general, wherever a short form adjective is possible, that is, after byt' or a zero copula, there is also a grammatical counterpart with a

long form. Elsewhere only the long form can be used. There are two kinds of exception to this generalization. The first kind is rare; it has to do with short forms that can appear after verbs other than byt'. This can happen only with adjectives whose short forms have taken on an unpredictably different meaning, separate from that of the long forms. Some such words are listed in (9).

- (9) zanjatoj (LF) 'generally busy'  
 zanjat (SF) 'occupied at the moment'
- bol'noj (LF) 'sickly; having poor health'  
 bolen (SF) 'ill at the moment'
- pravyj (LF) 'right; not left' or 'upstanding'  
 prav (SF) 'right; not wrong'

Some of these meanings are special enough to force the use of the short form in otherwise prohibited environments.

- (10) Ded okazalsja prav (SF).  
 'Grandpa turned out to be right.'

The other kind of exception has to do with two constructions that permit no long forms at all. First, short forms can occur with infinitive complements, as in (11).

- (11) Ja { rada (SF)  
 dolzhna (SF)  
 gotova (SF)  
 soglasna (SF) } pomogat' vam.  
 'I (am) { glad  
 obligated  
 ready  
 agreed } to help you.'

Not only long form adjectives, but nouns as well are generally barred from taking such complements. Verbs, on the other hand, participate in many similar constructions:

- (12) Masha  $\left\{ \begin{array}{l} \text{mogla} \\ \text{xotela} \\ \text{obeshchala} \end{array} \right\}$  pomogat' vam.  
 'Masha  $\left\{ \begin{array}{l} \text{was able} \\ \text{wanted} \\ \text{promised} \end{array} \right\}$  to help you.'

The second construction which allows only short form adjectives is imperatives with byt', except for those with a hortatory meaning.<sup>1</sup>

- (13)a) Priezzhaj zdorovym (LF)!  
 b) \*Priezzhaj zdorov (SF)!  
 'Go in good health!'
- (14)a) \*Bud'te zdorovymi (LF)!  
 b) Bud'te zdorovy (SF)!  
 'Be well!'
- (15)a) Bud' ostorozhnym (LF)!  
 b) Bud' ostorozhen (SF)!  
 'Be careful!'

Many of the syntactic peculiarities of short form adjectives have been presented as similarities to verbs. but what features of these adjectives could explain their semantic characteristics? After the summary in section II.2,

I present a unified account of the syntactic and semantic differences between the two types of adjective.

## II.2 Summary of the differences between long form and short form adjectives in Russian.

	<u>Long Forms</u>	<u>Short Forms</u>
1.	occur in both predicate and prenominal position	occur in predicate position only
2.	occur in predicates with many different verbs	occur only with <u>byt'</u> and zero copula
3.	inflect for case	do not inflect for case
4.	agree with referent of <u>vy</u> in number	agree with grammatical plurality of <u>vy</u>
5.	take no infinitive complements	may take infinitive complements
6.	may not appear in ordinary imperatives with <u>byt'</u>	may appear in most imperatives with <u>byt'</u>
7.	have a relative meaning; are non-intersective	have an absolute meaning; are intersective

## II.3 A Montague analysis.

In this section I propose an analysis of Russian adjectives which captures the generalizations summarized in section II.2. As mentioned earlier, the syntactic distinction between short and long form adjectives, with the exception of the imperative facts, to which I return later, can be seen as similarities between short adjectives and verbs. In fact, the semantic distinction of intersective versus non-intersective also allies the short adjectives

with verbs. After all, in The woman is walking, 'walking' is a property of the individual referred to. The sentence must mean that the woman is walking in an absolute sense, not relative to her womanness. She is simply a member of the intersection of the sets of women and walkers.

A grammar like Montague's predicts that the syntactic and semantic facts will coincide in this sort of way, that a type of adjective that behaves like an intransitive verb syntactically will also have intransitive verb semantics. The syntax and semantics work side by side in such a way that, in the absence of special meaning postulates, any two expressions that are the same syntactically will be the same semantically, though not necessarily vice versa. Identical complex semantic types which differ syntactically are distinguished by varying the number of slashes between the components of their syntactic categories. The syntactic categories of IV/IV and IV//IV, for instance, are the same semantically, but differ syntactically.

The syntax with which the Montague grammar works has a categorial part which has two primitives,

e	for entities
t	for sentences

Complex categories are built up for these. t/e, for instance, is something which combines with an entity to produce a sentence. Some important complex categories include:

t/e	or	IV	intransitive verbs and verb phrases like <u>walk</u> , <u>run</u> ( $\approx$ VP)
t//e	or	CN	common nouns like <u>woman</u> , <u>unicorn</u> ( $\approx$ NOM or N)
t/IV	or	T	terms or noun phrases like <u>John</u> , <u>she</u> ( $\approx$ NP)
IV/T	or	TV	transitive verbs or verb phrases like <u>eat</u> , <u>find</u> , <u>hammer</u>
IV/IV	or	IAV	verb phrase modifying adverbs like <u>rapidly</u>
IV//IV			infinitive taking verbs like <u>try to</u>

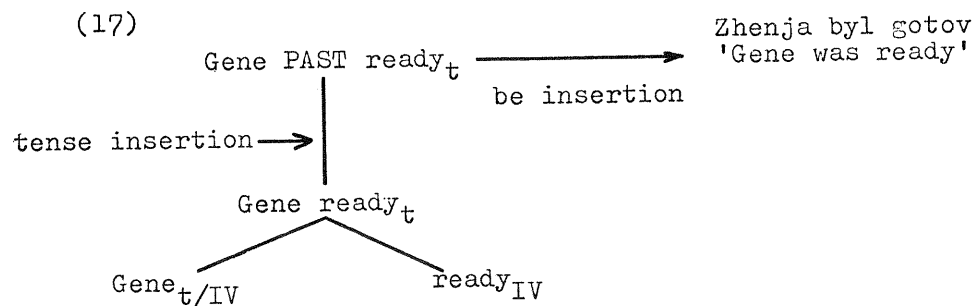
Semantic interpretation takes place in two stages; first, and most important for our purpose, translation of the natural language into intensional logic, and then interpretation of the resulting formulas with respect to a model. Each of the above syntactic categories corresponds to a unique semantic type of the intensional logic. The mapping of the syntactic categories into semantic types is accomplished by a particular function  $f$  (Montague (1974b), p. 260). In translating a sentence of a natural language into the intensional logic, each lexical item is mapped onto a constant of the appropriate syntactic-semantic kind, except for the few natural language expressions that have special logical roles to play. The constants are written as English words with wavy lines: unicorn. The translations of the words are combined by means of semantic rules that correspond one-to-one with the syntactic rules.

If we want short form adjectives to be treated like verbs both syntactically and semantically, they will have to be of the same categories as verbs, IV, TV, or IV//IV.<sup>2</sup> The syntactic rule for combining verbs with their subjects is (16), (where  $P_A$  is the set of phrases of the category A). Transformational equivalents for this and other Montague syntactic rules can be found in Appendix II.

- (16) If  $\alpha \in P_{t/IV}$  and  $\beta \in P_{IV}$ , then  $F_1(\alpha, \beta) \in P_t$ ,  
where  $F_1(\alpha, \beta)$  is  $\alpha\beta$ .

(Corresponds to phrase structure rule (1),  
Appendix II.)

So we can draw syntactic trees like (17):<sup>3</sup>



The one problem that arises immediately in treating short form adjectives like verbs is that tense usually jumps right onto verbs, but, as we can see in (17), a form of byt' 'to be' is inserted to support it before short form adjectives.<sup>4</sup> (That byt' is a tense support when it appears before short form adjectives is also suggested by the fact,

noted earlier, that short forms do not generally occur after infinitive byt'.) There are several possible ways of handling this discrepancy between verb and adjective behavior. One way would be to use the multiple slash notation. Short form adjectives could be assigned to a category  $t///e$ . This would indicate that short forms differ from intransitive verbs syntactically, although they are the same semantically. Specifically, byt'-insertion would apply before members of the category  $t///e$  in non-present sentences, but not before  $t/e$ 's, the intransitive verb phrases. However, assigning short forms to a new syntactic category would make it more inconvenient to state the many syntactic and morphological parallels between short form adjectives and intransitive verbs. Another solution would be the use of a rule feature to mark short form adjectives for the minor rule of byt'-insertion with tense:

- (18) If  $\alpha \in P_T$  and  $\beta \in P_{IV(+F_2)}$   
then  $F_2(\alpha, \beta) \in P_t$ , where  $F_2(\alpha, \beta) = \alpha\beta'$   
where  $\beta'$  is the past/future/imperative form  
of byt' followed by  $\beta$ . (Corresponds to phrase  
structure rule (1) plus transformation (1) in  
Appendix II.)

The semantic rule corresponding to (16), the subject-predicate rule is (19).

- (19) If  $\alpha \in P_{t/IV}$  and  $\beta \in P_{IV}$  and  $\alpha, \beta$  translate into  $\alpha', \beta'$  respectively, then  $F_1(\alpha, \beta)$  translates into  $\alpha'(\wedge \beta')$ .

The up arrow,  $\wedge$ , designates the intension or sense of the expression that immediately follows it, as opposed to its extension, denotation, or reference. It is introduced automatically by even the simplest semantic rules in order to enable the system to account for constructions whose analysis requires such a notion. (In the translation of the expression seek a unicorn, for instance, seek' applies to the intension of unicorn', and not to a member of its extension, since it has no extension.) The up arrow plays no crucial role in the translation of ordinary subjects and predicates. Since (19) is the same semantic rule we use for ordinary subjects and predicates, it is not even subject to any meaning postulates that alter its absolute meaning that  $\alpha$  is among things  $\beta$ . In fact, the up arrow will reduce out of most actual translations, as in (20), the translation of sentence (17) into intensional logic. (20)b) is the ultimate output of the semantics, achieved through simplifications, definitions, conventions, and meaning postulates.

(20) a)  $\widehat{P} ( P \{ \wedge g \} ) ( \wedge \text{ready}' )$

b) ready'\* (g)

In (20)b) readiness is predicated of the individual g that 'Gene' refers to, just as walking is in (21), a translation of Gene is walking.

(21) walk'\* (g)

But what about the long form adjectives, the non-intersective modifiers that must yield a relative reading? What category are they, and how does the semantics work out? In treatments of English (Montague (1974a), for instance) the usual way of handling attributive adjectives is to assign them to category CN/CN. They are things that combine with a common noun to make a new common noun by means of the following syntactic rule:

- (22) If  $\alpha \in P_{CN/CN}$  and  $\beta \in P_{CN}$ , then  $F_3(\alpha, \beta) \in P_{CN}$ , where  $F_3(\alpha, \beta) = \alpha/\beta$ . (Corresponds to phrase structure rule (2) in Appendix II.)

The corresponding semantic rule is (23).

- (23) If  $\alpha \in P_{CN/CN}$  and  $\beta \in P_{CN}$ , and  $\alpha, \beta$  translate into  $\alpha', \beta'$ , respectively, then  $F_3(\alpha, \beta)$  translates into  $\alpha'(\wedge \beta')$ .

Here, the up arrow, which has again been included automatically as part of the general form of semantic rules, figures crucially. Many adjectives, including Russian long form adjectives, do modify the intension or sense of the common noun, and not the individuals in the extension of it. It would take a special meaning postulate to make a CN/CN extensional. Such a meaning postulate would

have to have the effect of changing the semantic type of the CN/CN to that appropriate to a t/e adjective. Such a meaning postulate could be written, but only because no explicit constraints on meaning postulates have yet been formulated. Clearly, the meaning postulates will have to be constrained in some way, if they are going to play a part in any interesting theory of language. It seems a reasonable beginning to say that they may not undo the compositional semantics by converting a phrase of one category into a semantic type appropriate to another existing category. The behavior of CN/CN adjectives is amenable to such a constraint, as CN/CN's are always appropriately intensional. (See section IV.11 for a discussion of some putative CN/CN's that are extensional, as well a formulation of the inadmissible meaning postulate that would be necessary actually to treat extensional adjectives as CN/CN's.) Indeed, the intensionality of CN/CN's is how they come to be relative to their common nouns.

Bolinger (1968), writing on English, has characterized the relativity of non-intersective adjectives as "reference modification." He contrasts it with the behavior of the absolute adjectives, which is "referent modification." This terminology means that the relative adjective (the reference modifier) says nothing directly about the individuals that the common noun picks out as referents; instead

it changes the picking-out or reference function itself. Since the intension of a common noun is precisely this picking-out function, the translation rule (23) seems to formalize Bolinger's insight correctly. One of Bolinger's clear examples of reference modification is an English sentence like (24).

(24) Henry is a rural policeman.

The adjective rural says little about Henry directly; 'rural' isn't really a property of people at all. Rather, it says what kind of policeman Henry is. The relative reading of example (1) of Chapter I. works the same way. In Marya is a beautiful dancer, beautiful may just be telling what kind of a dancer Marya is. Accordingly, our semantic rules will ultimately yield as one translation (beautiful' (^dancer')\*) (m), where beautiful' applies to the intension of dancer'.

Any semantic peculiarities of CN/CN adjectives can now be given by meaning postulates, whose function is to restrict attention to those interpretations of intensional logic which are reasonable candidates for interpretations of natural language. (25), for instance, applies to the qualitative adjectives discussed here.

$$(25) \square \left[ \left[ \alpha \left( \wedge \beta \right)_{*} \right] (u) \longrightarrow \beta_{*} (u) \right]$$

where  $\alpha \in P_{CN/CN}$

$\beta \in P_{CN}$

u is a variable of type e

(25) says that if an individual  $u$  is, for instance, an intelligent ( $\alpha$ ) student ( $\beta$ ), then she is necessarily a student, but not necessarily intelligent in the absolute sense, as she may be stupid as an electrician or as a ball-player. There can be different meaning postulates for different classes of CN/CN adjectives. An alleged ogre is not necessarily an ogre or even alleged in an absolute sense, since alleged seems to have no absolute sense:

(26) \*They were alleged.

Getting back to Russian, the attributive adjectives, the long forms, are also CN/CN's, although the distinction between common nouns and terms is not quite so obvious in Russian as it is in English, since there are no articles in Russian. In English woman and tall woman are clearly common nouns; they cannot alone combine with a verb to yield a sentence as term phrases must. We must construct a full term like the (tall) woman before we can get a good sentence like The (tall) woman is walking. In Russian, though, (27) is a good sentence, having the glosses that appear below it.

(27) (Vysokaja) zhenshchina guljaet  
'The/a/some (tall) woman is walking  
po ulice.  
along the street.'

However, this does not mean that zhenshchina alone is a term and that attributive adjectives in Russian combine with T's to form new T's. First, syntactically, in Russian as in English, prenominal adjectives may not modify pronouns or proper nouns, which must be terms since they can combine with IV's to make sentences. In addition, limiting long form adjectives to combining with CN's, and not with terms, makes good semantic sense. On the one hand, having long form adjectives modify common nouns will ensure that long forms are relative to the meaning of modified nouns, and not modifiers of any individuals it may denote. This is because, since CN's are the same semantic type as IV's, the long forms, by modifying CN's, will be combining with a property to form a new, modified property. On the other hand, making long forms CN/CN's will prevent long forms from being interpreted as verb-like absolute predicates that apply to individuals, as only terms can combine with such predicates. Therefore, we will assume that words like zhenshchina are CN's, with which prenominal adjectives can combine to make new CN's by means of the rules given in (22) and (23).

Of course, the problem of predicate long form adjectives will now arise. They don't combine with CN's to make new CN's, but with a verb or a zero copula to make an IV phrase:

(28) Studentka umnaja (LF).

'(The) student (is) intelligent.'

Yet predicate long form adjectives must not be of a different category from the prenominal ones, as they have the same relative interpretation. Also, we certainly don't want to have to repeat the meaning postulates for a new category of adjective.

A solution to this problem appears if we think of what we have said that (28) actually means. If the adjective had been short, 'intelligent' would have been predicated of the individual who is a student absolutely. But (28) has a relative meaning. It says that the student is intelligent as a student or perhaps as something else. 'Intelligent student' is the sort of thing that is predicated of her. What we need to do is to derive all such non-intersective, reference modifying adjectives attributively, but in the predicate. That is, underlying (28) will be (29).

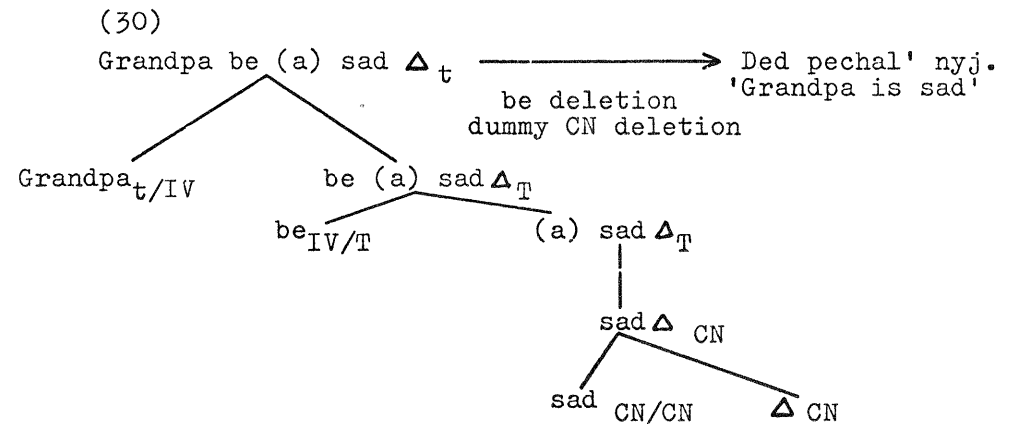
(29) Studentka umnaja (LF)

'(The) student (is an) intelligent  $\Delta$ .'

$\Delta$  is a free variable which ranges over CN's. In (29)  $\Delta$  can be interpreted as 'student'. As with free variables of category T (Deictic pronouns may be an example), in any given sentence, the  $\Delta$  will have to be interpreted

as some particular CN, or the sentence won't form an acceptable surface structure. Pragmatic considerations, though, determine the interpretation of  $\Delta$ . When appropriate, as in (28), it can be interpreted as co-intensional with the subject; otherwise it will be interpreted semantically as any other property suggested by the subject or the situation at hand. (See the interpretation of example (12) in Chapter I.) Syntactically, though, it is always empty and must be deleted from the surface structure. (See the end of this section for motivation for the syntactic rule of dummy CN deletion.)

With the preceding analysis, we can have the following kind of analysis tree:



The semantic rules operating on the untransformed t phrase will, with some simplification, give us (31), which eventually reduces to (32).



(31)

$$\widehat{P}(P\{\widehat{g}\}) (\widehat{z} \widehat{P} \forall x(\underline{sad}'(\widehat{\Delta}') \wedge P\{x\})) (\widehat{y}(\forall z=\forall y))$$
(32)  $\underline{sad}' (\widehat{\Delta}')_*(g)$ 

Meaning postulate (25) ensures that in (32) the property of individuals represented by  $\Delta'_*$ , but not  $\underline{sad}'_*$  is predicated of the individual represented by  $g$ . So  $\underline{sad}'$  pertains only to  $\widehat{\Delta}'$ , which is a function that picks out things that are  $\Delta'$ 's. In other words,  $\underline{sad}'$  modifies the reference of  $\Delta$ , just as a long form should.

Notice that in order to have the categories work out right, long form predicate adjective phrases must always have some verb in the deep structure, although if the verb is byt' it will be deleted in the present tense, as in (30). It may seem strange to have one form of 'be' specially inserted in sentences with short forms like (33), while 'be' in (34) has been deleted from the verb position.

(33) Ljuba byla vesela (SF).

'Luba was happy.'

(34) Ljuba veselaja (LF).

'Ljuba (is) happy.'

However, the two types of 'be' are semantically quite different.<sup>5</sup> Moreover, this strange outcome helps to explain the fact that short forms, but not long forms, can appear after byt' in the usual kind of imperative. Although there

are no imperatives in the Montague fragments, it is reasonable to suppose that the lexical 'be' of the kind that must appear with long form adjectives is barred from imperatives, except for exhortations to act in a certain way, as it is in English, because it is a stative verb. The transformationally inserted 'be' that can appear with short forms, however, would not be barred from imperatives. It is semantically neutral and is probably best viewed as being inserted to support the imperative mood marker as it does tense.

Let us return now to the device of dummy CN deletion, needed to get (28) from (29). Happily, Russian not only requires such a rule for an account of predicate long form adjectives, but also supplies some independent motivation for it. It seems that a long form adjective in Russian "may be used without a noun but the noun to be understood is usually clear from the context."<sup>6</sup>

(35) Ax, ty bednaja (LF)!

'Oh, you poor (thing)!'

(36) Vy pročitali vse ego knigi? Net, novaja (LF)

slishkom dlinnaja (LF).

'(Have) you read all his books? No, (the)

new (one) (is) too long.'

(37) Vy kupili knigi? net, ne bylo novyx (LF).

'(Did) you buy (a) book? No, (there) were

no new (ones).'

(38) Ty gotov k poslednemu (LF)?

'(Are) you ready for (the) last (one)?'

Such sentences are possible only with long form adjectives, exactly where dummy CN deletion is applicable. With this final motivation of the dummy CN deletion rule, the sketch of a principled description of short and long form adjectives is completed. It will be summarized in section II.6.

#### II.4. A transformational analysis.

It is worth pointing out now that, armed with the insight that adjectives do not form a unified underlying category in Russian, we should be able to construct a more standard transformational analysis of the data.<sup>7</sup> Let us say that only long form adjectives are members of the category ADJ, while short forms belong to V, for verbs. The following phrase structure rules would then serve to generate long forms only preominally and short forms only in predicates:

(39)a) S → NP AUX VP

b) VP → V (NP) (COMPLEMENT)

c) NP → DET NOM

d) NOM → ADJ NOM

e) NOM → N

To obtain the surface long adjectives in predicate position, we'll need a dummy noun deletion rule, as in the Montague analysis in the previous section.

