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A FIELDGUIDE FOR TRANSFORMATIONAL SYNTAX

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INTRODUCTION

This fieldguide is presented as a set of procedures for applying the theory of Transformational Grammar to raw language data. There is no doubt that the analyses initially arrived at by applying the procedures will need to be modified as the analysis progresses. Nevertheless, it is hoped that it will provide a useful beginning point as an example of the sorts of techniques which might effectively be employed in using Transformational syntax in the field situation.

It must be emphasized that this manual is not intended to be used by itself. First, it assumes knowledge of the basic orientation of Transformational Grammar, including formalisms, basic assumptions, motivations, and methods of syntactic argumentation. In its present form it was developed specifically to supplement Akmajian and Heny (1975) or Baker (1978), although any introductory text would probably be suitable as a conjunct.

Secondly, it would be desirable that a work such as this contain extensive reference to the literature to support the sorts of analyses proposed, and suggestions to the reader regarding further works which could usefully be consulted on the topics discussed. To some extent this is done, but for the most part the validity of the analyses is not supported by argumentation, although the analyses themselves are those considered to be 'standard' in at least some approaches.

The manual is organized as follows. At the end of this Introduction is a statement of the basic assumptions in terms of which the whole is to be understood. There is nothing particularly controversial here, but the explicit statement of the 'ground rules' may make the task of syntactic analysis easier.

Chapter One is a brief discussion of some syntactic universals. There is no attempt to cover this burgeoning field in any depth, although some of the more interesting findings have been summarized and illustrated. Again, the goal here is to facilitate analysis by suggesting these universals as potential hypotheses (I return to this topic in that chapter).

Chapter Two focuses on the lexicon. There is a close relationship between one's view of the lexicon, and one's view of phonology, particularly as regards abstractness. I attempt here to illustrate how lexical entries might be represented, discussing possible options. The goal is to provide some means by which analysis can proceed; there is no claim here as to the superiority of these proposals, though they have shown themselves to be useful.

Chapter Three is a presentation of the Extended Standard Theory in one of its forms; this is the theoretical stance assumed in the volume. For those who have had no contact with EST, this will serve as an introduction; for those who are already familiar with it, this will provide a useful summary, as well as information as to ways in which my approach here might be considered a departure from orthodoxy.

Chapters Four to Eight present actual procedures for carrying out syntactic analysis within EST as defined in Chapter Three. There is no attempt to be exhaustive as to the structures which must be accounted for, although I hope that there is coverage in sufficient breadth and depth to guide analysis in other areas as they are encountered. Various types of syntactic structures (such as clause and noun phrase), or rules (such as topicalization) are discussed one at a time. In actual practice, of course, the analysis must proceed on all levels simultaneously, so that the description at each point must be re-evaluated as the total analysis progresses. (I mention this as a caveat to the user, although of course it is true of all research in linguistics, whatever the model of choice.) To exemplify the procedures proposed, English data is used in the exposition, with illustration of the application of the procedures to other languages following immediately.

Chapter Nine deals with structural semantics (no reference is made to the semantics of the lexicon). An attempt is made here to provide a model of the sorts of semantic rules which are needed, as much as possible relating them to the proposals in EST.

Chapter Ten deals with text structure. While it has been true that Transformational Grammar has historically ignored linguistic patterns relevant to structures larger than the sentence, this is no longer the case (e.g., see Chomsky (1976)). This chapter proposes a model of how various facts of text-linguistics may be presented within this theory. Again there is no attempt to be exhaustive, and the reader