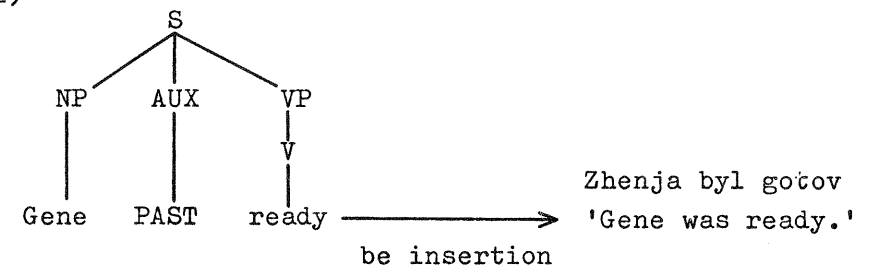
(40) [ADJ Δ] NOM → [ADJ ∅] NOM

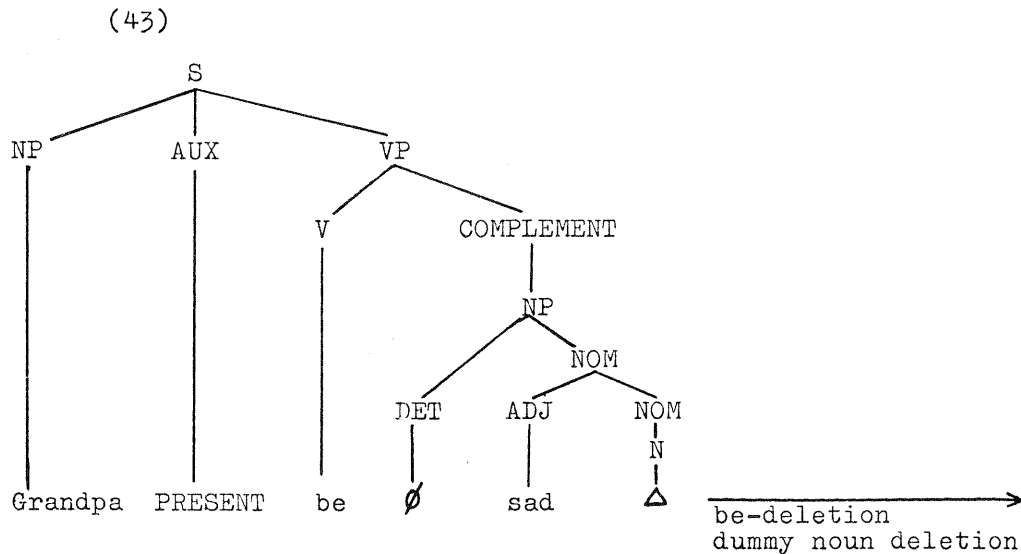
Rules (39)a)-(39)e) ensure that only long form adjectives will be generated after regular verbs, including lexical byt', but the tense support byt' will have to be transformationally inserted before short form adjectives in many sentences. As in (18), the be-insertion rule will have to be sensitive to a feature on the adjectival verb, as be-insertion applies before short form adjectives, but not intransitive verbs.

(41)  $\left\{ \begin{array}{l} \text{PAST} \\ \text{FUTURE} \\ \text{IMPERATIVE} \end{array} \right\}^V_{[+41]} \rightarrow \left\{ \begin{array}{l} \text{PAST} \\ \text{FUTURE} \\ \text{IMPERATIVE} \end{array} \right\} \text{byt}'^V_{[+41]}$

The above rules will produce the following trees, very much like (17) and (30).

(42)





Ded pechal'nyj.  
'Grandpa (is) sad.'

The semantics would presumably work on the untransformed strings in (42) and (43), just as it did in (17) and (30), only defined in terms of the category names given here.

## II.5 Other analyses.

Other transformational analyses might seem to be possible, but in fact, each alternative runs into difficulties. Suppose, for instance, that we tried to list only one form of the adjective in the lexicon and to derive the other transformationally in the right places. Although I think it will make little difference which way we do it, I will start with the long form and derive the short. My reasons for doing it in this direction are two:

First, since the long forms appear both prenominally and in the predicate and the short forms, only as predicates, transforming long-to-short has only one environment, while short-to-long has two. Second, there are classes of long adjectival forms, active participles and the relational adjectives of foot note 4 of Chapter I, which have no corresponding short forms, but there are few short forms which have no corresponding long forms.

A first approximation of a transformation to derive short forms from long forms correctly might be (44).

(44) NP (tense byt') ADJ → NP (tense byt') ADJ<sub>short</sub>

Unfortunately, there are many things wrong with this rule. First of all, in view of the semantic distinction between long forms and short, it must change the meaning of a sentence; the semantics can no longer work on the untransformed string. But even if we are willing to accept such a transformation, the conditions for its application are very strange. The rule must ordinarily be optional, so we can get both (3)a) and (3)b) and both (4)a) and (4)b), but it is obligatory if the sentence is imperative or has an infinitive complement. Finally, the morphological rules will have to be written to treat verbs and short adjectives similarly with respect to many inflection and agreement phenomena, while long adjectives behave like parts of noun

phrases. The grammar will suggest no explanation of these facts.

Let us try, then, deriving both forms of the adjective - long and short - from a single underlying verbal category as in Babby (1971). This is quite plausible if one assumes that all long forms come from reduced relative clauses. The underlying difference between (45) and (46) would then be the difference between deep structures like (47) and (48).

(45) Ona umnaja (LF).  
'She (is) intelligent.'

(46) Ona umna (SF).  
'She (is) intelligent.'

(47) She is a  $\Delta$  who is intelligent.

(48) She is intelligent.

However, there are adjectives which can appear in relative clauses but appear not at all or with a different meaning preominally, and vice versa.<sup>8</sup> In fact, long form predicate adjectives are not even grammatical in unreduced relative clauses on the surface. Most important, though, the deep structures in (47) and (48) cannot accurately reflect the semantic differences between long forms and short.

The translation rule for relative clauses in Russian,

as in English, is conjunctive and so, yields an intersective reading. The rule (from Montague (1974b)) is as follows.

(49) If  $\lambda \in P_{ON}$ ,  $\phi \in P_t$ , and  $\lambda, \phi$  translate into  $\lambda', \phi'$  respectively, then  $F_{4,n}(\lambda, \phi)$  translates into  $\bar{x}_n [\lambda'(x_n) \wedge \phi']$

Evidence for its correctness in English can be found in (50) - (52).

(50) That negligence is pure.

(51) That is negligence that is pure.

(52) That is pure negligence.

Pure is an adjective which, like beautiful, has both an intersective and non-intersective version. Unlike beautiful, though, pure does not allow dummy CN deletion. Consequently, whenever pure appears alone in a predicate, we can be sure that it is the intersective version of pure, the verbal version analogous to Babby's single underlying verbal form. Hence (50) has an intersective interpretation. Contrary to the implications of Babby's analysis, the relative clause in (51) does nothing to change the interpretation. (50) and (51), the sentence with a relative clause, are both intersective in meaning. They are also both rather surprising, since they seem to be saying that something is both negligence and 'pure' in an absolute sense, that is

innocent or untainted. Only in (52), however, where pure can be relative to negligence, does the entire expression come out meaning 'thorough negligence, or utter negligence'.

Relative clauses in Russian are also constitutionally intersective. So, the semantics working on a deep structure like (47) will have to give us something like 'She is a  $\Delta$  and she is intelligent,' where both ' $\Delta$ ' and 'intelligent' are absolute modifiers. But long forms are supposed to be relative. (45) actually means 'She is intelligent as a  $\Delta$ .'

There are other possible analyses to try, but it seems that under the assumptions about the interrelationship of syntax and semantics which are common to Montague grammar and standard transformational grammar, we have no choice but to treat Russian adjectives as belonging to two separate syntactic-semantic categories. In extended transformational theories (Jackendoff (1972) for instance) that include many kinds of interpretive semantic rules that operate on intermediate and surface structures, there would be a choice. One could assign adjectives to a single underlying category, mark them for the appropriate syntactic behavior, and use interpretive rules to assign independently the correct semantic behavior. Such an analysis would treat as accidental the fact that adjectives with verblike syntax have intersective semantic readings and that ad-

jectives with ad-common noun syntax have non intersective semantic readings. It would allow for arbitrary relations between syntax and semantics at many levels. A double category analysis, on the other hand, is consistent with the stronger hypothesis that at least some important semantic information is a direct reflection of the base syntactic rules. The double categories will not seriously complicate the lexicon, either. Most adjectives in Russian will be entered in the lexicon in both CN/CN and t/e versions. A lexical word formation rule, as formulated in Aronoff (1976), Dowty (1975), or Siegel (1974), could express their close morphological relationship. The few adjectives with no short forms or absolute meanings could now conveniently be entered only as CN/CN's. The resulting complication of the lexicon is of a kind independently needed to account for other kinds of words. Verbs which can have different kinds of complements, for instance, must behave semantically in a manner appropriate to each permissible syntactic construction. In Section V.2 there is a discussion of the relationship between the traditional parts of speech and the syntactic-semantic categories of a categorial component. Certainly, many verbs must belong to more than one syntactic-semantic category, under the assumption that the semantics works up the syntactic tree. It can then be taken as support for such an assumption that the double-adjective analysis of Russian that it has forced us into actually explains part of the language.

With either of the grammatical systems employed in this chapter, the facts recorded in section II.2 can be captured, as outlined in section II.6.

#### II.6 Summary of the solution.

1. Long forms appear in both predicate and prenominal position; short forms, only in the predicate. We can now say that long forms actually are generated only prenominally and short, only in predicate position. Long forms appear sometimes to be predicative because of the effects of the independently motivated rule of dummy CN deletion.

2. Long forms can occur with many verbs; short forms, only with byt'. This is because short forms, being of the same category as verbs themselves, leave no room for any verb other than the transformationally inserted kind of byt'.

3., 4., and 5. Long forms are like nouns in inflection, agreement, and in not taking infinitive complements. Short forms, on the other hand, inflect, agree, and take infinitive complements, just the way verbs do. Long form adjectives are of category CN/CN, so they are always part of a noun phrase and behave accordingly. Short forms are of the same category as intransitive verbs and so, follow verb rules.

6. Long forms can't appear in most imperatives with byt'; Short forms can. This is because the kind of byt' that can appear with long form adjectives is a stative lex-

ical verb which does not normally occur in imperatives, while the kind of byt' that appears with short forms is a transformationally inserted dummy support for tense and mood.

7. Long form adjectives are non-intersective, or reference-modifying; short forms are intersective, or referent-modifying. This difference is captured by assigning each type of adjective to a different syntactic category and, hence, to a different semantic type. The category CN/CN version (LF) combines with a property to make a new property. The IV version (SF) is itself a predicate that applies to individuals.

1. Examples of hortatory imperatives, as opposed to those that are commands or warnings, are i and ii.
  - i. Bud'te smelym, soldat!  
'Be brave, soldier!'
  - ii. Bud' xoroshim, moj syn!  
'Be good, my son!'
2. There is ample precedent for treating at least some adjectives as simple predicates. Bach (1968) and Quine (1960) are two examples. The sentences in (11) show that adjectives can also be infinitive - taking intransitive verbs.
3. Russian lexical items should actually appear in this and other analysis trees where the object language is a fragment of Russian, but I have used English glosses for convenience in reading the trees.
4. A similar transformationally inserted 'be' has been suggested both for English passives and for English predicate adjectives. (Lee (1974))
5. Lee (1974) gives translations for the 'be' of identity and the copula 'be'. Partee (1975a) includes a discussion of three kinds of 'be'.
6. Lunt (1968), p. 151.
7. Cooper and Parsons, (1976).
8. Compare, for instance, i., ii., and iii.
  - i. Eto plat'e, kotoroe gotovo (SF).  
'This (is a) dress which is ready (for something).'
  - ii. \*Eto plat'e, kotoroe gotovoe (LF).  
'This (is a) dress which is ready/ready made.'
  - iii. Eto gotovoe (LF) plat'e.  
'This (is a) ready-made dress.'

C H A P T E R I I I  
ADJECTIVES IN ENGLISH

III.0 Introduction

In Chapter II. it was shown that adjectives in Russian do not form one unified category. Rather, there are two different underlying syntactic-semantic categories, non-intersective ad-common nouns (long forms) and intersective one-place predicates (short forms). English adjectives also exhibit the semantic distinction between non-intersective and intersective adjectives, as we saw in section I.1. In addition, English adjectives exhibit some syntactic peculiarities which, while less obviously related to the semantic distinction than the Russian facts are, still can be seen to be connected with it. Some systematic account could be achieved through meaning postulates, through special semantic rules, or through the compositional semantics itself. Since it turned out in Chapter II. that in terms of Montague grammar, the dual semantic role of the adjectives clearly corresponds with the dual syntactic roles of ad-common noun and predicate, the last course of action, the one adopted for Russian, seems to be the most promising one.

In section III.1 I outline a theory of adjectives in English as belonging to the two different underlying

adjectives classes defined, as in Russian, by the following oppositions:

Class I.	Class II.
Non-intersective Adjectives	Intersective Adjectives
relative	absolute
intensional	extensional
reference-modifying	referent-modifying
ad-common nouns	one-place predicates
CN/CN	t///e or t/e

In section III.2 alternative theories are considered and my view is given in more detail. Section III.3 presents more positive evidence for the double-category theory of adjectives.

### III.1 The analysis.

#### III.10 Semantics.

In Montague terms, non-intersective adjectives like veteran map the meanings of common nouns, which are semantically characteristic functions, into new characteristic functions. They combine with one picking-out or reference function to make a new such function. This semantic type is represented as  $\langle\langle s, \langle\langle s, e \rangle, t \rangle\rangle, \langle\langle s, e \rangle, t \rangle\rangle$ , corresponding to the syntactic category CN/CN, something that takes a common noun to make a common noun. For instance, in a translation of Helga is a veteran manager, veteran'

applies to the intension of manager' to yield the new common noun veteran' (^manager'). The new common noun means 'veteran, that is, experienced, as a manager', parallel to the Russian expression with a long form adjective: umnaja studentka 'intelligent as a student'. As in Russian, CN/CN's like veteran do not directly modify a term-phrase like Helga. They apply to the sense or intension of a common noun. As in Russian, meaning postulates will ensure the proper entailments for the complex common nouns built up from CN/CN's with CN's. Meaning postulate (25) from Chapter II, is repeated here as (1).

$$(1) \square [ [\alpha (^{\beta})_*] (u) \longrightarrow \beta_* (u) ]$$

Where  $\alpha \in P_{CN/CN}$

$\beta \in P_{CN}$

and  $u$  is a variable of type  $e$

(1) works for most non-intersective adjectives in English. It says that a veteran manager, for instance, is necessarily a manager, but that we can't expect her to be 'veteran' in any absolute sense. A few non-intersective adjectives, non-standard modifiers like former, alleged, fake which are marked with a \* in Appendix I, will need special meaning postulates.

The semantics of intersective adjectives is, as be-



fore, more straightforward. In English, intersective adjectives do not resemble verbs in the obvious ways that they do in Russian - in inflection or general syntactic behavior. Yet both Bach (1968) and Lakoff (1970) have suggested that adjectives in English be treated as one-place predicates like intransitive verbs. Such a suggestion would not only allow English intersective adjectives to be represented as Russian ones are; it also automatically yields the right semantic interpretation.

In a Montague system, intransitive verbs are of category  $t/e$ , things which take entities to make sentences. The corresponding semantic type is  $\langle\langle s,e \rangle, t \rangle$ , a function from individual concepts to truth values, which is the characteristic function of a set that shares a particular property. Since intersective adjectives in English, as well as in Russian, say that the individual that they modify is a member of the set of things that have the property that the adjective represents, the semantic fit is perfect. The syntactic fit of intersective adjectives to intransitive verbs, though, is not quite perfect, since predicate adjectives must always be preceded by a form of 'be' before they can act as the predicate of a sentence. This is easy to take care of. The syntactic category of predicate adjectives can be called  $t///e$  to distinguish adjectives from other predicates

syntactically. In Russian, where be-insertion constitutes the sole systematic difference between intersective adjectives and intransitive verbs, the adjectives could remain members of the intransitive verb category, but be marked to take be-insertion. In English, however, intersective adjectives might as well have their own syntactic category, since they differ from intransitive verbs in many ways. Among other things, they do not share verbal inflections, they can undergo preposing (See rule (6)), and, as mentioned before, they require the insertion of be before combining with term phrases to make sentences. Rule (2), an extension of the Russian be-insertion rule and also a semantically empty rule, accomplishes the necessary be-insertion.

- (2) If  $\alpha \in P_{t///e}$ , then  $F_4(\alpha) \in P_{te}$ , where  $F_4(\alpha)$  is 'be  $\alpha$ '.

(Corresponds to transformation (2) in Appendix II.)

Formalizing the semantic notions involved supports the idea that the distinction between non-intersective adjectives and intersective ones in English as in Russian is actually a distinction between adjectives that are basically ad-common nouns operating on intensions of CN's, and adjectives that are basically predicate and extensional by translation conventions. Some preliminary syntactic motivation for this division can be found in non-restrictive adjectives in English. Non-restrictive ad-

jectives require a specific full noun phrase to combine with. My theory of adjectives, as developed so far, would predict that only intersective adjectives could be non-restrictive, since only they can combine with full noun phrases. (Non-intersective adjectives must combine with common nouns.) If we look at some sentences with proper nouns, which can occur with only non-restrictive adjectives, this prediction seems to be borne out. Adjectives which are exclusively intersective make fine non-restrictive modifiers:

- (3) They've always wanted to meet  $\left\{ \begin{array}{l} \text{healthy} \\ \text{angry} \\ \text{naughty} \\ \text{aged} \end{array} \right\}$  Carla.

Adjectives which, like beautiful, can have either an intersective or a non-intersective interpretation are unambiguously intersective when non-restrictive:

- (4) The person I need is  $\left\{ \begin{array}{l} \text{responsible (= trustworthy)} \\ \text{terrible (= scarey)} \\ \text{old (= aged)} \end{array} \right\}$  Ivan.

And, finally, exclusively non-intersective adjectives, which according to the theory can combine only with common nouns, are ungrammatical as non-restrictive modifiers:

- (5) \*Don't pay any attention to  $\left\{ \begin{array}{l} \text{mere} \\ \text{ostensible} \\ \text{actual} \end{array} \right\}$  Jonathan.

The proposed division of adjectives into non-intersective ad-common nouns and intersective predicates, then, has initially both semantic and syntactic motivation. If it were the case that we got non-intersective readings with all and only those adjectives in prenominal position and intersective readings with all and only those adjectives in predicate position, we would be finished. Everything would be accounted for. If we got both readings in predicate position only, as in Russian, we could just have another dummy deletion rule and be done with it. The right readings would fall out of the compositional semantics. Unfortunately, for the most part, if an English adjective is capable of yielding both kinds of reading, it will do so in either position in the sentence.

- (6) That lutist is good.

- (7) That is a good lutist.

Both (6) and (7) could be taken to be commenting on either the lutist's playing ('good as a lutist') or her morals or general qualities ('generally or absolutely good'). The only reassuring syntactic generalization is that all those adjectives that appear exclusively prenominally (Appendix I, lists D and E) are exclusively non-intersective in their semantics, while those few that appear exclusively predicatively (Appendix I, list B) are exclus-

ively intersective. The syntactic categories and semantic types are related as predicted in some simple cases, but how are we to account for the vast majority of more complicated adjectives?

### III.11 Syntax

In this section I argue for a doublet theory of English adjectives. Most adjectives will have both a CN/CN non-intersective version and a t//e intersective version.<sup>1</sup> The CN/CN's are generated exclusively prenominally. However, they may come to appear in the predicate with no following CN, somewhat as in Russian. The language includes a dummy common noun, which may come to the surface as one for singular count nouns. In predicate position, though, this dummy may be syntactically deleted by rule (8).

$$(8) \text{ be a } [\text{ADJ}]_{\text{CN/CN}} \Delta \text{ CN} \rightarrow \text{be } [\text{ADJ}]_{\text{CN/CN}}$$

Rule (8) has no semantic effects.  $\Delta$ , the dummy CN, remains part of the semantic interpretation. Its own interpretations range over common nouns, but it is interpreted uniquely for any given utterance. Most often, the  $\Delta$  is interpreted according to linguistic context. The lutist is good on its non-intersective reading is more likely to be interpreted as 'The lutist is a good lutist' than as 'The lutist is a good plumber.' However, the

second interpretation would be possible, given the right pragmatic context. Indeed, there are many sentences where the interpretation of the  $\Delta$  must be done pragmatically. In a sentence like This is fake, (underlyingly 'This is a fake  $\Delta$ ') there is simply no linguistic context.<sup>2</sup>

The t//e versions of adjectives are generated exclusively in predicates. However, most of them may be moved into prenominal position by a semantically empty rule that preposes t//e adjectives from relative clauses.<sup>3</sup>

$$(9) \text{ CN}_1 \left\{ \begin{array}{l} \text{that} \\ \text{which} \\ \text{who} \end{array} \right\} \text{ be ADJ}_{t//e} \rightarrow \text{ADJ}_{t//e} \text{ CN}_1$$

With rules (8) and (9), the doublet theory accounts for the fact that (6) and (7), repeated below, are both ambiguous between non-intersective and intersective readings. It assigns to them the underlying structures as shown. The a) structures yield the non-intersective readings; the b) structures, the intersective ones.

(6) That lutist is good.

- a) That lutist is a good  $\text{CN/CN} \Delta \text{ CN}$
- b) That lutist is good<sub>t//e</sub>

(7) That is a good lutist.

- a) That is a good  $\text{CN/CN}$  lutist
- b) That is a lutist who is good<sub>t//e</sub>

However, a doublet theory considerably complicates the lexicon and, added to the Russian analysis, generalizes the strange claim that adjectives do not form any kind of unified category. It would be appropriate, therefore, to consider possible alternative ways of analysing adjectives in English.

### III.2 Alternatives

#### III.20 Introduction

In this section I discuss some possible ways of treating adjectives. I examine them to see if they can be made to be descriptively adequate in broad detail within a transformationally adapted Montague syntax, whether they are, in principle, capable of expressing the non-intersective/intersective distinction and, finally, whether they predict the right readings in the right places. I argue that the doublet theory is the only one that meets these criteria.

The logical possibilities, as I see them, are

1. The basic predicate theory: generate all adjectives basically as simple predicates and derive adjectives elsewhere transformationally.

2. The basic ad-common noun theory: generate all adjectives as basic prenominal ad-common nouns and derive adjectives elsewhere transformationally.

3. The mixed theory: generate some adjectives as

basic syntactic-semantic predicates and some as basic syntactic-semantic ad-common nouns and derive transformationally those adjectives whose syntax and semantics do not coincide this way.

4. The doublet theory, as stated before: generate most adjectives as both basic syntactic-semantic predicates and as syntactic-semantic ad-common nouns and derive transformationally those adjectives whose syntax and semantics do not coincide this way.

#### III.21 The basic predicate theory

The idea of generating all adjectives predicatively and deriving forms in other places by transformation was the idea behind early transformational analyses of adjectives, as in Chomsky (1957) and Smith (1961). According to such analyses, (11) was to be derived from something like (10) by means of relative clause reduction and preposing transformations.

(10) a woman who is tall

(11) a tall woman

Such an analysis for all adjectives can be shown to be inadequate on purely syntactic grounds. Many linguists, such as Bolinger, Berman, Levi, Winter and Jackendoff, have pointed out that the grammaticality of an ADJ+CN

sequence such as that in (11) is often not predictable from the grammaticality of any designatable source where the adjective is not prenominal. A sampling of the idiosyncrasies that any predicate-to-prenominal adjective transformation will have to deal with appears in (12).

(12)

a veteran manager	*a manager who is veteran
a total stranger	*a stranger who is total
a medical man	*a man who is medical
a financial genius	*a genius who is financial
*a certain woman (different meaning)	a woman who is certain
*an asleep banker	a banker who is asleep
*a ready woman	a woman who is ready
a definite contribution	*a contribution which is definite (different meaning) definitely a contribution
a basic mistake	a mistake which is basic *basically a mistake (different meaning)
a tobacco chewing slouch	*a slouch who is tobacco-chewing a slouch who chews tobacco
*a linguistics-studying student	*a student who is linguistics-studying a student who studies linguistics

In addition to the fact that many prenominal adjectives have no predictable relative clause or other pred-

icate source, the basic predicate theory of adjectives runs into serious semantic problems. Both (13) and (14) are ambiguous between non-intersective and intersective interpretations.

(13) a landlord who is bad

(14) a bad landlord

In either, the speaker may be talking about someone who is bad as a landlord (non-intersective) or about someone who is evil in general and just happens to be a landlord (intersective). In a system where all adjectives originate as predicates, this ambiguity cannot be structural; it will have to reside within the adjective. Since the distinction is a systematic one, it might best be expressed as a feature on adjectives, perhaps [ $\pm$  intersective]. Adjectives like asleep would be marked [+ intersective], adjectives like veteran would be marked [-intersective], and adjectives like good would not be marked, so they could have either reading. This would work, as far as it goes, but actually a feature like this can do very little work. It fails to suggest why all adjectives for which preposing in this system would be obligatory (utter, main, and others in lists D and E in Appendix I.) should have to be marked [- intersective], while all adjectives that are exceptions to the preposing rule (adjectives in Appendix I. lists

B, I, and J) are marked [+ intersective]. More fundamentally, it provides no mechanism for realizing the semantics of [- intersective] adjectives. There is no way to have them differ from [+ intersective] ones by having them operate on the meaning of a common noun.

It might appear that [- intersective] adjectives could be made to apply to the meaning of a common noun by means of a later semantic rule. That is, if preposing is obligatory for adjectives marked [- intersective], and semantic interpretation could take place after preposing, then adjectives marked [- intersective] would always be in construction with a common noun by the time semantic interpretation took place. The problem with such a system arises with the unmarked adjectives, those which remain in predicate position and must be able to have either a [- intersective] or a [+ intersective] interpretation. Such adjectives never come to be in construction with a common noun, and, so, could never be given a [- intersective] interpretation. One might try to remedy the situation by marking all adjectives + or - intersective when they are inserted into a tree. In such a system, the feature [ $\pm$  intersective] would be stripped of its syntactic significance; preposing could no longer be obligatory for all [- intersective] adjectives. Those that must be preposed would have to be specially marked. The

feature [- intersective] would serve exclusively as an arbitrary trigger for the characteristic bound semantic interpretation of non-intersective adjectives. However, for [- intersective] adjectives in predicate position, there will be no common noun around for the adjective to be bound to, so the correct semantic interpretation still could not take place.

There is a variation on the basic predicate theory of adjectives that is proposed by Berman and, I think, Bolinger. It is meant to deal with the fact that the grammaticality of ADJ+CN sequences seems to depend very often on what lexical items are involved. It says roughly that adjectives that appear in the predicate are generated there, while many adjectives that appear prenominally are listed in the lexicon with their nouns, as compounds. This variation does nothing to solve the semantic problems cited above. In fact, it doubles them, since the feature [ $\pm$  intersective] will now appear on members of two lexical categories, predicate adjectives and certain ADJ+CN compounds. It does, however, solve the problem of syntactic idiosyncrasy, albeit at great expense in complication and new problems. Berman herself observes that true ADJ+CN compounds ((a) sentences) behave syntactically differently from other ADJ+CN collocations ((b) sentences).

(15) a) \*I prefer long shots to hot ones.

b) I prefer warm baths to cold ones.

(16) a) Sally is as much of a young lady as Mary.

b) ?Sally is as much of a tall woman as Mary.

Semantically, real compounds are also different from other ADJ+CN sequences, in that the non-intersective/intersective distinction isn't always pertinent in real compounds. Consider sentences (17) and (18).

(17) The old teachers meet here.

(18) The old boys meet here.

In (17) old teachers is an ordinary ADJ+CN string. It must have either the non-intersective reading 'old (experienced) as a teacher' or the intersective reading 'old (aged) and a teacher.' In (18), though, old boys is a compound. It doesn't mean either 'old as boys' or 'old and boys.' It actually means something like 'members of an established, exclusive, elite, male, social and/or professional group.' A final difference between ordinary ADJ+CN strings and compounds is cited by Gleitman and Gleitman (1970). Both CN/CN adjectives and t//e's in an ordinary string can be intensified. Very old teachers can mean teachers who are very experienced (CN/CN) or teachers who are very aged (t//e). Adjectives in compounds cannot be intensified without causing the compound to lose

its compound interpretation, as in the expression very old boys.

These basic syntactic and semantic differences between real compounds and other ADJ+CN sequences mean that if all ADJ+CN sequences are to be listed as compounds, they will still have to be differentiated from real compounds. This is as much as to say that they cannot be listed as compounds.

### III.22 The basic prenominal theory.

Generating all adjectives prenominally and then deriving any non-prenominal adjectives by transformation has also been suggested as a theory of adjectives. No such approach that involved movement of adjectives into predicates would be possible. In such a system the peculiar The tall woman is would underlie The woman is tall, and The old bison grew would underlie The bison grew old. A more plausible version of the basic prenominal theory, one similar to Montague's treatment of adjectives in Montague (1974a) would involve a rule like (8) that would delete a dummy CN after adjectives in the predicate. That is, (19) would underlie (20).

(19) The woman is a tall  $\Delta$ .

(20) The woman is tall.

As in rule (8), the  $\Delta$  would be interpreted indexically,

so that in a sentence like She is tall, with underlying structure 'She is a tall  $\Delta$ ' the  $\Delta$  could be interpreted as 'woman' or 'ship' or anything else that the speaker happened to be talking about.

However, even this more reasonable version of the basic prenominal theory does not provide a grammatical source for every grammatical sentence. The sentences in (21), for instance, could not have come from the sources in (22).

- (21) a) The bison grew old.  
 b) I saw the president drunk.  
 c) The actor is ready.
- (22) a) \*The bison grew an old  $\Delta$  ( $\Delta$  = bison)  
 b) \*I saw the president a drunk  $\Delta$  ( $\Delta$  = president)  
 c) \*The actor is a ready  $\Delta$  ( $\Delta$  = actor)

The syntactic difficulties seem insurmountable, but even if they were worked out, the semantics would still pose problems. The ambiguity of (6), That lutist is good, could be explained on the basic prenominal theory as a result of the vagueness in the interpretation of the deleted dummy CN. The sentence could mean 'That lutist is a good checker player,' given the right context. What the approach fails to account for is that (7) That is a good lutist, can also be ambiguous, but not vague like the predicate version in (6). It is fairly easy to

extend the basic prenominal theory to give prenominal adjectives a vague reading identical to that of the same adjective in predicate position. One need only add a semantically empty adjective preposing rule that would derive good lutist from 'lutist who is a good  $\Delta$ ' syntactically, but allow the semantics to operate on the untransformed structure. Unfortunately, good lutist is not vague like lutist who is good, but truly ambiguous.

Consider the following situation. If one is watching a checker game among musicians, it might be appropriate to say, "The lutist is good," meaning 'good as a checkerplayer.' Under the same circumstances one could not say "That is a good lutist" and still mean 'That is a lutist who is good as a checkerplayer.' A good lutist can only be good as a lutist or good in general. Similarly, suppose there were a restaurant that had a reputation for hiring cooks from all over the world. If, upon visiting the kitchen, a regular patron saw someone unfamiliar wearing a fez, he might ask "Is the Turk new?" meaning 'Is the Turk a new cook,' or 'new member of the staff.' He would not say "Is that a new Turk?" The proprietor could answer him, "No, the Turk is old," meaning that the Turk is old as a cook or as a member of the staff. It would be inappropriate as well as rude for him to reply to the patron, "No, he's an old Turk," because



prenominal old is not vague. It must mean either a 'veteran Turk' if that made sense, or, more likely, an 'aged Turk,' that is, old in general. Prenominal old cannot be interpreted as applying to any pragmatically plausible CN the way old in the predicate can.

I see no way that the basic prenominal theory of adjectives could account for the fact that common adjectives are ambiguous in prenominal position, but vague in the predicate. A more complicated theory seems in order. The doublet theory correctly predicts this distribution of ambiguous and vague readings, but there is one more alternative theory to consider first.

### III.23 The mixed theory.

The last alternative theory of adjectives holds that some adjectives are generated only prenominally as ad-common nouns, while others are generated only as basic predicates. Mixed theories differ from my doublet theory in that, although they recognize two different classes of adjective, they present these classes as mutually exclusive. It is possible to frame a mixed theory within many different kinds of theoretical frameworks. Katz (1972), for instance, has a sort of mixed theory with theoretical assumptions very different from mine. He divides adjectives into two semantic groups, relative adjectives (including my non-intersective adjectives and the measure adjectives

of chapter IV) and absolute adjectives (intersective adjectives like carnivorous, speckled). This is a mixed theory, because every adjective belongs to one or the other class, but not to both. Since Katz believes that the relationship between semantics and syntax may be arbitrary, his treatment does not include how each kind of adjective should be generated. His interest is solely in giving a semantic representation, in terms of semantic markers, of relative adjectives. Relative adjectives, he says, are always relative to the lowest order category included as a semantic marker in the subject. Sentence (23) would have roughly the interpretation in (24).

(23) Skyscrapers are high.

(24) Skyscrapers are GREATER in VERTICAL SIZE than the average BUILDING.

BUILDING is the lowest order category for skyscrapers, VERTICAL SIZE is the relevant dimension, and GREATER (than average) is the appropriate relation, as determined by the meaning of high.

Even given the assumptions of Katz's theory, this account seems inadequate. First, there is not always a lexical subject from which to choose the lowest order category. Consider (25), for instance.

(25) It is high.

If objects, as well as words, have semantic markers, the referent of it in (25) might supply the necessary marker, except that one could utter (25) meaningfully without having any idea what "it" was.


Second, as we have seen in section III.22, it need not be the lowest order category for the subject that an adjective is relative to. In the right context, (26)a could be interpreted as in b):

- (26) a) That dancer is good.  
 b) 'That dancer is better than average at playing checkers.'

Finally, the idea of an adjective determining a scale such as VERTICAL SIZE and placing the subject on it (GREATER than average) relative to the range of the subject's comparison group (BUILDINGS) makes some sense for an adjective like high, or even good. However, there are some relative adjectives that defy such an analysis. Navigable, for instance, passes both my consistency test for non-intersectiveness (27) and Katz's test for relativity (28).

- (27) That break in the trees is a footpath and a stream.

That break in the trees is a navigable footpath, but it's not a navigable stream.

- (28) The footpath is more navigable than the stream. 

The footpath is navigable.

Yet, what scale can we associate with navigable? I think there is nothing more illuminating than 'navigability' to be found. Now, assuming that something like BODY OF WATER is an appropriate lowest order category to constitute a comparison class for stream, can we say how navigable the average body of water is? The same problems arise with intentional, customary and other non-measuring adjectives which, all the same, are used relatively.

Parsons (1971) has suggested a mixed theory of adjectives based upon a set of assumptions closer to my own. His two classes of adjectives are CN's and t///e's. Since most adjectives appear on the surface both prenominal and predicatively,<sup>4</sup> the criteria for classifying adjectives as basic CN/CN's or basic t///e's must be semantic. As shown in section III.10, non-intersective adjectives should be the ones to be generated prenominal, and intersective adjectives should be the ones to be generated predicatively. This is the division that Parsons uses. He seems to employ the consistency test in (2) to identify the non-intersective adjectives and notions similar to the intuitive idea of non-relativity discussed earlier to identify intersective ones. The difference between my use of these semantic criteria in I.1 and their use in the mixed theory of adjectives is that I

used the tests earlier to ascertain whether or not a particular adjective had a non-intersective and/or an intersective reading. Now in this mixed theory, any adjective which satisfies the conditions in (2) of Chapter I is categorized as exclusively CN/CN. This will include good, old, beautiful, and other common adjectives, all those in Appendix I. lists F-J.

The mixed theory avoids the need for doublets by saying that if an adjective that has been classified as a CN/CN seems to have a non-relative reading, such a reading is due to a very general interpretation of the dummy CN. This solution is similar to that in the basic prenominal theory and runs into similar problems. In a system where any given adjective is generated only as either a basic CN/CN or a basic t///e, there is a need to account for the occurrence of adjectives categorized as non-intersective in predicate position and of adjectives categorized as intersective in prenominal position. Parsons proposes two optional, semantically empty syntactic rules that have the effect of getting each type of adjective into the natural position of the other:

(29) be a [ADJ]<sub>CN/CN</sub> <sup>Δ</sup> CN → be [ADJ]<sub>t///e</sub>

(30) NP<sub>1</sub>  $\left\{ \begin{array}{l} \text{which} \\ \text{who} \\ \text{that} \end{array} \right\}$  be [ADJ]<sub>t///e</sub> → [ADJ]<sub>t///e</sub> NP<sub>1</sub>

(29) is a version of rule (8), the old dummy CN dele-

tion rule. It derives non-intersective adjectives in predicate position by deleting the dummy CN. Non-intersective adjectives like veteran, utter and the other words in Appendix I. lists D and E, which cannot appear alone in the predicate, will be exceptions to this rule, as they would be to (8). Since (29) is semantically empty, the semantics will still operate on the untransformed structure including the indexical dummy CN. It will still yield a non-intersective reading, although (29) recategorizes the adjective syntactically as a t///e. (30) moves both basic and derived t///e adjectives into prenominal position, also without changing the semantics. The basic t///e adjectives are those originally classified as intersective. So (29) creates surface structures like rancid cheese, while allowing the semantics to operate as if rancid were a predicate. The derived t///e adjectives, however, are the output of (29). Semantically, they still include their dummy CN's, but they have been recategorized syntactically as t///e's. The purpose of the recategorization is to make these adjectives subject to the preposing rule (30) in order to provide a second source for ambiguous prenominal adjectives. However, the results of the application of (30) to t///e's derived by (29) are the same as the results for the ill-fated rule within the basic prenominal theory which fronted non-intersective adjectives along with their (syntactically

invisible) dummy CN's.

Basic CN/CN's now have two ways of getting into prenominal position. They may be generated there directly, or else they may be generated as part of a predicate NP with a dummy CN and syntactically reduced and fronted by (29) and (30). The semantic structure of (31a) may look like either (31b) or (31c).

- (31) a) a good lutist  
 b) a good CN/CN lutist  
 c) a lutist who is a good CN/CN  $\Delta$  CN

As in the basic prenominal theory framework, in the absence of extra mechanisms that might interfere, the prediction is that the common noun that good applies to can be vague whether the adjective is prenominal or predicative, since both structures can contain a  $\Delta$ . We have seen in III.22 that this prediction is wrong; only predicate adjectives are truly vague in this way.

### III.24 The doublet theory.

Having tried apparently simpler theories and found them inadequate, I return to the doublet theory to show how it avoids the weaknesses of the others. In section III.3 I give some more positive evidence for it.

To repeat the basic principles of the doublet theory, most adjectives in it will have both a CN/CN  $\Delta$  and

a t///e version. A positive result on the test in (2) of Chapter I for non-intersectiveness means that the adjective has a CN/CN version. But the presence of an intuitively non-relative reading as well will mean that it will also have a t///e version. As in the mixed theory, it is not difficult to account for the appearance of both semantic types in both syntactic positions. CN/CN versions of adjectives will, as usual, be generated only prenominally. However, when they modify a dummy CN in the predicate, that dummy CN may be deleted, unless one of the exceptional adjectives in Appendix lists D, E, H, or J is involved. The dummy CN will remain in the semantics to be interpreted by linguistic or pragmatic context. In this way, we get non-intersective readings both prenominally and in the predicate. t///e versions of adjectives are generated only in the predicate, but they and only they may be fronted by relative clause reduction and fronting. (Of course, the exceptional t///e's in Appendix lists B, I, and J can never be fronted at all.) Limiting reduction and fronting to basic t///e's avoids the pitfalls, shown in (12), of the more general rules of this type, since every grammatical intersective reading does have a grammatical relative clause source. The constrained rule also accounts for the occurrence of intersective adjective readings both in the predicate and prenominal position.

However, unlike the basic prenominal theory and the mixed theory, the doublet theory also predicts the fact that adjectives with CN/CN versions are vague in the predicate but ambiguous prenominally. That is, as we saw in (6) and (7), repeated below in (32) - (35), such adjectives can apply to the meaning of any pragmatically determined common noun when they appear in the predicate ((34)), but prenominally they can only be read as applying either to the following CN, or to something so general that, in fact, they don't apply to anything ((35)).

(32) That lutist is good

(33) That is a good lutist.

In the situation where somebody wishes to compliment a lutist's checker-playing, (32) was appropriate, but (33) was not. The basic prenominal theory and the mixed theory, in the absence of compensatory mechanisms, both predicted wrongly that (32) and (33) should be equally appropriate. In a doublet theory, though, good itself is ambiguous; it can be either a CN/CN or a t///e. The possible semantic structures for (32) and (33) on this theory, then, look like (34) and (35) respectively.

(34) That lutist is good.

a) That lutist is [good] t///e

b) That lutist is a [good] CN/CN [Δ] CN

(35) That is a good lutist.

a) That is a lutist who is [good] t///e

b) That is a [good] CN/CN lutist.

The a) sentences represent the sources for the intersective readings of (32) and (33). Both (32) and (33) can mean that the person who is a lutist is good in general. The b) sentences represent the non-intersective readings of (32) and (33). (34b), corresponding to (32), contains an indexical dummy CN, so (32) will be appropriate in the checker situation. That is, (32) can, in the right situation, mean 'That lutist is good as a checkerplayer.' (35b), the non-intersective version of (33), on the other hand, contains no dummy CN. (33) will be inappropriate in the checker situation because good must either be interpreted as applying to lutist, or as being a t///e, as in (35a). The doublet theory, then, correctly represents the facts. Only (32) is assigned a vague interpretation; (33) is simply ambiguous.

### III.3 Other evidence for doublets.

#### III.30 Introduction

The doublet theory seems preferable to the alternatives discussed here. However, since additional alternatives undoubtedly exist, it is important that there be independent positive evidence for doublets. Such evidence is of three kinds. First, there are certain syntactic constructions which in general permit only t///e adjectives. These constructions include among their permissible adjectives the most general readings of words like old, new, and good, indicating that these common adjectives

do, in fact, have a t///e version, as well as a CN/CN one. Second, some adjectives very clearly have doublets; in their CN/CN versions they are exceptions to the dummy CN deletion rule; yet, they can appear in predicate position as t///e's. Finally, tests on adjectives which are partial synonyms of more complex adjectives show that most such complex adjectives are synonymous with and share other behavior with t///e's as well as CN/CN's.

### III.31 Syntactic constructions that select t///e's.

There are two syntactic constructions in English that are grammatical only with those adjectives that seem intuitively non-relative. This includes both adjectives that would be basic t///e's by the mixed theory and adjectives that would be basic CN/CN's by the mixed theory, but only in their most general senses. These general senses of such CN/CN's must actually be full-fledged t///e doublets of the adjectives, since it is nearly impossible to write rules for these constructions if the participating adjectives do not form a unified class. In a doublet theory, the adjectives that can appear in these constructions are all in the category of t///e's, including exclusive t///e's (such as those in lists A and B in Appendix I.) and the t///e partners of doublets (such as those in lists F-J).

The constructions involved are illustrated in (36) and (37).

(36) There are two boxes ready on the table.

(37) I { found  
caught  
saw  
hired  
bought  
met } the swimmers nude.

John Goldsmith brought constructions like (36) to my attention, and David Dowty discusses those illustrated in (37) in two papers, Dowty (1972) and (1975a). Goldsmith and Dowty claim that their respective constructions select for adjectives that represent temporary qualities. Temporariness certainly contributes to acceptability, but it is not a hard and fast criterion, nor a sufficient one. What the constructions do unfailingly select for is t///e adjectives. Consider (38) and (39), which illustrate the bias toward the temporary.

(38) There were a lot of faces red in the room  
that night.

(39) We've all seen the house red.

(38) is appropriate only if the speaker is saying that the people present were embarrassed, not if she is saying that they were Native Americans. This latter reading is possible for There were a lot of red faces. Similarly, (39) is appropriate only if the speaker is saying that the house referred to is in the habit of

changing colors owing to sunsets or frequent paint jobs. In both sentences, only temporary reds can be understood. Note, however, that the readings of red selected in (38) and (39) are also all clearly intersective readings appropriate only to a t///e adjective. The one reading clearly excluded in (33) is the non-intersective reading of red face, which is 'red, of a human face,' or Native American; that is, not red in any absolute sense.

Furthermore, there seem to be some non-temporary adjectives that can appear in these constructions, some temporary ones that can't, and some selections that have nothing to do with temporariness. In all these cases a valid generalization is that the permissible adjectives are intersective. Consider first (40) and (41).

(40) I've seen a lot of my teachers old.

(41) He likes to buy his socks old.

It would be hard to maintain that the intersective senses of old that come out in (40) and (41) are temporary qualities. Certainly they are no more temporary than the excluded reading. This excluded reading is, as predicted, the one associated with a non-intersective version of old. It means 'former,' as in my old teacher or his old socks he outgrew. (42), on the other hand, contains an example of a temporary quality that is ungrammatical in the there

construction because it is exclusively CN/CN. The temporary quality is temporariness, and (42b) is meant to show that it is not excluded from the construction because of the meaning of the resulting sentence.

(42) a) \*There are several teachers temporary  
in our department.

b) There are several temporary teachers  
in our department.

Finally, (43) and (44) provide an example of a selection that could have nothing to do with time, only category.

(43) a) There were several students present when  
the decision was made.

b) There were several present students when  
the decision was made.

(44) a) All of us have seen your husband present  
at P.T.A. meetings.

b) All of us have seen your present husband  
at P.T.A. meetings.

'Present in place' is no more temporary than 'present in time,' yet only the former interpretation of present, the non-relative one, is possible in the a) sentences above. The b) sentences, in contrast, have only a 'present in time' reading. It is not, then, only temporariness that

is necessary for the selection of adjectives in these constructions, but being a t///e. However, many adjectives that clearly have non-intersective, CN/CN versions occur in these constructions:

- (45) I've seen many of my teachers old.
- (46) Gwen bought the hockey stick new.
- (47) I've seen those children good, but not very often.
- (48) There are three students new in class today.
- (49) You just happened to catch me short; I'll pay you back tomorrow.

It follows, then, that the adjectives appearing above have both t///e and CN/CN versions. This conclusion makes the statement of the syntactic rules for the two constructions under discussion quite simple, since the syntactically permissible adjectives can be designated simply as those of category t///e.

Let us consider the there construction first. There cannot be generated directly as the subject of a sentence since it is hard to see how to give it an interpretation as a term phrase, or even how to get the verb marked correctly for number. Consequently, there sentences are generally considered to be a product of an optional transformation. It is the exact formulation of this transformation that the doublet analysis will facilitate.

Roughly, there-insertion must take a sentence with an indefinite subject followed by be or certain other verbs, insert there, and move the subject:

$$\text{NP}_1 \quad \text{be} \quad X \rightarrow \text{There be NP}_1 \quad X$$

(-def.)

However, there are limitations on what X can contain in the rule above.

- (50)
  - a) A bat is  $\left\{ \begin{array}{l} \text{suspended} \\ \text{throwing things} \end{array} \right\}$  from the ceiling.
  - b) There is a bat  $\left\{ \begin{array}{l} \text{suspended} \\ \text{throwing things} \end{array} \right\}$  from the ceiling.
- (51)
  - a) A bat is a good pet.
  - b) \*There is a bat a good pet.
- (52)
  - a) Some bat is  $\left\{ \begin{array}{l} \text{handy} \\ \text{asleep} \end{array} \right\}$  in every bathroom.
  - b) There is some bat  $\left\{ \begin{array}{l} \text{handy} \\ \text{asleep} \end{array} \right\}$  in every bathroom.
- (53)
  - a) One filling is temporary in her mouth.
  - b) \*There is one filling temporary in her mouth.

(50) shows that verbs and verb phrases with either the auxiliary be or the passive be are acceptable. (51),



on the other hand, shows that predicate noun phrases, which occur with the main verb be, are not any good with there sentences. (52) illustrates once again that t///e adjectives, with their transformationally inserted be, can undergo there insertion. In (53), we see that CN/CN adjectives, which occur with lexical be cannot. With this division of data, the generalization seems to be quite simple. There insertion can be conditioned by any be other than the main verb be.

$$(54) \text{ NP}_1 \quad [\text{be Y}] \quad \text{t/e.} \quad \text{X} \rightarrow \text{There be NP}_1 \text{ Y X}$$

where  $\text{be} \notin \text{P}_{\text{IV/T}}$

If we were to attempt to write a there-insertion rule in a grammar that did not treat only the appropriate meanings of old, good, and other adjectives in Appendix lists F-J as underlying t///e's, we would have a serious problem. In either the basic predicate theory or the basic prenominal theory, all adjectives would appear in the same kind of underlying structures, so the generalization about the kind of be allowed would be destroyed. In Parsons' mixed theory, some of the adjectives that there-insertion would have to apply to would be basic t///e's, while others -- the non-relative readings of old, new, good, etc. -- would be basic CN/CN's. However, Parsons' theory

includes rule (29), repeated below.

$$(29) \text{ be a } [\text{ADJ}]_{\text{CN/CN}} \quad [\Delta]_{\text{CN}} \rightarrow \text{be } [\text{ADJ}]_{\text{t///e}}$$

It deletes a dummy CN after a CN/CN and recategorizes the adjective as a t///e. Rule (29) could be changed so that it also deleted be. Then a rule like (2) would insert the be that goes with t///e's in place of the main verb be. The there-insertion rule (54) would then be able to work syntactically as it does in the doublet theory. However, rule (29) is semantically empty. The semantic interpretation of there sentences would have to be done in this mixed theory on structures resembling the input to rule (29), including the dummy CN. But only certain readings of adjectives that the mixed theory classifies as CN/CN's are possible in there sentences. If there-insertion has applied, the  $\Delta$  must be interpreted very generally, perhaps as 'entity.' Without this restriction, the sentence There is a lutist new in the group could end up semantically as 'A lutist is a new checkerplayer in the group.' Yet the statement of such a restriction would require the addition of some powerful and as yet unenvisioned device to a transformational type grammar. Also difficult to explain would be the fact that, even if the interpretation of the dummy were taken care of, only a special class of CN/CN's could appear in there sentences. None of the words

classified as exclusive CN/CN's (lists C - E in Appendix I.) nor any of the lexically distinguished CN/CN versions of doublets would be allowed. The mixed theory could not predict, as the doublet theory does, that in (45), repeated below, old cannot mean 'veteran' or 'former.' It can have only the interpretation matching the absolute adjective aged.

(45) I've seen a lot of my teachers old.

Let us turn now to the construction illustrated in (37). In his discussion of this construction, Dowty suggests an analysis which he admits may be an oversimplification. He suggests that the adjectives come from reduced when clauses. Such a source is meant to explain the temporary element in their meaning. We have already seen that temporariness is not a sufficient criterion for grammaticality in this construction, but there are other discrepancies between the surface forms and their putative sources as when clauses. One discrepancy is that when clauses, being sentences, can contain another time adverbial, as in (55).

(55) The warden caught the swimmers when they were  
nude on Friday.

(56) The warden caught the swimmers nude on Friday.

In (55), on Friday is most easily taken as specifying when the swimmers were nude. In (56), the proposed reduced version of (55), on Friday can only be specifying when the warden caught the swimmers.

The when clause analysis fails to explain the fact that sentences like (56) can't have a time adverbial that is understood as having been attached to a lower sentence, as well as another discrepancy between when clauses and the construction in question. When clauses occur with many, many verbs; this particular adjectival construction occurs with only a few verbs.

(57) a) Cathy saw the swimmers when they were nude.  
b) Cathy saw the swimmers nude.

(58) a) Cathy watched the swimmers when they were  
nude.  
b) \*Cathy watched the swimmers nude. (on the  
intended reading)

If (57b) comes from (57a) by when clause reduction, this reduction rule will have to be conditioned by just a handful of main verbs, in order to prevent the derivation of (58b) from (58a).

The fact that the main verb dictates whether or not the construction will be grammatical suggests reanalysing the adjectives as complements to the participating main

verbs. Previous observations that it is just expressions of the category t///e that can appear in these sentences make it easy to designate the complements. See, catch, and the other verbs will have to belong to the category TV/t///e as well as to TV. See will take a t///e like nude to make a transitive verb see nude. The rule that joins a transitive verb with its direct object can do so by placing the object right after the first verb in the transitive verb phrase.<sup>5</sup> This rule will take see nude and the swimmers and yield the intransitive verb phrase see the swimmers nude.

Other plausible sources for the adjectives in these constructions might include relative clauses or infinitive complements. However, neither (60) nor (61) could possibly be the source for (59), since (59) has a meaning different from both of theirs.

(59) Jason caught the swimmers nude.

(60) Jason caught the swimmers, who were nude.

(61) Jason caught the swimmers who were nude.

A further reason for not deriving swimmers nude from a NP with a relative clause is that such expressions do not seem to be NP's or, for that matter, constituents at all. If they were NP's, passive should be able to apply in (62);

if they were constituents of any kind they should be able to be pseudo-clefted in (63) and left by gapping in (64).<sup>6</sup>

(62) a) Jason found the swimmers nude.

b) \*The swimmers nude were found by Jason.

(63) a) I like to see swimmers nude.

b) \*Swimmers nude is what/who I like to see.

(64) a) Jason caught the lifeguards drunk, and  
Sandra caught the waitresses asleep.

b) \*Jason caught the lifeguards drunk, and  
Sandra, the waitresses asleep.

As for the infinitival complement source, it would be ungrammatical in most cases, as in (65a):

(65) a) \*Jason caught the swimmers to be nude.

b) Jason found the swimmers to be nude.

In fact, find is the only one of the verbs under discussion that is grammatical with infinitival complements, and it has a different meaning when used with infinitival complements from the one it has with t///e complements:

(66) (infinitival complement) She finds the students  
(to be) smart.

'She considers the students smart.'

(67) (t///e complement) She finds the students  
asleep.

'When she finds them, the students are asleep.'

It seems that generating these adjectives as complements to a small set of main verbs is descriptively adequate and graceful to state. It even explains why a time adverbial cannot be taken as applying to a lower sentence; there is no lower sentence for it to apply to. But the feasibility of this solution is preserved only so long as common adjectives like good and old are treated as having a t///e version as well as a CN/CN one. If, once again, we try treating this construction under the assumptions of the mixed theory, where these common adjectives are exclusively CN/CN's, we will have to allow the participating main verbs to take not only t///e complements, but also common nouns or noun phrases as complements. However, lexical nouns of any kind are ungrammatical in these constructions:

- (68) a) \*Jason saw her (a) confused lawyer.  
b) \*Jason saw the lawyer (a) confused one.

So, in a mixed theory, the verbs see, catch, find, and the others will have to take as complements only those common nouns that have a dummy CN, as in (69).

(69) Jason saw the lawyer (a) confused  $\Delta$ .

In fact, it would be a general condition on adjective complements to verbs like see in a mixed theory that only those CN's or NP's that met the structural description of the dummy deletion rule (8) (except for the presence of be) could appear. Expressions with more than one adjective, for instance, must be barred or made to blow up:

(8) be a [ADJ] CN/CN  $\Delta$  CN  $\rightarrow$  be ADJ

- (70) a) Jason saw the swimmer a nude beautiful  $\Delta$ .  
b) \*Jason saw the swimmer (a) nude beautiful  
one.  
c) \*Jason saw the swimmer nude beautiful.

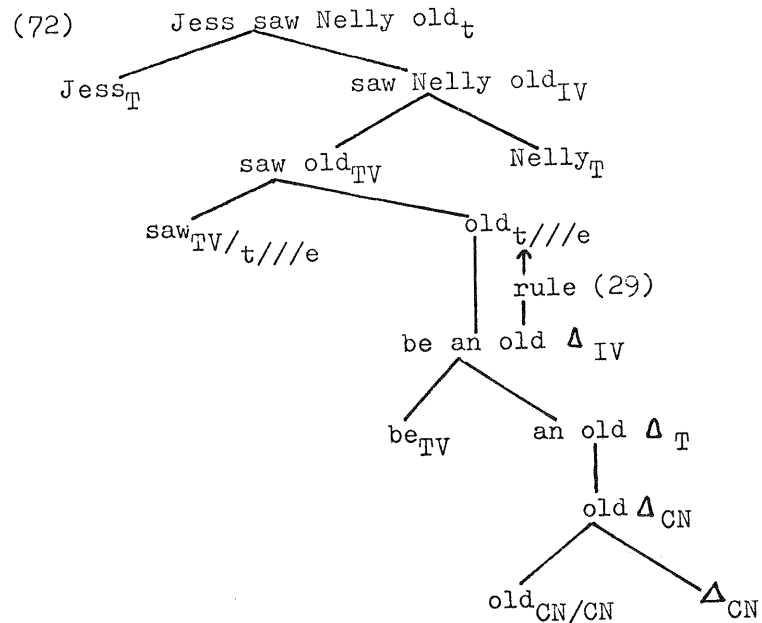
Furthermore, although rule (8) must in general be optional, the grammar would have to ensure that the dummy CN is always deleted syntactically in these complement constructions, so it does not surface as in (68b). This would involve changing rule (8) to apply obligatorily when there is no preceding verb be in order to effect the change in (71).

(71) Jason saw the lawyer (a) confused  $\Delta \rightarrow$   
Jason saw the lawyer confused.

There is no apparent way of changing (8) to apply correctly. Perhaps an entirely separate, although very similar,

rule is necessary.

The syntactic problems involved in making the mixed theory work for this construction are serious problems only in a standard transformational framework. The difficulty is that, after the verbs listed in (37), any CN/CN adjective construction must meet the structural description of some modified rule (8), and the rule must apply. In a transformational grammar, there is no way to ensure all this, but in a Montague syntax, one would be able to turn underlying CN/CN's syntactically into t///e's by a variation of Parson's rule (29), before they are accepted as complements to verbs. (72) represents such a derivation.



However, semantic problems remain in a Montague version of the mixed theory. Since rule (29) is semantically empty, Jess saw Nelly old will still be interpreted on the basis of the structure 'Jess saw Nelly to be an old  $\Delta$ .' Assuming that we could get rule (29) to delete be from the syntax in the right contexts, this solution might still present problems with the verb find. Examples (66) and (67) showed that find works differently with real t/e to be complements from the way it works with t///e complements. (72) suggests that both kinds of complements have the same source. However, the difference could be explained by hypothesizing that there are two different verbs find, rather than maintaining that the two complement structures must be different. Second, and more seriously, as with the there sentences, something must somehow ensure that the pragmatics will give the dummy CN in the semantic structure only a very general interpretation. The sentence in (72) must not be interpreted as 'Jess saw Nelly an old lutist.' In Montague grammar, as in transformational grammar, the requirement that the pragmatically determined  $\Delta$  be interpreted very generally when it is in such a verbal complement eludes formulation. There is also no satisfactory explanation in a mixed theory, in which the construction under discussion must accept some CN/CN's, as to why most CN/CN's are still ungrammat-

ical in it. It remains a mystery that certain adjective readings (those associated with exclusive CN/CN's and CN/-CN versions of doublets in a doublet theory) simply won't allow the general interpretation of their dummy necessary to mimic the t///e reading. A mixed theory could not predict, for instance, that old in (72) could not mean 'veteran' or that none of the adjectives in lists C - E in Appendix I. would be grammatical in this construction. In general, then, the mixed theory, in which so many common adjectives lack basic t///e versions, makes an illuminating account of the see-catch-find construction very difficult, if not impossible, within current theories.

If, on the other hand, one accepts the doublet theory of adjectives, there is the neat generalization that the there construction and the see-catch-find construction accept only basic syntactic-semantic t///e's. This generalization can provide us finally with a positive test for t///e adjectives. If an adjective is grammatical in one of these constructions, it must be of category t///e or have a t///e version.<sup>7</sup>

### III.32 Syntactically apparent doublets.

The preceding section yielded a positive syntactic test for t///e adjectives. We already have a positive semantic test for non-intersective adjectives, which correspond to CN/CN adjectives. Unfortunately, having two

different kinds of tests like this, one syntactic, and the other semantic, helps only indirectly with establishing the existence of doublets, since it will be absolutely clear that there are two of each adjective only if it can be shown that particular adjectives must be of two distinct syntactic categories or of two distinct semantic types.

The biggest problem with syntactic arguments about the categories of an adjective is that the dummy CN deletion rule and the t///e adjective fronting rule make each kind of adjective mimic the other's surface behavior. In section III.31 two characteristic pieces of t///e syntactic behavior were unearthed, but it is much harder to find syntactic behavior peculiar to CN/CN's. Although dummy CN deletion is defined only on CN/CN's, the ability to undergo this rule constitutes no test of category. The surface structure produced looks just like that of a basic predicate t///e. However, just as only CN/CN's can undergo dummy CN deletion, only they can be exceptions to it. An adjective that can appear in the predicate with one or with another CN, but cannot appear alone with unchanged meaning, can only be a CN/CN.

Some CN/CN's do not undergo dummy CN deletion because they never meet the structural description of rule (8). Some of these are semantically anomalous with a dummy

CN (73b); others sound awkward with the indefinite article (73a). Other CN/CN's meet the structural description of the deletion rule, but are marked not to allow deletion of the dummy. Both kinds of non-deleting CN/CN's exhibit one of two kinds of semantic behavior if placed alone in the predicate. First, some non-deleting adjectives are ungrammatical alone in the predicate. (73) includes examples of these. (73a) and (73b) contain adjectives that never meet the structural description of rule (8); the sentences in c) through e) contain adjectives that must be marked as exceptions to rule (8). (Other similar adjectives can be found in lists D and E in Appendix I.)

- (73) a) That cause is the main one, but there are others.  
 \*That cause is main, but there are others.
- b) Gudrun is a blithering idiot.  
 \*The idiot is blithering.
- c) The engine in that lawnmower is an actual one.  
 \*The engine in that lawnmower is actual.
- d) That horse is a prize one.  
 \*That horse is prize.
- e) My bunk is a bottom one.  
 \*My bunk is bottom.

The ungrammaticality under dummy CN deletion of the sentences in (73) is what we would expect of adjectives that are exclusively CN/CN and cannot undergo dummy CN deletion. However, there is a second kind of behavior possible for non-deleting adjectives. Many of them produce a grammatical sentence when they stand alone in a predicate. What is important is that the sentence has a different meaning from the one with the prenominal version of the adjective. This is what we'd expect if, as CN/CN's, the adjectives could not, for whatever reason, undergo dummy CN deletion, but as t///e's, with slightly different meanings, they were independently generated in the predicate.<sup>8</sup> (74) - (79) show some of these adjectives that do not undergo rule (8), but are nevertheless grammatical alone in the predicate because they are doublets with t///e versions. (More such adjectives can be found in Appendix lists H and J.)

- |   |  |
|---|--|
| (74)  | Paraphrase of the relevant reading of the adjective. |
| a) That artist is certainly a sorry one.              | 'bad specimen of a'                                  |
| b) That artist is certainly sorry.                    | 'regretful; remorseful'                              |
| c) There were a lot of students sorry after the riot. | 'regretful; remorseful'                              |

I've never seen Audrey  
sorry for anything  
she's done. 'regretful; remorseful'

(75)

a) Susan can tell us whether or not this generalization is a true one. 'genuine'

Susan can tell us whether or not this psychic is a true one. 'genuine'

b) Susan can tell us whether or not this generalization is true. 'correct'

Susan can tell us whether or not this psychic is true. 'loyal'

c) There are only two statements true in the whole paper. 'correct'

In fifteen years, Scoutmaster Senta has seen only one or two boy-scouts true. 'loyal'

(76)

a) Caleb's son is a dirty liar. 'terrible'

b) Caleb's son is dirty. 'soiled'

c) I've seen the house dirty. 'soiled'

(77)

a) Thelma's idea is a definite contribution. 'real'

b) Thelma's contribution is definite. 'fixed; specified'

c) There are two contributions definite so far. 'fixed; specified'

(78)

a) The rumor that Roscoe is starting a war is a current one. 'present in time'

b) The rumor that Roscoe is starting a war is current. 'circulating'

c) There is a rumor current that Roscoe is starting a war. 'circulating'

(79)

a) The woman in the lampshade is our present caretaker. 'present in time'

b) The woman in the lampshade is present. 'present in place'

c) The watchman saw the woman present at the inquiry. 'present in place'

The readings of these adjectives that appear exclusively preminally, as in the a) sentences, must belong to CN/CN versions of the adjectives, since there is no other source for them. They can be shown by semantic test to be non-intersective. However, the readings of the same adjectives in the b) sentences are non-relative and are exactly the same readings that show up in the t///e diagnostic environments of the c) sentences. These readings must belong to t///e versions of the adjectives. Most of the adjectives



in the a) sentences also have a reading that matches that in their corresponding b) and c) sentences. The doublet theory would predict this, as most t///e's can be fronted. Each of the adjectives featured in (74) through (79) must really be a doublet.

### III.33 Semantically apparent doublets.

In the preceding section, the object was to show that single adjectives must belong to two different syntactic categories. Syntactically, t///e's show identifying behavior; they may be grammatical in the constructions discussed in section III.31. But most CN/CN's do not show identifying syntactic behavior. Therefore, in section III.32, we were able to identify syntactically as doublets only those whose CN/CN version failed to undergo dummy CN deletion. It remains to be shown that single adjectives must belong to the two distinct semantic types that correspond to the syntactic double categories. In arguing for semantic doublets, the problem is the opposite of the problem at the syntactic level. Semantically, we can identify non-intersective (CN/CN) readings of adjectives easily, by using the test in (2) of Chapter I. It is not so easy to identify positively the absolute, intersective (t///e) readings. Since it often seems that the common adjectives that test out as having non-intersective readings - old, new, good - are always relative in some

sense, it is tempting to say that these adjectives are always non-intersective. Yet examples (45) through (49) constitute syntactic evidence that in certain constructions these same adjectives are t///e's. Perhaps whatever relativity remains with these adjectives under certain readings can be built right into simple predicates, as outlined in Chapter IV. This must be what happens, because there is semantic evidence that these adjectives do have intersective, as well as non-intersective, versions, that they too are doublets.

This evidence for intersective versions of commonly non-intersective adjectives comes from partial paraphrases. Adjectives which have non-intersective readings can have other readings which are the ones to show up in syntactic environments appropriate to t///e's. These other readings can be paraphrased by words which are quite clearly exclusively intersective. So single adjectives must have both non-intersective and intersective versions. First, the consistent conjunctions in examples (80) - (83) show by test (2) from Chapter I. that four common adjectives can be non-intersective:

- (80) Rachel is a colleague and Rachel is a friend.  
 Rachel is an old colleague, but she's not  
 an old friend.

- (81) Rachel is a colleague, and Rachel is a friend.  
Rachel is a new friend, but she's not a new  
colleague.
- (82) This small block of granite is a paperweight  
and a pocket pencil-sharpener.  
This small block of granite is a handy paper-  
weight, but it's not a handy pocket pencil-  
sharpener.
- (83) Greta is a friend, and Greta is a colleague.  
Greta is a bad friend, but she's not a bad  
colleague.

Next, examples (84) - (87), like the sentences in (45) - (49), show that the same adjectives can act syntactically as t///e's, although their meanings are somewhat different in such sentences.

- (84) a) I've seen a lot of my teachers old.  
b) Gail buys her clothes old.
- (85) a) Wendy bought the car new.  
b) There are three workers new to the job.
- (86) a) He just saw the hammer handy, picked it  
up, and swung.  
b) There's always a hammer handy.

- (87) I don't think I've ever seen that child bad.

These sets of examples could be interpreted as evidence against compositional semantics, or at least against my syntactic rules, for it seems as if these adjectives are semantically non-intersective, but syntactically t///e's. However, if we paraphrase the adjectives in (84) - (87) with words that have only the meanings relevant in those sentences, we will find that we have a list of clearly non-relative qualities:

(88)	<u>complex adjectives</u>	partial paraphrase: t///e (meaning in (84)-(87))
	old	'aged'; 'worn'
	new	'unused, fresh'
	handy	'nearby'
	bad	'naughty'

The meanings that surfaced in (80) - (83), the relative ones, are, in fact, impossible in sentences like those in (84) - (87). Conversely, the non-relative meanings of the adjectives, given in (88), would make (80) - (83) inconsistent. (80) - (83) must contain the non-intersective versions of the adjectives; (84) - (87), the intersective versions.

Both syntactically and semantically, then, common adjectives can be shown to be pairs of complexes of

associated readings. The readings belonging to one member of the pair are non-intersective semantically and basically prenominal syntactically. The readings belonging to the other member of the pair are intersective and basically predicative. The doublet theory of adjectives presented here accordingly requires that most adjectives be listed both as expressions of the category CN/CN and as expressions of the category  $t///e$ .

Although listing each word twice may at first seem redundant, in fact, the semantic relationships between the two versions of adjectives are varied and often idiosyncratic in a way characteristic of the lexicon. (See, for instance, the words in (74) - (79) and those in Appendix lists G - J.) It is true, however, that the two versions of more adjectives do exhibit a more systematic semantic relationship. The words confused, navigable, clean, and the rest of the words in the indefinitely extendable Appendix list F are identifiable by the tests in (2) of Chapter I and in section III.31 as having two versions. The two versions are very close in meaning, although their logical roles are, of course, different. In particular, for such adjectives, the generalization in (89) holds.

(89)

X is  $ADJ_{t///e}$  if and only if X is an  $ADJ_{CN/CN}$  entity<sub>CN</sub>

However, the fact that such a semantic generalization holds for many adjectives is no reason to give up listing adjectives as doublets. First, no such generalization holds for the many common adjectives in lists G - J in Appendix I. For instance, one can be an old entity (in the non-intersective senses of old friend or old teacher) without being old, meaning 'aged'. So, many adjectives will have to be listed as doublets anyway. Second, it is easy and appropriate to express a generalization like (89) without treating the two versions of the adjective as underlyingly the same. As Chomsky writes in Chomsky (1970), "Where the grounds [for positing identical deep structures] are semantic, an alternative is an enrichment of the rules of semantic interpretation."<sup>9</sup> The semantic generalization in (89) can be captured by meaning postulate (90), which will apply to most adjectives with doublets, the class represented in Appendix list F.

$$(90) \quad \square [\alpha_*(u) \leftrightarrow [\alpha'(\wedge \text{entity}')] ]_*(u)$$

where  $\alpha \in P_{t///e}$   
 $\alpha' \in P_{CN/CN}$   
 $\alpha$  and  $\alpha'$  are homonyms

The relatively small classes of adjectives in G - J, whose two versions have taken on special meanings, will be exceptions to this meaning postulate.

The main reason for favoring the doublet theory of adjectives is that it helps explain the behavior of all adjectives in a way that single-category theories and mixed theories cannot. By allowing each adjective to play a dual syntactic-semantic role, it predicts the correct distribution of the different kinds of adjective reading. It also accounts for some intuitions about vagueness and ambiguity and allows concise accounts of two puzzling syntactic constructions.

## CHAPTER III.

1. Examples of doublet adjectives appear in Appendix I. in lists F - J. List F, which contains doublets that are unexceptional with regard to all the rules given here, seems to be indefinitely extendable. The other lists, G-J, which contain doublets exceptional in some way, are not; additions are hard to come by.
2. Thanks to David Dowty for this example.
3. Adjectives with t///e versions appear in lists A, B, and F - J in Appendix I. Those in lists A, F, and G and H undergo rule (9); those in lists B, I, and J are exceptions to it. Only lists A and F, two which obey the rule, seem to be easily extended much.
4. Only the adjectives in lists B, D, and E in Appendix I. do not appear both preminally and predicatively. This means that both classes of adjectives that are indefinitely large, those represented in A and F, do appear in both positions, while only three of the nine small exception classes do not.
5. Montague (1974a) pp. 195-196.
6. Stillings (1975) p. 249.
7. Failure to fit grammatically into one of these constructions does not, however, mean that the adjective has no t///e version. There are additional semantic requirements, apparently something like temporariness, which, unsatisfied, can prevent a syntactically grammatical word from being quite acceptable.

8. The reason that only adjectives whose two versions have taken on different lexical meanings as well as different logical roles can be identified as exceptions to dummy CN deletion is discussed later, in section III.33. Briefly, it is normally impossible to tell, given an adjective alone in a predicate, whether dummy CN deletion has taken place or not. Consider sentence i. and the underlying structures a. and b.

i. The dancer is beautiful.

a. The dancer is [beautiful]<sub>t///e</sub>

b. The dancer is a [beautiful]<sub>CN/CN</sub> [Δ]<sub>CN</sub>

Now, meaning postulate (90) in section III.33 tells us that the dancer is beautiful<sub>t///e</sub> if and only if the dancer is a beautiful<sub>CN/CN</sub> entity. Unless i. has been uttered in a context that makes it clear that beautiful is a CN/CN relative to some interpretation of Δ more specific than 'entity', either a. or b. could underly i. For the same reason, all doublet exceptions to the t///e adjective preposing rule (Appendix I. lists I and J) are also exceptions to meaning postulate (90).

9. Chomsky (1970), p. 213.

## C H A P T E R I V .

### MEASURE ADJECTIVES

#### IV.0 Introduction.

The distinction between relative adjectives and absolute ones has long been recognized, but the line between them has generally been drawn in a place different from where I have been drawing it. While everyone seems to agree on what an absolute adjective is, most writers have concentrated on a kind of relativity different from the kind that I have been talking about. These writers seem to have been interested in the relativity of the kind of adjective that is used in expressions that can be paraphrased with the expression for a:

Irene is tall (for a woman).

The library is tall (for a building).

Erica is a tall child (tall for a child).

I call adjectives that can be paraphrased this way measure adjectives. Other common measure adjectives are heavy, short, fat, and the for a readings of clever, strong, and intelligent. The adjectives with measure readings in Appendix I. are marked with a check mark in the third column under possible paraphrases.

The problems that exist in the interpretation of these measure adjectives - the determination of the class

that the subject will be compared to in regard to the dimension in question, determination of the norm of the comparison class along the dimension - are the problems that have concerned most of the people who have written on so-called relative adjectives. Wheeler (1970), in an introduction to his relative adjectives, reports that "philosophers from Aristotle on have said things like, 'Tall' implicitly carries reference to a reference class."<sup>1</sup> Bartsch and Vennemann (1972) seem to have a similar view of what constitutes relativity in an adjective. By way of introduction they cite Russell (1945):

We are told that, since 6 is greater than 4 but less than 12, 6 is both great and small, which is a contradiction. Again, Socrates is now taller than Theaetetus, who is a youth not yet full grown; but in a few years Socrates will be shorter than Theaetetus. Therefore Socrates is both tall and short. The idea of a relational proposition seems to have puzzled Plato, as it did most of the great philosophers down to Hegel (inclusive).<sup>2</sup>

However, this venerable kind of relativity to a measurement scale is not the sort that I have been concerned with. The preceding chapters have shown that a fundamental distinction for natural languages, one that is decisive in the workings of the syntax, as well as the semantics, is between the absolute, intersective adjectives (t///e's) and readings which are relative to the meaning, or intension, of the modified common noun (CN/CN's).

Measure adjectives do not seem at first to fit into either of these classes. They are not, strictly speaking, intersective, as a set of consistent sentences that would seem to satisfy the test for non-intersectiveness in Chapter I. can be constructed:

- (1) i. Rilly is a ballet dancer.
- ii. Rilly is a basketball player.
- iii. Rilly is a tall ballet dancer. (tall for a ballet dancer)
- iv. Rilly isn't a tall basketball player. (tall for a basketball player)

Yet, in section I.1, where this non-intersectiveness test for CN/CN's was introduced, expressions paraphrasable 'ADJ for a CN', like (1) iii. and (1) iv. above, were explicitly excluded from qualifying as a positive result in the test for the non-intersective CN/CN's. This was because, while measure adjectives are not strictly intersective, they do not share the other properties of CN/CN adjectives. They are, in fact, more like t///e's. In particular, they are not intensional, and they are not syntactically ad-common nouns.

IV.1 What measure adjectives are.

IV.10 Extensionality

It can be seen informally that measure adjectives

are not interpreted relative to the intension of the common noun the same way that normal CN/CN's are. Compare the following two expressions:

(2) a good car (good as a car) CN/CN

(3) a fast car (fast for a car) Measure Adjective

In (2) the reading of good is an intensional, CN/CN reading. To understand the meaning of good here, you must know the meaning of car, what, exactly, is expected of a car. On the other hand, fast in (3) is a measure adjective. In order to understand the meaning of fast in (3), one needn't know much about what a car is. One need only know about how fast things called cars normally go. Apparently, this particular piece of information isn't essentially part of the meaning or intension of car. Cars that do not go at all are still called cars, and so are cars that go nearly 700 miles per hour.

Examples (4) and (5) give another indication that the relativity of measure adjectives is not relativity to the meaning of the modified common noun.

(4) bad library CN/CN

(5) tall library Measure Adjective

In (4) the most natural reading of bad is the intensional

one, 'bad as a library,' where bad applies to the meaning of library. The whole expression is most likely to mean that the library's book collection is scant, ill-chosen, or inaccessible, although it might mean in addition that the physical surroundings are such that they make it difficult to do what one normally does in a library. In contrast, the interpretation of tall in (5) has nothing to do with the meaning of library. The whole expression means something like 'library that is tall for a building.' Its interpretation depends upon the selection of the comparison class 'building' and the placement of the library relative to some norm. The only knowledge about libraries necessary for these decisions is that many libraries happen to constitute entire buildings. Such knowledge is knowledge about things in the extension of library, not about its intension.

More direct evidence of the extensionality of measure adjectives is difficult to find. Because of their indeterminacy, the usual test for extensionality will not work quite right. The usual test for extensionality involves examining the substitutability in the expression being tested of co-extensional items, common nouns that refer to the same individuals, although in different ways. For instance, if, for some reason, exactly the same people played trombone as sang bass in the chorus,

we could use the co-extensive items trombone player and bass singer to test for extensionality. In testing the adjectives dead and good, for instance, we would find that (6) holds, but that (7) does not.

(6) Clay is a dead trombone player if and only if Clay is a dead bass singer.

(7) Tim is a good trombone player if and only if Tim is a good bass singer.

The two clauses in (6) will always have the same truth value, even though the referent is referred to by different common nouns. We can conclude from this that dead is extensional, or referent-modifying. The two clauses of (7), on the other hand, will not necessarily have the same truth value, so the whole of (7) will not necessarily be true. Even though trombone player and bass singer are co-extensional, they are not mutually substitutable after good. This is because good has a CN/CN version, so it can be intensional; that is, its meaning can be relative to that of the particular common noun employed.

Unfortunately, being intensional like good in (7) is not the only way that an adjective can fail the usual substitution test for extensionality. Measure adjectives fail the test, when they do so, not because their meanings

are interpreted relative to those of the modified common nouns, but for independent reasons suggested earlier. Consider once more the example where the same group of people constitute both all the trombone players and all the bass singers. Let us submit a measure adjective like tall to the extensionality test of substitution of co-extensive expressions. Is it true that Ray is a tall trombone player if and only if he is a tall bass singer, under the assumption that all and only trombone players are bass singers? At first, it might seem as if it would have to be true. But suppose some stubborn observer<sup>3</sup> cherished a theory that trombone players ought to be very tall on the average (perhaps because long arms are useful to them), that, in the future, perhaps, they will be taller, at least, than the average bass singer. This observer might not accept as true the proposition that X is a tall trombone player (tall for a trombone player) if and only if X is a tall bass singer (tall for a bass singer).

The measure adjective tall has failed the substitution test, but not because it is interpreted relative to the intension of the common noun it modifies. It has failed the test because, with measure adjectives, there is some leeway as to what individuals will be included in the comparison class for the adjective and what norm will be picked for the dimension that the adjective represents. Our difficult observer in the case of the trom-



bone players and the bass singers has happened to include hypothetical trombone players in the comparison class, something that is fairly natural to do. The observer consequently chose a higher norm for tallness in trombone players than the norm that would have been chosen by someone who did not share her theory about trombone players. This norm also turned out to be higher than the norm for bass singers, so truth value was not preserved when one expression was substituted for the other, and the biconditional did not hold.

It is important to remember, however, that this failure to preserve truth value under substitution is not due to relativity to the intension of the modified common noun. Just as in earlier examples (5) and (6) speed was not part of the intension of car and the height of buildings was not part of the intension of library, height is not relevant to the meaning of trombone player. The indeterminacy of measure adjectives has to do with the selection of a comparison class that may or may not coincide with the extension of the modified common noun and of a norm for the class along the adjective's dimension. These are quite different activities from relativizing the meaning of good in good trombone player to the meaning of trombone player. I return in section IV.2 to ways of accounting for the selection of comparison

classes, dimensions, and norms.

#### IV.11 Membership in category t///e.

If the indeterminacy in the interpretation of measure adjectives is not due to their being intensional, then it is reasonable to believe that measure adjectives are vague in certain defined respects, but extensional, since it seems likely that an account of their vagueness will depend on extension, rather than intension. What does this mean in terms of the doublet theory of adjectives? It means, at the very least, that there is nothing to be gained and something to be lost by assigning measure adjectives to the category CN/CN. This is not to say that they could not be so assigned. As mentioned in section II.3, although the general form of semantic rules predicts that CN/CN's will be intensional, and the other words which we have reason to call CN/CN's are in fact intensional, it would still be possible, in theory, to assign measure adjectives to the category CN/CN, and to have a meaning postulate like (8), which would ensure that they were interpreted extensionally, like t///e's.

$$(8) \forall M \wedge u \square [(\alpha (\wedge \beta))_* u \leftrightarrow \forall M(u) \wedge \beta_*(u)]$$

where  $\alpha \in P_{CN/CN}$

$\beta \in P_{CN}$

M is a variable over properties of individuals  
(extensional, one-place predicates).

u is a particular individual variable.

However, there are serious problems with such an approach. A meaning postulate like (8) violates the reasonable constraint, formulated in section II.3, that meaning postulates must not have the effect of translating an expression of one category as if it were a member of another, existing category. Meaning postulate (8) is designed to make measure adjectives, once they have been classified as CN/CN's, behave semantically like t///e's. None of Montague's meaning postulates does such a thing, and any constraints actually observed in our already too powerful theories of language should be preserved, if possible.

The desire to constrain the meaning postulates might be reason enough to conclude that it is not a good idea to classify measure adjectives as CN/CN's. They are not like other CN/CN's semantically, since they are extensional. But there is more direct evidence that they must not be classified as CN/CN's. Measure adjectives are not like CN/CN's syntactically, either. In fact, they are just like t///e's. Measure readings emerge only in environments where t///e adjectives and t///e versions of doublets are permissible. In some of these environments, no CN/CN's may appear. (See discussion of the there construction and the see-catch-find construction in section

III.31, for example.)

For syntactic evidence that measure adjectives are t///e adjectives or t///e versions of doublets, consider first the indications of possible paraphrases of ADJ + CN strings that are listed for each adjective in Appendix I. Appendix lists A and B, the exclusive t///e's, naturally never allow the non-intersective interpretations. List B, since it consists of non-preposable t///e's, has no interpretations at all for ADJ + CN sequences. But I think that it is possible to get a for a measure interpretation from at least one word in list B when it appears predicatively, as in (9). For the most part, however, such relative interpretations are impossible for list B words, as in (10).

- (9) a) Are you alive? (for a living person: said to someone who is obviously very tired)  
b) Is it alive? (for an organism: said of an animal that has been hit by a car)
- (10) Are you asleep? (for a ?: there is no reasonable relative interpretation)

Many of the words in list A of Appendix I., although they can prepose, also have only the plain intersective interpretation (11), but several of them can have a for a interpretation both prenominally and predicatively (12) - (14).

- (11) This stuff is rancid food (\*rancid for food),  
but it's not rancid garbage (\*rancid for  
garbage).
- (12)a) He's a healthy invalid (healthy for an invalid),  
but he's not a healthy child (healthy for a  
child).
- b) The invalid is healthy (for an invalid).
- (13) a) Cheryl is a tall girl (tall for a girl)  
but she's not a tall basketball player  
(tall for a basketball player).
- b) Cheryl is tall (for a five-year-old).
- (14) a) This is a heavy pocket pencil sharpener  
(heavy for a pocket pencil sharpener),  
but it's not a heavy paperweight (heavy  
for a paperweight).
- b) The pocket pencil sharpener is heavy (for  
a pocket pencil sharpener).

So far, we have just a few measure adjectives with the characteristic for a measure interpretation, but all of them are exclusively t///e. It is not terribly significant that we find measure adjectives among the exclusive t///e's, since the divisions among the Appendix I. lists were made with the help of test (2) in Chapter I., which excludes an adjective with no relative interpretation except the measure interpretation for qualifying as a CN/CN.

If, however, we turn to lists C, D, and E in the Appendix, the lists of exclusive CN/CN's, we find something of more consequence. While each exclusive CN/CN allows one of the two intensional non-intersective interpretations, none of them allows the measure interpretation.

- (15) Jack is a blithering fool, but he's not a  
blithering idiot (\*blithering for a fool,  
but not blithering for an idiot).
- (16) Jane was a temporary cook, but not a temporary  
companion. (\*temporary for a cook, but  
not temporary for a companion).
- (17) This is the actual design that was used, but  
it's not the actual building (\*actual for  
a design, but not actual for a building).

It would be a very odd accident indeed, if measure adjectives were CN/CN's, that no exclusive CN/CN's had a measure interpretation. It makes much more sense to conclude from the fact that adjectives which lack a t///e version also lack a measure interpretation that measure interpretation is associated with t///e forms of adjectives. The complete absence of measure interpretations with exclusive CN/CN's lends further support to the hypothesis that t///e adjectives are the only ones that can have measure interpretations.

Finally, turning to the doublets in columns F through I in Appendix I., we find that each doublet has one or both of the non-intersective interpretations preminally. Also, all and only those whose t///e versions can undergo preposing (F, G, and H) can have the plain intersective interpretation preminally. Most of these same adjectives --and no non-preposing ones--can also yield a measure interpretation preminally: Compare clever, whose t///e version preposes, with present, and close, whose t///e versions do not prepose:

- (18) We can't hire Washo; she's a clever monkey, but she's not a clever philosopher (clever for, or compared to, other monkeys, but not not clever compared to other philosophers).
- (19) Marcy is a present employee, but she's not a present resident (\*present for, or compared to other employees, but not present compared to other residents).
- (20) Alfred is a close collaborator, but he's not a close friend (\*close for, or compared to other collaborators, but not close compared to other friends).

Only in (18), with clever, is the for a measure interpre-

tation a reasonable alternative to the non-intersective as a interpretation preminally, and only with clever can the t///e version of the adjective appear in preminally position. This correspondence lends further support to the contention that t///e's are responsible for measure readings.

It should be noted, by the way, that the failure of both present and close to yield a measure interpretation preminally cannot be attributed to an inability to do so under any circumstances. Although present and close have no for a interpretation preminally, predicatively, close can yield a for a interpretation:

- (21) a) The library is close (for a campus building: close = 500 feet).  
 b) Boston is close (close for a big city: close = 100 miles).

A necessary condition, then, for the emergence of a measure reading of a certain adjective in a particular syntactic position is that the adjective have a t///e version and that the t///e version be permissible in the particular syntactic position.

Some adjectives with t///e versions never yield a measure interpretation at all, though. These are the adjectives that cannot be taken as picking out any measure-

ment scale. Present is one such adjective. In (19) it did not yield a for a interpretation, presumably because it appeared preminally there, and the t///e version of present does not prepose. But even predicatively, present, unlike close, does not have a for a interpretation:

- (22) a) The employee is present (\*compared to other employees).  
 b) The resident is present (\*compared to other residents).

Other doublets that never have a measure reading because they fail to pick out a measurement scale include all those words cited in III.23 as counter-examples to Katz's mixed theory of adjectives, since that theory seems to treat all relative adjectives as measure adjectives: navigable, representative, public, rabid, final, artificial, local, handy, sorry, current, present, ready, prime. Exclusive t///e's with the same characteristic include rancid, carnivorous, nude, and many others. (See Appendix I. lists A and B.) However, any adjective that has a t///e version and also has the lexical property of picking out some kind of measurement scale can yield a measure interpretation in contexts where the t///e version is syntactically permissible.

There remains another construction in English that permits only t///e adjectives and so, will serve as a

test for the claim that it is t///e versions of adjectives that are responsible for measure readings. This construction is NON-RESTRICTIVE ADJ. + NP sequences (See section III.10). As predicted, non-restrictive adjectives, which must be t///e's, can have measure interpretations, as in fat Albert or big Bertha. While the fact that these particular measure adjectives must be t///e's does not show that there are no measure adjectives that are CN/CN's, it does show that the relativity of measure adjectives is not always relativity to the meaning of a common noun, as with CN/CN's. Big does not even combine with a common noun in big Bertha, but with a full term or noun phrase. Nevertheless, its interpretation is relative to the normal size of individuals of whatever class Bertha belongs to.

A final illustration, from Italian, will show how measure readings emerge in environments where t///e adjectives, and only they, are allowed. According to Conte (1973) most adjectives in Italian can appear both predicatively and attributively. Attributive adjectives may appear either pre- or post-nominally. Generally, an adjective in the prenominal position has a non-restrictive reading and one in post-nominal position has a restrictive reading.

- (23) *inglesi flemmatici* RESTRICTIVE  
 'Englishmen who are phlegmatic'

- (24) flemmatici inglesi      NON-RESTRICTIVE  
'Englishmen, who are phlegmatic'

However, if there is a determiner or a demonstrative that makes it clear that the adjective is to be understood non-restrictively, then that non-restrictive adjective may appear post-nominally.

- (25) questa importante iniziativa      NON-RESTRICTIVE  
'this initiative, which is important'
- (26) questa iniziativa importante      NON-RESTRICTIVE  
'this initiative, which is important'

In addition, some adjectives have what Fornaciari (1884) called the senso traslato, the metaphorical, or transferred meaning. This class includes grande, 'big, great', alto 'tall, high', buono 'good', vero 'true', povero 'poor', vecchio 'old', and others. For such adjectives, the pre-nominal position loses its non-restrictive significance and takes on the senso traslato. (The only way to use these adjectives non-restrictively is in the predicate of a non-restrictive relative clause.<sup>4</sup>) The adjectives in (27) - (29) are all restrictive.

- (27) a) uomo grande      'large man'  
      b) grande uomo      'great man'
- (28) a) professore buono      'virtuous professor'

- b) buon professore      'good (as a) professor'
- (29) a) slogan vero      'slogan that's true'  
      b) vero slogan      'veritable slogan'
- (30) a) ufficiale alte      'tall official'  
      b) alte ufficiale      'high official'

In my terms, the adjectives in the b) examples represent CN/CN versions of the t///e adjectives in the a) examples. Not only do they have the intensional meanings associated with the CN/CN's; they also are limited to ad-common noun position. Only the t///e intersective readings as in the a) examples emerge in predicate position.

In Italian, then, we can be sure that, where there is a CN/CN version, when unmodified,<sup>5</sup> it will appear pre-nominally. Post-nominal and predicate appearances of the same words will be t///e's. Where do measure readings fit in? Conte makes it clear that, for adjectives that have CN/CN versions at all, what I have called measure readings emerge in postnominal (and predicate) position, but not in prenominal position. (27)a), (28)a), and (30)a), for instance, can have the measure reading 'large for a man' 'virtuous for a professor,' and 'tall for a person.' (30)a), in fact, can have only this reading. But the corresponding b) sentences do not have for a interpre-

tations. This is evidence that the measure interpretations are associated only with t///e adjectives. A theory that held that measure adjectives were CN/CN's in Italian would be complicated by ad hoc rules, both syntactic and semantic, designed to get the measure adjective subclass of CN/CN's to conform in every way to the behavior, very transparent and distinctive in Italian, of t///e's.

The correspondence, in English and Italian, between the permitted syntactic positions of the t///e version of an adjective and the positions in which a measure reading can emerge constitutes syntactic evidence that it is t///e words that are responsible for measure readings. There is some more semantic evidence as well. (31) and (32) include doublet adjectives whose t///e versions prepose, so they can be interpreted prenominally as either CN/CN's (ADJ as a CN) or t///e's. These adjectives are also all exceptions to meaning postulate (90) of Chapter III., so their two versions differ in lexical definition, making it easier to tell what version appears in a given sentence. Notice how thinking of the for a interpretation, as in the b) versions of the sentences below, changes the reading of the adjective from the CN/CN as a interpretation of the a) versions to the readings that emerge in the t///e diagnostic environments of the c) versions of the sentences.

(31) a) Marilyn is a crazy mother (crazy as a mother),

but she's not a crazy artist (crazy as an artist). (Marilyn is not necessarily insane at all, just an unconventional parent.)

- b) Marilyn is a crazy mother (crazy for a mother), but she's not a crazy artist (crazy for an artist). (Marilyn must be at least a little insane compared to other mothers, although not compared to artists).
- c) I've seen those mothers crazy. (Crazy here must mean insane, not just unconventional.)
- (32) a) Herb is an old lover (old as a lover; former), but he's not an old teacher (old as a teacher; former).
- b) Herb is an old lover (old for a lover; aged compared to other lovers), but he's not an old teacher (old for a teacher; aged as teachers go).
- c) I've seen a lot of my teachers old. (Old here means aged only.)

The CN/CN version of crazy in (31)a) seems as capable of designating a measurement scale as the t///e version in (31)b) and c). However, once again, only the t///e version admits a measure interpretation.

In section IV.10 the semantic evidence that measure adjectives are not intensional made it seem inconvenient to classify them as CN/CN's. Such a move would have necessitated a new and undesirable kind of meaning postulate. In section IV.11 the syntactic evidence shows that measure readings are, in fact, associated with t///e's, and not with CN/CN's. If measure adjectives are to be classified

as t//e's both their extensionality and their syntactic behavior will automatically be accounted for. What remains is to examine the sense in which measure adjectives are relative, or, more accurately, vague, in spite of their t//e status.

#### IV.2 Analyses of measure adjectives

Several linguists and philosophers have advanced theories of measure adjectives, often under the title of theories of relative, or attributive adjectives. I have already discussed the inadequacies of Katz's theory of relative adjectives, for instance, as a theory of all non-intersective adjectives, in III.23. However, as a theory of measure adjectives, it is much more nearly adequate. (34), his representation of the sentence in (33), at least sets the basic task in interpreting a measure adjective: designating the category of comparison (BUILDING) choosing the relevant dimensional (VERTICAL SIZE), and giving the subject's relation to the comparison class along the dimension (GREATER than average).

(33) Skyscrapers are tall.

(34) Skyscrapers are GREATER in VERTICAL SIZE  
than the average BUILDING.

Unfortunately, Katz's theory doesn't really tell us satis-

factorily where the information in (34) comes from. Consider sentence (35) and its putative representation, (36).

(35) He's a crazy one.

(36) He is GREATER in CRAZINESS than the average  
HUMAN.

We saw in (31)b) that prenominal crazy does admit of a measure interpretation, so Katz's theory should work on it. The comparison class is supposed to be the lowest order category included as a semantic marker for the subject. If the subject is he, as in (35), the lowest order category is HUMAN, or possibly, ANIMATE. Yet (35) might well mean 'he's crazy for a doctor,' as in if he's a doctor, he's a crazy one! It seems that the comparison class actually comes more from the situation and the linguistic context than from any semantic markers on the subject.

The situation is similar with prenominal measure adjectives with less empty common nouns. One might think that Katz's theory would have no trouble giving the comparison class for such measure adjectives. A tall man is simply GREATER in VERTICAL SIZE than the average MAN. Actually, though, comparison classes for prenominal measure adjectives can be thoroughly idiosyncratic. Double prenominal adjectives afford a clear demonstration of the difficulty of determining the comparison class of

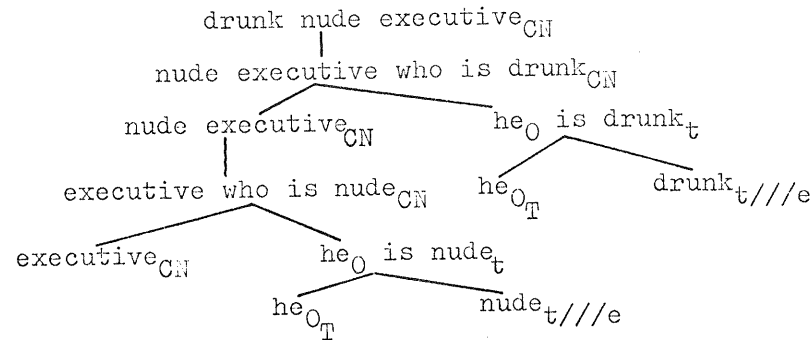


measure adjectives systematically.

In order to appreciate the vagaries of double measure adjectives, we must first consider double adjectives in general. A second regular t///e, like nude or drunk, for instance, just adds another property of individuals to a set of conjoined properties.

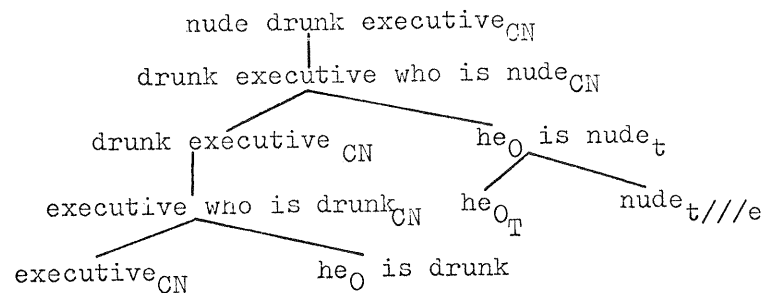
(37) drunk nude executive

translation:  $\widehat{x}_1$  [executive'  $x_1$   $\wedge$  nude'  $x_1$   $\wedge$  drunk'  $x_1$ ]



(38) nude drunk executive

translation:  $\widehat{x}_1$  [executive'  $x_1$   $\wedge$  drunk'  $x_1$   $\wedge$  nude'  $x_1$ ]

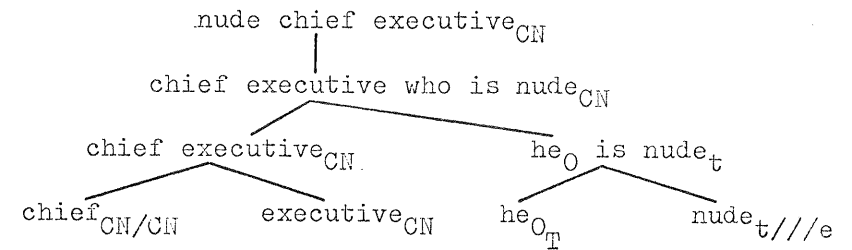


This is as predicted by our syntactic and semantic rules.

(37) and (38) are synonymous; their corresponding translations are clearly logically equivalent. An extra CN/CN, on the other hand, modifies the intension of whatever maximal CN-phrase it combines with.

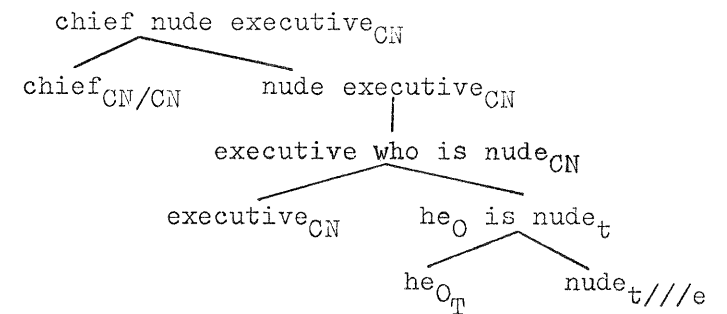
(39) nude chief executive

translation:  $\widehat{x}_1$  [chief' ( $\wedge$  executive')  $x_1$   $\wedge$  nude'  $x_1$ ]



(40) chief nude executive

translation: (chief') ( $\wedge$   $\widehat{x}_1$  [executive'  $x_1$   $\wedge$  nude'  $x_1$ ])



(39) and (40) are not synonymous, and their respective translations reflect this fact.

It is also interesting to note that the interpretation

of sequences like chief nude executive or genuine carnivorous cow, sequences of the form  $ADJ_{CN/CN} ADJ_{t///e} CN$ , bears on the question of how relative clauses are to be analysed.<sup>6</sup> Such double adjective sequences are always interpreted as if the CN/CN applies to the entire reduced and fronted relative clause with its head, as in (40). We get readings corresponding to  $[chief_{CN/CN} [nude executive]_{CN}]$  or  $[genuine_{CN/CN} [carnivorous cow]_{CN}]$ . If a CN/CN applies to an expression, that expression must be a phrase of the category CN, so the relative clause with its head must be a common noun phrase. This fact supports an analysis of relative clauses where relative clauses with their heads are common noun phrases, as in Montague Grammar. A theory that analyses relative clauses as having the structure  $[NP [S]]_{NP}$  (as in Ross (1967)) would be incompatible with the idea that these CN/CN adjectives combine with common nouns.

Let us now consider double measure adjectives.

(41) heavy fast runner

$\widehat{x}_1 [runner' x_1 \wedge fast' x_1 \wedge heavy' x_1]$

(42) fast heavy runner

$\widehat{x}_1 [runner' x_1 \wedge heavy' x_1 \wedge fast' x_1]$

If the measure adjectives heavy and fast are actually  $t///e$ 's, as I've argued that they must be, then (41) and (42) should be translated as above. In fact, (41) does have a reading that roughly corresponds to the given translation:

'runner that is both heavy and fast for a runner.' This is the reading upon which (41) is synonymous with (42), as in the translations above. A theory of measure adjectives would just have to explain where the comparison class 'for a runner' comes in. This wouldn't be too difficult for Katz's or other theories. However, a complete theory would also have to explain why it is that (41) may also mean 'heavy for a fast runner.' Such a reading is quite different from the translation given above; it is also different from a translation appropriate to a CN/CN, since it is extensional, being a measure reading. Presumably, it is the context of utterance that allows us to understand how much is included in the comparison class.

It would appear that with prenominal measure adjectives, the comparison class may be taken as being either the set picked out by the basic common noun modified, or by another, more complex common noun to the right of the measure adjective. The ambiguity must be resolved in context. One might think that a system using Katz's semantic markers could at least systematically predict the available options, from the broadest comparison class, the basic common noun, to the narrowest, the maximal common noun phrase to the right of the measure adjective. In fact, though, there seems to be no way to predict formally the set of possible comparison classes for a prenominal

measure adjective. Apparently, whatever picks out the comparison class can actually skip through a complex common noun, omitting adjectives that are irrelevant to the dimension of the measure adjective.

(43) Billy is a tall little red-headed basketball player.

(43) is meant to be a description of a child who plays basketball. It means that Billy is tall for a little basketball player. The interpretation of tall seems to have skipped over red-headed in the collection of a comparison class, presumably because hair color isn't relevant to height. CN/CN's enjoy no such selectivity. They are bound by syntactic-semantic rule to modify the entire following common noun phrase:

(44) Billy is a former little red-haired basketball player.

(45) Billy is our top little red-haired basketball player.

Both (44) and (45) are strange things to say unless you want to suggest in (44) that Billy isn't red-haired anymore, and, in (45), that Billy is, in some sense, top in his capacity as a red-head.

The measure adjectives, then, are alone in depending

crucially for the determination of their comparison classes upon contextual disambiguation and lexical peculiarities. If it is to be a theory of measure adjectives, Katz's system with its semantic markers fails to provide the necessary mechanisms to determine comparison class. Another problem with Katz's system is that the relevant dimension is supposed to be part of the meaning of the adjective. In fact, it will usually turn out to be all of the meaning of the adjective, and so, not be very illuminating. For clever, the dimension will be CLEVERNESS, for beautiful, BEAUTY, and, in (35), the dimension for crazy is CRAZINESS. Once again, the semantic markers as such haven't helped much. CRAZINESS remains an untranslated, unquantifiable, quality. Finally, the relation between the subject and its comparison class is elusive. Calling something or someone crazy I think requires that they be somewhat more than crazier than average. Someone who is only a tiny bit crazier than average would be merely odd.

The Bartsch and Vennemann (1972) theory is similar to the Katz theory in that it is a mixed theory of adjectives. All adjectives are divided into basic absolute adjectives, basic relative adjectives, and a small class of non-standard modifiers like alleged, although it is said that basic absolutes sometimes take on a figurative relative meaning. As in the Katz theory, the relative

adjectives are meant to include words like good, heavy, big, beautiful, and intelligent, but they are all treated strictly as measure adjectives. No 'ADJ as a CN' readings or other intensional readings are considered. Therefore, the theory is best considered as a theory of measure interpretations. A representation of a sentence like (46), for instance, would be (47).

(46) John is tall.

(47)  $f_{\mathbb{T}}^M$  (John)  $\rangle$  N

$f^M$  is a measure function that assigns numbers to sets. Specifically, in (46),  $f^M$  is assigning a degree of tallness (the dimension is indicated by the subscript  $\mathbb{T}$ ) to John. (46) says that John's degree of tallness is greater than the context-specific or socially determined norm of a contextually determined comparison class. N, representing this norm, is really a function of all the sets relevant to the discourse: people in general, John's relatives, John's contemporaries, or whatever.

As a theory of measure adjectives, this one has some advantages over Katz's. It is less linguistically determined. Both the dimension of comparison and the norm or average are to be contextually, not lexically, given. Consequently, in this theory, there would be no special problem with (35), either in defining the comparison class

for the non-lexical subject or in allowing for broader standards of craziness than just greater or less than average. Unlike Katz, Bartsch and Vennemann unabashedly choose tallness as the relevant dimension for tall. There is no attempt to analyse the adjective further. In fact, both because of the reliance of contextual input and the absence of abstract semantic markers, the Bartsch-Vennemann theory seems more like a theory of strategies of interpretation of sentences in context than a theory of underlying structure. It seems to take the structure and the lexicon of the language for granted. If the scope of this theory is limited, as it must be, to measure adjectives, its approach is consistent with my findings that measure adjectives are special cases of absolute adjectives, picked out from their category-mates by the idiosyncratic property of being able to designate measurement scales.

Another theory of measure adjectives that allows for contextual disambiguation is presented in Wheeler (1970). This theory is meant to account for all attributive adjectives, but an attributive is first defined as "an adjective or adverb which, when paired with a substantive or stuff-predicate or verb, yields sentences which cannot correctly be given in conjunctive account."<sup>7</sup> These are exactly the non-intersective adjectives. However, later,

the definition is narrowed to include extensional modifiers only. This immediately excludes adjectives with 'as a' readings like good and other CN/CN readings (former, alleged, blithering, mere) from the class of attributive adjectives. It narrows the class, in fact, to what I have called measure adjectives, the only ones to be extensional, but not purely intersective.

According to Wheeler, the kind of adjective that he is dealing with is a "two-termed relation between an individual and a class of individuals, plus a membership sentence saying that the individual belongs to the class to which it is related."<sup>8</sup> Thus, the logical form of (48) is (49).

(48) John is a tall man.

(49) Tall (John,  $\hat{x}$  (x is a man)) & (John  $\in$   $\hat{x}$  (x is a man))

Since Wheeler is concentrating on attributive, as opposed to predicative, adjectives, there is rarely any problem with determining the comparison class. As in (48), the comparison class is given by the modified noun. However, Wheeler does want to account for the relativity of (50), as in (51).

(50) That lobster is red.

(51) Red (that lobster,  $\hat{x}$  (x is a lobster)) &  
(that lobster  $\in$   $\hat{x}$  (x is a lobster))

Probably, he would also represent (52) as in (51), if it were said while pointing at a lobster.

(52) It's red.

So, it seems that the comparison class is meant to be contextually determined, as in the Bartsch-Vennemann theory. The dimension of comparison, however, is given here in even more surfacey terms than in the Bartsch-Vennemann theory. We get, not 'tallness', but tall. It is not really a dimension, but a relation between the individual and the comparison class. The nature of this relation is not given at all, but left to be contextually determined. Wheeler avoids saying anything about John being taller than any average or norm in (49). He observes, rightly, I think, that such a norm may be nowhere to be found, yet we can still use measure adjectives:

The population of acrobats consists of 101 individuals, 51 of which are exactly seven feet tall. It seems to me that the 51 are tall acrobats, but they are not any taller than most acrobats.<sup>9</sup>

The last theory of measure adjectives to be considered is that in Kamp (1974). Kamp's theory of measure adjectives is at once the most explicit and the least linguist-

stically determined. It is also the only one of these theories meant by its author more or less as a theory of measure adjectives. Kamp first considers the prenominal adjective theories of Montague and Parsons (see sections III.22 and III.23) in which adjectives are treated as CN/CN's. He then offers his own theory of adjectives that can act like vague one-place predicates, although he is not sure how far the domain of such a theory extends. As examples of adjectives that would definitely not be in its domain, he mentions alleged, fake, skillful, good, and four-legged. This list includes paradigm examples of both unparaphrasable CN/CN's (alleged, fake) and 'as a' CN/CN's (skillful, good), as well as non-measuring exclusive t///e's (four-legged). In my terms, this leaves as the domain for Kamp's theory only measure adjectives, those t///e's with a for a interpretation.

Kamp gives no translations of English into a logic. Rather, he gives model-theoretic truth definitions to account for the use of sentences with measure adjectives, which he takes to be, basically, simple one-place predicates. Kamp, then, is trying more to develop a theory of use of a type of predicate than a grammar of adjectives. This fits in nicely with the notion of measure adjectives as a peculiar subset of the t///e's. Also, a theory of use seems to be the proper realm in which to treat the

problems of measure adjectives. Damereau (1975) comes close to this conclusion in a critique of various formal syntactic-semantic proposals for dealing with measure adjectives. He criticizes a proposal set out in Lakoff (1972) and Zadeh (1974) to use fuzzy sets. The proposal relies too heavily on linguistic variables like height and also lacks the notion of a comparison class. Similarly, Damereau regards the choice of comparison class, norm or average, and dimension in Katz's system as too linguistically determined to represent the facts accurately. He concludes that all aspects of the interpretation except, perhaps, the polarity of the adjective, must be open to contextual influence, but he mourns the fact that such an approach won't make for very convenient syntactic deep structures:

The difficulty, of course, is formulating a grammar capable of deriving correct surface structures from such a deep structure.... In the absence of such a grammar, any evaluation of the validity of possible semantic deep structures....is really empty of content.<sup>10</sup>

In contrast, Kamp embraces the conclusion that measure adjective interpretation is not a matter of syntax: "The idea of a predicate being true of an entity to a certain degree....is closely related to such general features of natural language as vagueness and contextual disambiguation."<sup>11</sup>

Kamp's truth definitions for sentences with measure

adjectives are given in terms of graded context-dependent models. Given an (incomplete) model of the actual world, the context of use determines a slightly less vague ground model, as well as a set of possible further sharpenings or modifications of the model. In some cases, the context-determined ground model will be explicit enough about the standard of comparison, the dimension of comparison, and the subject's place on the dimension to provide a truth value for a sentence like (53).

(53) Harry is heavy.

Harry will either be in the positive or negative extension of the predicate heavy in the ground model, and the sentence will be true or false, accordingly.

If, however, the standard of comparison, and, consequently, the subject's relation to it isn't fully determined in the ground model by the context, an intermediate truth value can be determined by examining the truth of the sentence in the possible models less vague than the ground model, that is, in the possible sharpenings and modifications of the ground model that the context has determined. In this way it is possible to calculate the degree of truth for the sentence (a number between 0 and 1) based on the frequency with which possible standards of comparison would make the sentence true. If,

on the other hand, the relevant dimension isn't picked out in the ground model, the truth of the sentence may actually be undecidable. Kamp agrees with the others that there is little trouble identifying the relevant dimensions with a one-dimensional adjective like heavy or tall. However, unlike the others, Kamp isn't satisfied with saying that cleverness, which is multi-dimensional, is the relevant dimension in (54)

(54) Harry is clever.

The truth of (54) would be undecidable in Kamp's theory unless some single-scaled attribute like problem-solving ability or quick-wittedness is contextually selected for primary attention. I am not at all sure that problem-solving ability or quick-wittedness is particularly more single-scaled than cleverness, but I think that this treatment of dimension in Kamp's theory does capture the fact that we can't use a measure adjective as such unless we have some idea of a scale in mind.

Kamp's theory is built on vagueness and operates by contextual disambiguation. It shares none of the problems of the others, and succeeds in building in a scalability requirement for dimensions of comparison. One might suggest that Kamp's theory runs into fewer problems because it attempts less, that is, that it does not constitute a

grammar of adjectives, or even a logical structure for them, beyond that of a simple predicate. In fact, though, the goals of this theory are simply different. Kamp considers the measure adjective problem to be related, not so much to the syntactic and logical role of the adjective, but to vagueness and contextual disambiguation. His theory does provide a framework for the treatment of these latter phenomena.

#### IV.3 Measure adjectives and comparison

The theories of measure adjectives, then, seem to get more correct as they get more vague. That is, the more they allow the comparison class, the dimension, and the position along the dimension to be contextually determined, the better they account for the facts. The various logical forms given for measure adjectives are not so much representations to be built into a grammar. Rather, they are models of what we mean when we use measure adjectives, no matter what their underlying grammatical structure might be.

I have tried to show that adjectives with a measure interpretation are a subset of the t///e adjectives. As far as the workings of the grammar go, the distinction between t///e's and CN/CN's is the fundamental one. Aside from their t///e characteristics, measure adjectives show

no uniform syntactic behavior. Much of the supposed importance of measure adjectives as a class comes from the role they are supposed to play in comparatives. In a discussion of why nouns don't often have comparative forms, Kamp hypothesizes that a word's ability to produce reasonable comparatives depends upon its having a sizable extension gap (it must not be too clear what is and what is not in its extension) and on its determining a dimension or a few dimensions of measurement. Among adjectives, these two features would be determined by facts about the world and the lexical properties of the words. Yet, many writers, including Sapir (1944), as well as Katz, Bartsch and Vennemann, and Wheeler, have maintained that adjectives that can participate in comparative constructions are exactly the category of measure adjectives which characteristically allow a for a interpretation in the positive. Even Kamp explains comparatives as part of the same phenomenon as the measure readings, although he claims no grammatical significance for the category so determined.

However, many adjectives that cannot have a measure interpretation can appear in comparatives:

- (55) a) Bowser is a speckled poodle, but he's  
not a speckled dalmation. (\*Bowser  
is speckled as poodles go, but he's  
not speckled as dalmations go.)
- b) Spot is more speckled than Bowser.



- (56) a) This is a public restroom but it's not a public auditorium. (\*This is public compared to other restrooms, but it's not public compared to other auditoriums.)
- b) Let's go someplace more public.

Such non-measuring comparatives occur in all grammatical categories of adjectives.

(57)

exclusive t///e's (App. A,B)	exclusive CN/CN's (App. C,D, E)	doublets with MP (90) (App. F)	doublets without MP (90) (App. G, H,I,J)
speckled angry remiss loath	temporary forcible rightful	navigable representative customary public local	handy rabid sorry close ready

This list of adjectives that permit comparatives even includes some exclusive CN/CN's, words of a category incapable of yielding a for a measure interpretation.

- (58) I will follow Peter, because he is the more rightful king.

Further evidence that comparatives are not, like measure interpretations, limited to t///e adjectives can be found in the comparatives of doublets. We saw in (31) and (32) that the measure interpretation of a doublet automatically

selects the t///e version of the doublet. Comparative constructions show no such behavior. The sentences below are ambiguous. The adjectives can have their CN/CN interpretations, or the t///e interpretations of the b) sentences.

- (59) a) I've never seen a sorrier artist. (sorry can mean either 'bad specimen of a' or 'regretful.')
- b) I've never seen that artist sorry. ('regretful' only)
- (60) a) Kim is looking for a handier tool. (handy can mean either 'useful' or 'conveniently nearby')
- b) There's always a hammer handy in this house. ('conveniently nearby' only)

Comparison, then, is not part of the same phenomenon as measure interpretation. It is much more widespread, occurring in more than one grammatical category, including non-adjective categories. Measure interpretation, now on its own, looks even more like a special way of interpreting t///e's. Wheeler observes that some adjectives like red which can have a measure interpretation more often have an absolute interpretation. He proposes to account for this by saying that, for the absolute

reading, the comparison class is everything. One could extend this hypothesis to account for t///e's and t///e versions of doublets that never allow a measure interpretation by saying that such adjectives help determine a context in which the comparison class is always everything. This way, we can think of whatever theory that best explains the interpretation of measure adjectives as part of a general strategy for using t///e's.

1. Wheeler (1972), p. 310.
2. Russell (1945), p. 159, cited in Bartsch and Venemann (1972), p. 47.
3. Terry Parsons brought this possibility to my attention.
4. The fact that the only way to use an Italian adjective that has a senso traslato (a CN/CN version) non-restrictively is as a predicate adjective in a relative clause constitutes more evidence for a claim made in section III.10. This claim was that, as predicted by the doublet theory of adjectives, only t///e adjectives have non-restrictive readings. The Italian facts support this claim, since only t///e's can appear in predicate position in Italian.
5. Heavy adjectives, those with additional modifiers, seem always to be shifted to post-nominal position, regardless of category.
6. Thanks to Emmon Bach, who pointed this out to me.
7. Wheeler (1972), p. 311.
8. Wheeler (1972), p. 315.
9. Wheeler (1972), p. 319.
10. Damerau (1975), p. 5.
11. Kamp (1975), pp. 128 - 129.

## C H A P T E R V.

## CONCLUSION

## V.0. Introduction.

The theory of adjectives that I have presented includes two basic syntactic-semantic categories for adjectives. One, the t///e's, for adjectives that actually modify the extensions of noun phrases, is closely allied to intransitive verbs. The other, the CN/CN's, for adjectives that modify the intensions of common nouns, can only be called adjectival. My claim that both these basic categories must be available to natural languages runs contrary to some other works on adjectives (Bach (1968) and Lakoff (1970), for instance) where adjectives have been considered to derive universally from other basic categories. Givon (1970) states the position this way:

In short, we are dealing with a lexical category whose universality is open to doubt, and whose membership arises primarily through overt derivation even in languages where it does exist,<sup>1</sup>

Certainly, some languages seem to get along very well with few basic adjectives, or even supposedly, with none at all. (Bach (1968) suggests that this is true of Nootka, and Welmers (1973), that it is true of LoNkundo.) Since my theory of adjectives adds to the stock of basic categories not one, but two, adjective categories, I would like to show that these categories are useful even in theories of languages that seem to have

few adjectives. I do not claim that all languages must have both a CN/CN class of words and a t///e class. What I mean to say is that both these categories are options as base categories for natural languages, options which many, if not all, languages make use of. Not all the members of both categories will always be recognizable as members of the traditional part of speech group, adjective. The double-category theory can do more than explain peculiarities of the many and strange adjectives in Indo-European languages like Russian and English. It can also help account for semantic and morphological peculiarities in a relatively adjectiveless language.

## V.1. Adjectives in Ngamambo.

## V.10 Introduction.

Because work on syntactic-semantic categories requires the intuitions of a native speaker, I have not been able to investigate either of the languages that have the reputation of being completely adjectiveless. It would be interesting to be able to discover the fate of the two basic adjectival categories in a language which was completely without adjectives. However, I was lucky enough to have the help of two native speakers of Ngamambo. Ngamambo is one of the languages spoken in Cameroon,<sup>2</sup> and it is one of many African languages generally supposed to have only a few adjectives.

## V.11 The un-adjectives.

A large majority of words that translate English adjectives are verbs in Ngamambo. They do not form a separate verb class, but are distributed throughout the verb classes of the language:

- (1) a) Kapinta we ka  
carpenter the is strong  
'The carpenter is strong.'
- b) wëd we nam  
person the is married  
'The person is married.'
- c) atën ze ñid  
chair the is heavy  
'The chair is heavy.'

Most of these adjective-verbs and many words that are translated in English as plain intransitive verbs also have post-nominal attributive forms. The attributive form is predictable from the form of the verb. All Ngamambo words end in a vowel, nasal, or a stop. If the verb ends in a vowel, the vowel lengthens in the attributive forms as in (2)a). If the verb ends in a nasal, a ə is added, as in (2)b). If the verb ends in a stop, then a ə is added there also, but certain phonological changes, general in the language, take place, as in (2)c)<sup>3</sup>.

- (2) a) kapinta kaa we  
carpenter strong the  
'the strong carpenter'
- b) wed namə we  
person married the  
'the married person'
- c) atën ə ñire ze  
chair epenthetic heavy the  
vowel  
'the heavy chair'

In meaning, the expressions, in (1) and (2) are all intersective. It appears simply to be impossible to get a non-intersective reading of an adjective in Ngamambo if it is a member of the verb-derived majority represented in (1) and (2). Since the Ngamambo words for 'intelligent' and 'old' are members of this majority, English sentences like (3) and (4) must be paraphrased as in (3)b) and (4)b), rather than translated directly. Direct translations into Ngamambo yield contradictory sentences, rather than the intended non-intersective readings.

- (3) a) He's an intelligent student, but a stupid father.
- b) 'He's a student that has intelligence, but as a father he's useless.' OR  
'He has a head for learning, but not for raising children.'

- (4) a) She is an old friend, but a new neighbor.  
 b) 'I've known her a long time as a friend,  
 but it's not a long time that she's  
 been living in the other house.'

A compositional semantic approach would predict that the predicate adjectives would be of the intersective semantic type of intransitive verbs, since they are syntactically like such verbs, but the attributive forms in (2) would not have to be completely synonymous with them and share their exclusively intersective meaning. Yet, they are, and they do. We have already seen in (3) and (4) that attributive forms of verbal adjectives cannot have non-intersective interpretations. In fact, they can have only the same intersective interpretation as expressions with relative clauses containing their corresponding verb forms. (5)a) and (5)b) mean exactly the same thing, that represented in (5)c):

- (5) a) bug           wee           ze  
           dog       intelligent   the  
           'the intelligent dog'
- b) bug       ze   no    e       we       ne  
           dog       the   that   he   is intell-   restric-  
                                   igent       tive  
   relative  
   marker  
           'the dog that is intelligent'
- c) 'the one that is a dog and that is intelligent'

The synonymy of the relative clauses and the attributive forms, as well as the regularity of the morphological rules involved in forming the attributive forms suggests that the attributive forms might be derived from relative clauses in the syntax. When the intersective meaning of these attributives is taken into account, it seems that the attributive forms must be derived from the relative clauses, because they are semantically predicates, and not ad-common nouns, as their surface position might suggest. Such a derivation will involve a relative clause reduction rule. We must take care to limit the application of such a rule to those predicate adjectives and verbs that have grammatical attributive forms. The only predicate adjectives that do not have regular attributive forms are those that have special adjective versions (See Section V. 12) and a few of the ones that have corresponding nouns instead of attributive adjectives.<sup>4</sup> The real verbs that have attributive versions are verbs that can be intransitive:

(6) Verb	Gloss	Attributive	Adjective
bop	'rot'	boba	'rotten'
nam	'marry'	name	'married'
ñɛd	'putrefy'	ñɛrɛ	'putrefied'
ñɔd	'squeeze'	*ñɔrɛ	-
wa	'frighten'	*waa	-
zɔm	'insult'	*zɔmɛ	-

Those words that can undergo our relative clause reduction rule will have to be marked in some way. They could be marked with a rule feature or with another device available within the Montague framework for distinguishing syntactically determined subsets of unified semantic types, the multiple slash notation (see section II.3). Non-reducing intransitive verbs and adjectives can be of category t/e; those that reduce to attributives can be t///e's. Now, a rule like (7), applying to t///e's or to t/e's marked with an appropriate feature, can accomplish the relative clause reduction:

(7) For  $\alpha \in P_{CN}$ , where  $\alpha$  has the form  $[\beta [he_i \delta]_t]_{CN}$

and  $\beta \in P_{CN}$ ,  $\delta \in B_{t///e}$  or  $B_{t/e}$

[+ rule (7)],  $F_5(\alpha) \in P_{CN}$  and  $F_5(\alpha)$  is

$\beta \delta'$ , where  $\delta'$  is , for  $\delta$  ending in a vowel,  $\delta$  with a lengthened vowel, and, for  $\delta$  ending in a consonant,  $\delta + \emptyset$ .

(Corresponds to transformation (3) in Appendix II.)

The semantic rule corresponding to (7) will be the identity mapping. The semantics will work only on the relative clause version, that is, on the input to rule (7). Verb-derived attributives as in (5)a) will be translated just like their corresponding relative clause versions. (8), for instance, is the translation of both (5)a) and (5)b). It

has roughly the meaning of (5)c).

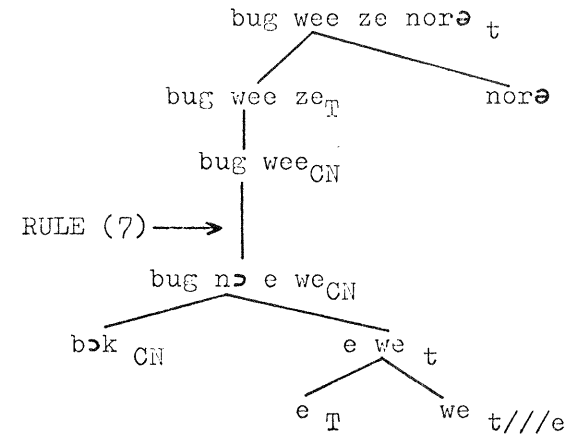
(8)

$\hat{P} \forall y [\wedge x [\text{dog}'(x) \wedge \text{intelligent}'(x) \leftrightarrow x=y] \wedge P \{y\}]$

(9) is an analysis tree representing the syntactic derivation of the Ngamambo sentence:

bug wee ze nor $\emptyset$   
 dog intelligent the ran  
 'The intelligent dog ran.'

(9)



V.12 The adjectives.

There are some adjectives in Ngamambo, though, that cannot possibly come from relative clauses. There are syntactic, morphological, and semantic discrepancies between these attributive adjectives and their possible corresponding relative clause sources. This group includes the four words that are considered Ngamambo's only real adjectives since they are obviously not derived from any

verbs, as well as the three Ngamambo color words.

(10) COLUMN I.

	<u>VERB</u>	<u>GLOSS</u>	<u>ADJECTIVE</u>	<u>GLOSS</u>
	fin	'to turn black'	firə	'black'
<u>PART A</u>	baŋ	'to turn red'	bagə	'red'
	fɔk <sup>5</sup>	'to turn white'	kifɔk	'white'
		also 'to wipe'		
	faŋ	'to be big'	kyen	'big'
	kəti	'to be small'	kwa	'small'
<u>PART B</u>	bɔŋ	'to be good'	tsɔm	'good'
	be	'to be bad'	libɔŋ	'bad'

As with the un-adjectives of section V.11, the verbal forms in column I. can appear only predicatively, and the attributive forms in column II. can appear only postnominally. Yet the pairs of words in (10) are not syntactically related as are the pairs of verbs and un-adjectives by rule (7).

The first argument against relative clauses containing the verbs in column I. as sources for the adjectives in column II. applies only to the color words in part A of (10). The argument stems from the fact that the verbs for black, red, and white do not mean simply 'be black', 'be red', and 'be white'. They mean 'turn black', 'turn red', and 'turn white'. So, parallel to (5)b), which is the source for (5)a), we have (11)b), which could not be the source for (11)a), since it is not synonymous with it.

- (5) a) bug            wee            ze  
dog            intelligent    the  
'the intelligent dog'
- b) bug ze nɔ e we ne  
dog the that he is intelligent restrictive  
relative  
marker  
'the dog that is intelligent'
- (11) a) ifu?            firə            we  
leaf            black            the  
'the black leaf'
- b) ifu? we nɔ wu fin ne  
leaf the that it turned black restrictive  
relative  
marker  
'the leaf that turned black'

A relative clause that is used for meanings closer to that of (11)a) is (12).

- (12) ifu? we nɔ wə finε ne  
leaf the that it is black restrictive  
relative  
marker  
'the leaf that is black'

(12), however, contains a different part of the verb in its relative clause from the one appearing in (1), (5)b), and (11)b). For verbal forms other than color words, relative clauses with the verb form that appears in (12) are not synonymous with the attributive expressions. The verb

form in (12) is actually a progressive form. If we wanted to derive (11)a) from (12), it would involve complicating the relative clause reduction rule so that, for color words only, it would operate on the progressive form of the verb. All hope of using (12) as a source for (11)a) fades when we consider the fact that (12) is not, in fact, completely synonymous with (11)a). Despite its gloss 'the leaf that is black', the construction illustrated in (12) is anomalous if the head noun is something that doesn't ordinarily turn black ((13)). The attributive construction is not anomalous under such circumstances. ((14)).

- (13)    %wéd    we    nɔ    wə    finɛ    ne  
          person the that he is black restrictive  
    relative  
    marker

'the person that is black'

- (14)    wéd                firə                we  
          person                black                the

'the black person'

In the above examples and in the rest of this chapter, I use the percent sign % to indicate expressions that, while grammatical, are semantically anomalous or pragmatically odd. Thus (13) would be appropriate only if the person in question has been painted or otherwise turned black. (14) is the way to refer to him if he is naturally black.

There is no fully acceptable relative clause source for expressions like (14).

The second argument against relative clause sources for the attributive adjectives in (10) applies to both the color words and to the other four adjectives in part B of (10). All seven are morphologically irregular in some way. The relative clause reduction rule (7) designates the predictable morphological shape of the attributive adjectives it creates. But the adjectives in column II part B of (10) have entirely different roots from their corresponding verbs in column I part B. The color words are also irregular. The adjective formation rule provides for the lengthening of a final vowel or the addition of a ə to verbs ending in a consonant. Regular phonological changes would then take place (See footnote 3.) But consider the color words:

- (15)                    verb                    adjective
- |    |                  |       |         |
|----|------------------|-------|---------|
| a) | fin              | firə  | 'black' |
| b) | baŋ              | bagə  | 'red'   |
| c) | fɔk <sup>5</sup> | kifɔk | 'white' |

(15)c) involves prefixation, not a regular adjective-formation process, and (15)a) and (15)b) involve a change in nasals intervocalically, which is not a regular phonological rule in the language, as can be seen in the following alternations:



(16)	nam	'to marry'	namə	'married'
	nom	'to be concupiscent'	nomə	'concupiscent'
	bin	'to dance'	binɛ	'is dancing'
	ton	'to refuse'	tonə	'refuses'
	nih	'to take'	nihə	'is taking'
	saŋ	'to leave'	saŋə	'is leaving'

If column II. of (10) were derived from column I. by rule (7), the morphological output would be predictable for all but these seven words.

The final and most important reason for not deriving these seven adjectives from relative clauses is that, unlike the verbal adjectives of Section V.11, they all share a systematic difference in meaning from their corresponding verbal versions. The verbal versions, as noted earlier, all have intersective interpretations. These seven adjectives, on the other hand, are non-intersective, and so, must belong to the basic category CN/CN. To see that this is so, compare the translations of the following pairs of expressions. The a) examples include the verbal versions of the seven words in (10); the b) examples include the attributive versions.

(17) a)

kapinta	we	nɔ	wu	faŋə	ne
carpenter	the	that	he	is big	restrictive relative marker

'the carpenter that is physically big'

b)

kapinta	kyen	we
carpenter	big	the

'the greater, or senior carpenter'

(18) a)

kapinta	we	nɔ	wu	kəti	ne
carpenter	the	that	he	is small	restrictive relative marker

'the carpenter that is physically small'

b)

kapinta	kwa	we
carpenter	small	the

'the lesser or junior carpenter'

(19) a)

kapinta	we	nɔ	wu	bɔŋə	ne
carpenter	the	that	he	is good	restrictive relative marker

'the carpenter who is good in general; good to look at, morally good'

b)

kapinta	tsɔm	we
carpenter	good	the

'the good carpenter; good as a carpenter (also, morally good)'

(20) a)

kapinta	we	nɔ	wə	be	ne
carpenter	the	that	he	is bad	restrictive relative marker

'the carpenter who is bad in general, evil at heart'

b)

kapinta	libɔŋ	we
carpenter	bad	the

'the bad carpenter; bad as a carpenter (also, morally bad)'

In each example, in the a) expressions a property - bigness, smallness, goodness, badness - is predicated in absolute, general terms of the individual involved. In the b) examples, the property operates on the meaning of the common noun that it modifies. In (17)b), 'senior carpenter' is actually 'big as a carpenter,' and in (18)b) junior carpenter' is a way of saying 'small as a carpenter'. In (19)b) and (20)b), the dominant readings are 'good' and 'bad' respectively, at being a carpenter. The possible secondary interpretations of (19)b) and (20)b), morally good or bad, can come out in certain contexts. They are not so clearly non-intersective, but neither do they completely coincide with the more general intersective reading of the a) examples. It is clear, though, that all four adjectives in the b) examples do have CN/CN versions, and so cannot be derived from the predicates of relative clauses, where such readings never appear.

The semantics of the three color words is more complicated, due mostly to the special meaning of 'becoming a certain color' associated with the verb forms. However, it is clear that the attributive versions are quite diff-

erent in meaning from the verbal versions. Among other things, they are non-intersective, while the verbal versions are intersective. Compare the a) and b) examples in (21) - (23)

(21) a)

nɪb	ze	nɔ	ɛ	finɛ	ne
house	the	that	it	is black	restrictive relative marker

'the house that is dark; without lights'

b)

nɪb	firə	ze
house	black	the

'the black house'

(22) a)

ifu?	we	nɔ	wə	finɛ	ne
leaf	the	that	it	is black	restrictive relative marker

'the leaf that is black'

b)

ifu?	firə	we
leaf	black	the

'the black leaf'

(23) a)

%wɛd	we	nɔ	wə	finɛ	ne
person	the	that	he	is black	restrictive relative marker

'the person that is black'

b)  
wöd firə we  
person black the  
'the black person'

(24) a)  
%fɪŋ ze nɔ ɛ finɛ ne  
heart the that it is black restrictive  
relative marker  
'the heart that is black'

b)  
fɪŋ firə ze  
heart black the  
'the black heart; the wicked soul'

(25) a)  
ɪywid we nɔ wɛ baŋə ne  
fire the that it is red restrictive  
relative marker  
'the fire that is red'

b)  
%ɪywid bagə we  
fire red the  
'the red fire'

(26) a)  
%ngwi ze nɔ ɛ baŋə ne  
dress the that it is red restrictive  
relative marker  
'the dress that is red'

b)  
ngwi bagə ze  
dress red the  
'the red dress'

(27) a)  
%weyig we nɔ wɛ baŋə ne  
woman the that she is red restrictive  
relative marker  
'the woman who is white/red'

b)  
weyig bagə we  
woman red the  
'the white woman'

(28) a)  
%ngwi ze nɔ ɛ fugə ne  
dress the that it is white restrictive  
relative marker  
'the dress that is white'

b)  
ngwi kifɔk we  
dress white the  
'the white dress'

The paramount meaning of the verbal form of black that appears in the a) examples of (21) - (24) seems to be 'dark (= unlighted)', as in (21)a). However, the meaning of 'the color black' can be induced, as in (22)a), but only if the head noun is something which, like a leaf, can literally turn black. The same word applied to a person or a heart produces anomalous expressions. (23)a), as mentioned in connection with the same expression in (13), is appropriate only if the person in ques-

tion has been painted with black paint. (24)a) would be appropriate under analogous circumstances, or if considerable discussion of the appropriate figurative use of black has preceded it.

In contrast, the attributive version of black, the one that appears in the b) examples, can never mean 'dark; without light'. It means only 'black in color', but relative to the noun it modifies, although this is not so easy to see. In (21)b) and (22)b) postnominal black means quite simply 'inherently black in color', since black houses and black leaves are no different in color from things that are black and houses or black and leaves. In (23)b), although a black person is usually not actually quite black in color, we can't be sure that 'black' is relative to the common noun it modifies, since a Ngamambo speaker correctly calls any dark color black. However, the figurative use of black in (24)b) does constitute evidence for the relativity of attributive 'black'. Idiomatic constructions are typical behavior for CN/CN's (Consider the English black humor) just because of their relativity. Only as a CN/CN can fire in (24)b) be correctly interpreted as 'black (of a heart)'.

The situation with red is more peculiar from the point of view of an English speaker. The verbal form of red is appropriately used only of things like fires,

which can be said to be actively being or getting red. Thus, (25)a) is acceptable, but (26)a) and (27)a), which deal with more passively red things, are not. Conversely, since fires are not considered to have any inherent static color, (25)b) is odd, while (26)b) and (27)b) are fine. (26)b) is otherwise unremarkable, but (27)b) is a good illustration of the non-intersectiveness of attributive color words. For a Ngamambo speaker, an expression that translates as 'red woman' picks out the same individuals that an English speaker picks out with white woman. Yet, the Ngamambo speaker makes no claim that these individuals are women who are red in any absolute sense, any more than an English speaker could claim that they are women who are white in any absolute sense. The adjective simply does not modify the individuals; it is a property of properties, a CN/CN.

The same sorts of things seem to be going on with white in (28), but, since my informants could not come to any firm conclusion about the status of the verbal form meaning 'to turn white' as distinct from the homophonous 'to wipe', I consider it best not to try to discuss it.

In conclusion, categorizing the seven adjectives in column II. of (10) as basic CN/CN's will account for their syntactic, morphological, and semantic behavior. They will

be generated only in the postnominal attributive position, where they occur syntactically. Their idiosyncratic morphology will be listed in the lexicon for each CN/CN entry, and they will automatically be assigned to the kind of non-intersective, intension-modifying semantic type that will correctly represent their semantic properties, since that is the semantic type that corresponds to the syntactic category CN/CN.

### V.13 Non-adjectives.

In Section V.11 it is shown that many intransitive verbs in Ngamambo have equivalent attributive forms. These attributive forms come from relative clauses with predicates that are marked for reduction either by a rule feature or by the multiple slash notation. The relative clauses are reduced by a rule like (7) that in the process of reduction puts the adjectival verb itself into the appropriate attributive form. Rule (7) has no effect on the intersective semantic interpretation of the verbal adjectives.

This is the way the vast majority of Ngamambo adjectives work. In Section V.12 it is shown that just a few adjectives in Ngamambo are basic CN/CN's and behave accordingly in their syntax, morphology, and semantics. One might wonder how Ngamambo comes to have so few non-intersective adjectives, while Russian and English have so many.

My account of Ngamambo adjectives would predict that one would not be able to say things with adjectives in Ngamambo that require non-intersective adjectives in English. Examples (3) and (4) constitute some evidence that this prediction is borne out. (29) gives some more glosses of Ngamambo non-adjectival paraphrases for English non-intersective adjectives.

- |      |                    |   |
|------|--------------------|---|
| (29) | substitute teacher | 'teacher who took the place of the one who was here before' |
|      | apparent reason    | 'reason that they gave'                                     |
|      | former teacher     | 'someone who used to be a teacher'                          |
|      | top student        | 'student who goes in front'                                 |

### V.2 Conclusion

It seems that languages generally allow for both ordinary intersective predication and for intensional, non-intersective modification. This does not mean that all languages must have two, or even one, basic adjective category, though. Intersective adjectives need not necessarily be in a separate basic category from verbs, as can be seen in the analyses of both Russian and Ngamambo. In a language where no such distinction exists, predicate adjectives are simply intransitive verbs, that is, t/e's and do not constitute a separate adjective category.

Similarly, non-intersective adjectives are of the same semantic type as verb-phrase modifying adverbs. The semantic type depends on the arrangement of the primitives in the syntactic category, not on the slashes. The semantic identity of CN/CN's and IV/IV's can be seen more clearly if abbreviations are not used.

(30) non-intersective adjective: CN/CN = t//e / t//e  
 verb-phrase adverbs: IV/IV = t/e / t/e

It should also be clear, though, that CN/CN adjectives are not so likely to collapse with adverbs as t//e adjectives are with intransitive verbs. The need for the double slashes in (30) stems from the syntactic differences between common nouns and intransitive verbs. So, only in a language where there are no such differences (like Nootka, possibly) should non-intersective adjectives and verb-phrase modifying adverbs form a single category and erase identifiable adjectives completely. Otherwise intensional modification of common nouns would have to be carried out either by members of a separate basic category CN/CN or by ponderous paraphrases such as those in (3), (4), and (29). In fact, most languages (those discussed in Welmers (1973) for instance) seem to have at least a few basic non-intersective adjectives, usually with the most common of relative meanings: 'big', 'little', 'good', 'bad'.

At least a handful of words that must be called adjectives usually persists. Yet the meaning of the part of speech term adjective is still not very clear. The relationship between the non-intersective and the intersective modifiers varies greatly. It ranges from the situation in Russian where almost every adjective is a doublet consisting of a CN/CN version and a t//e version, through English where most words that seem to be adjectives are in fact doublets, but many others are exclusively CN/CN or t//e, to Ngamambo, where individual words are of either one or the other category, but never related doublets. In a language like Ngamambo, there seems to be little reason to unify the CN/CN's and the t//e's under the part of speech name adjective or with a syntactic feature. They share practically no behavior. The CN/CN's may well be adjectives; they could hardly be anything else. But the intersective modifiers are clearly verbs. This is not the case in a language like English, where there is a need to unify the CN/CN's and the t//e's under a name or feature adjective, just as there is a need to unify as verbs intransitive, transitive, and complement-taking verbs, which are also assigned to different categories in a Montague grammar. Not only are the different kinds of adjectives in English so often homonyms; they also share morphological behavior and most selectional restrictions.

In conclusion, then, although the dual syntactic-semantic categories predicted for adjectives by a categorial based grammar with compositional semantics are necessary for an account of basic syntactic and semantic properties of these words, in some languages other kinds of rules may still have to refer to a super-category, the part of speech adjective. I must leave open for now the question of how to build into a Montague grammar fragment the notion of part of speech. Such a notion clearly must be added, if only to allow us to state rules for verb inflections, all of which will have to apply to basic expressions of the same group of different categories. The correspondence between particular parts of speech and particular syntactic-semantic categories is neither simple nor universal, but at least there is a division between the kind of rule that refers to part of speech labels and the kind of rule that refers to basic syntactic-semantic categories. Perhaps the different ways of classifying words correspond to different levels in the grammar.

The part of speech label adjective, for instance, will apply to words that modify nouns and that behave similarly with respect to morphological rules, selectional restrictions and, perhaps some transformations. The syntactic-semantic classes of CN/CN and t(//)e, on the

other hand, define two groups of words in terms of basic combinatory properties and logical role in semantic interpretation. The members of each of these groups of words could be classified as adjectives, because all could be said to combine with nouns, although in different ways. Words which must be classified as CN/CN's because they appear primarily or exclusively as ad-common nouns and have the characteristic non-intersective intensional semantic interpretation will be the ones to set the morphological and selectional standards for the part of speech class of adjectives. After all, except in the unlikely event of their collapsing with verb phrase adverbs, CN/-CN's could belong to no part of speech other than adjectives. Words which must be classified as one-place predicates because they appear primarily or exclusively as predicates and have the characteristic intersective, extensional semantic interpretation may or may not be members of the part of speech class of adjectives. If their morphological behavior and selectional restrictions resemble those of the CN/CN's, as in English, they will be adjectives. If they resemble those of verbs, they will be verbs, as in Ngamambo. Consequently, although languages nearly always exercise the option of expressing directly both non-intersective and intersective attribution, they may or may not have more than one kind of adjective.

1. Givon (1970), p. 837

2. Ngamambo is not a written language, and there is no standard phonetic transcription. I try to follow Asongwed's practice (Asongwed, 1975) but where uncertainties arise, I arbitrarily choose one symbol to use consistently. Particular areas of confusion are:

i. the vocalic suffix(es) used to form adjectives from verbs ending in consonants, as in (2)b) and (2)c). There may be different suffixes for stops and nasals ( ə and ɛ, respectively) or all may take the ɛ rather than the ə I have chosen. The form of the suffix is, at any rate, predictable.

ii. the exact nature of the intervocalic stops produced by rule ii., footnote 3. The output may be continuants, but it is, again at least predictable.

iii. tone. Ngamambo is a tone language, but I have left it out of consideration, as it does not have much bearing on adjectives.

3. The phonological rules involved (Asongwed, personal communication) are:

i. a vowel-lowering rule in final syllables:

$$\begin{bmatrix} +\text{voc} \\ +\text{hi} \end{bmatrix} \longrightarrow \begin{bmatrix} -\text{low} \\ -\text{hi} \end{bmatrix} \quad \underline{\quad} \text{C} \#$$

examples: dɛy 'to cry'      digə 'is crying'  
dzək 'to eat'      dzɛgə 'is eating'  
tɔk 'to spit'      tugə 'is spitting'  
itsɔk 'mouth'      itsugwe 'the mouth'

ii. an intervocalic voicing rule for stops:

$$\begin{Bmatrix} d,t \\ p \\ k \end{Bmatrix} \longrightarrow \begin{Bmatrix} r \\ b \\ ɣ \end{Bmatrix} \quad \text{OR} \quad \begin{matrix} ʌ \\ \beta \\ \gamma \end{matrix}$$

examples: kot 'to tie'      korə 'is tying'  
sop 'to cut'      sobə 'is cutting'  
dzək 'to eat'      dzɛgə 'is eating'

4. Predicate adjectives that have corresponding nouns instead of attributive adjectives include the following:

VERB		NOUN	
čindɛ	'to be stupid'	əčindɛ	'fool'
be	'to be crazy'	eted	'crazy one'

The verbal forms can be used in simple predicates or in relative clauses like the other predicate adjectives, but there is no postnominal attributive form. Instead, the noun can participate in a noun-noun construction, identifiable by its word order and tone:

əčindɛ wəd ze      \*wəd (ə) čindɛ ze  
fool person the  
'the stupid person'

eted ə wəd ze      \*wəd eted ze  
crazy one epenth. person the      \*wəd bee ze  
vowel  
'the crazy person'

5. There was some disagreement between my informants as to the status of this verb. It was agreed that the verb fɔk actually means 'to wipe', but it is also used more and more, especially by children, to mean 'to be or to turn white'. A regular attributive form fugə may also be coming into use.



APPENDIX I.

I. Notes

1. Lists A and F seem to be easily extendable; the others are more or less closed.
2. Adjectives with asterisks are exceptions to meaning postulate (1), and those in lists G - J are exceptions to meaning postulate (90), both of Chapter III.
3. Preposing is rule (9), and dummy deletion is rule (8), both from Chapter III.
4. Constituents in parentheses represent obligatory complements.
5. In the possible paraphrases columns, the intensional readings are those appropriate to CN/CN's and CN/CN versions of doublets, that is, those identified by test (2) of Chapter I. The extensional ones are those appropriate to t///e adjectives or versions of adjectives. In each category, the column marked  $\emptyset$  indicates those combinations that are unparaphrasable, although they meet the requirements for being intensional or extensional modifiers, as the case may be.

II. Adjectives that are exclusively t///e's

LIST A  
t///e  
+preposing

LIST B  
t///e  
-preposing

	possible paraphrases of ADJ+CN strings					possible paraphrases of ADJ+CN strings			
	intensional		extensional			intensional		extensional	
	'as a'	$\emptyset$	'for a'	$\emptyset$		'as a'	$\emptyset$	'for a'	$\emptyset$
unused				✓	rife				
rancid				✓	akimbo				
nearby				✓	asleep				
carnivorous				✓	alive			✓	
speckled				✓	asunder				
sick				✓	touched (mad)				
ill				✓	agape				
infinite				✓	agog				
parallel				✓	redolent (PP)				
healthy			✓	✓	loath (INr)				
portable				✓	aboveboard				
drunk				✓	afloat				
nude				✓	prone				
naughty			✓	✓	averse (PP)				
short			✓	✓	remiss				
fat			✓	✓					
tall			✓	✓					
four-legged				✓					
curt				✓					
prior				✓					
mutual				✓					
documentary				✓					
angry				✓					
aged				✓					

## III Adjectives that are exclusively CN/CN's

LIST C  
CN/CN  
+dummy deletion

	possible paraphrases of ADJ+CN strings			
	intensional		extensional	
	'as a'	∅	'for a'	∅
*fake		✓		
*imitation		✓		
temporary	✓			

LIST D  
CN/CN  
-dummy deletion  
don't meet S.D.

chief		✓		
main		✓		
top	✓			
principal		✓		
sheer		✓		
initial	✓			
utter		✓		
crack	✓			
veritable		✓		
forcible	✓			
*ostensible		✓		
blithering		✓		
mere		✓		

LIST E  
CN/CN  
-dummy deletion  
must be so marked

	possible paraphrases of ADJ+CN strings			
	intensional		extensional	
	'as a'	∅	'for a'	∅
rightful	✓			
*former	✓			
veteran	✓			
middle	✓			
ultimate	✓			
actual		✓		
inveterate		✓		
bottom	✓			
consummate	✓			
*apostate		✓		
prize	✓			
wildcat	✓			

## IV. Adjectives that are doublets

LIST F  
doublets  
+preposing  
+dummy deletion  
+ MP (90)

LIST F  
continued

	possible paraphrases of ADJ+CN strings					possible paraphrases of ADJ+CN strings			
	intensional		extensional			intensional		extensional	
	'as a'	∅	'for a'	∅		'as a'	∅	'for a'	∅
bad	✓		✓	✓	intelligent	✓		✓	✓
beautiful	✓		✓	✓	intentional	✓			✓
big	✓		✓	✓	large	✓		✓	✓
careful	✓		✓	✓	light	✓		✓	✓
confused	✓		✓	✓	little	✓		✓	✓
customary	✓			✓	local	✓			✓
copious	✓		✓	✓	profound	✓		✓	✓
complaint	✓		✓	✓	public	✓			✓
cheap	✓		✓	✓	navigable	✓			✓
clever	✓		✓	✓	small	✓		✓	✓
clean	✓		✓	✓	stupid	✓		✓	✓
difficult	✓		✓	✓	representative	✓			✓
diligent	✓		✓	✓	slight	✓		✓	✓
dependable	✓		✓	✓	shallow	✓		✓	✓
deep	✓		✓	✓	subtle	✓		✓	✓
easy	✓		✓	✓	skillful	✓		✓	✓
firm	✓		✓	✓	zealous	✓		✓	✓
good	✓		✓	✓	*artificial		✓		✓
great	✓		✓	✓					
heavy	✓		✓	✓					

## IV. continued (doublets)

LIST G  
doublets  
+preposing  
+dummy deletion  
-MP (90)

possible paraphrases  
of ADJ+CN strings  
intensional extensional

	'as a'	∅	'for a'	∅
old	✓		✓	✓
red		✓	✓	✓
black		✓	✓	✓
white		✓	✓	✓
handy	✓			✓
radical	✓		✓	✓
terrible	✓	✓	✓	✓
normal	✓		✓	✓
original	✓		✓	✓
responsible	✓		✓	✓
new	✓		✓	✓

LIST I  
doublets  
-preposing  
+dummy deletion  
-MP (90)

prime		✓		
faint	✓			
close	✓			

LIST H  
doublets  
+preposing  
-dummy deletion  
-MP (90)

possible paraphrases  
of ADJ+CN strings  
intensional extensional

	'as a'	∅	'for a'	∅
proper		✓	✓	✓
crazy	✓		✓	✓
rabid		✓		✓
plain		✓	✓	✓
true		✓	✓	✓
final	✓			✓
regular	✓	✓	✓	✓
natural	✓		✓	✓
particular		✓	✓	✓
dirty		✓	✓	✓
pure		✓	✓	✓
absolute		✓	✓	✓
filthy		✓	✓	✓
definite	✓		✓	✓
current	✓			✓

LIST J  
doublets  
-preposing  
-dummy deletion  
-MP (90)

present		✓		
ready	✓			
sorry	✓			✓

## APPENDIX II.

## TRANSFORMATIONAL EQUIVALENTS OF MONTAGUE

## SYNTACTIC RULES

Montague RuleTransformational RulePhrase Structure Rules

F<sub>1</sub>, chapter II. (1) S → NP VP  
(rule (16))

F<sub>3</sub>, chapter II (2) NOM → ADJ NOM  
(rule (22))

Transformations

F<sub>2</sub>, chapter II (1) (obligatory) Russian byt' insertion.

(rule (18))  $\left\{ \begin{array}{l} \text{Tense} \\ \text{Imperative} \end{array} \right\}^{V_{+adj}} \rightarrow \text{byt}' + \left\{ \begin{array}{l} \text{Tense} \\ \text{Imperative} \end{array} \right\}^{V_{+adj}}$

F<sub>4</sub>, chapter III (2) (obligatory) English be insertion.  
(rule (2))  $V_{+adj} \rightarrow \text{be } V_{+adj}$

F<sub>5</sub>, chapter V. (3) (optional) Ngamambo adjective preposing.

(rule (7))  $[\text{NOM } [\text{NP } V_{+(7)}] \text{ s}]_{\text{NOM}} \rightarrow [\text{NOM } V + \text{adjective ending}]_{\text{NOM}}$

where adjective ending is realized as a lengthened vowel for V ending in a vowel and as e otherwise.

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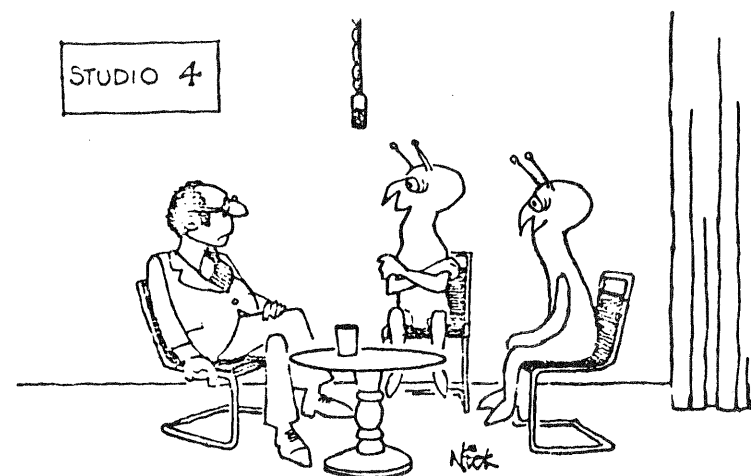
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Afterword<sup>1</sup>

"We've almost mastered your language, but  
some of your adjectives are a little zlivruquok."

<sup>1</sup> This cartoon first appeared in Saturday Review. It is reprinted here by the kind permission of the artist, Nick Hobart.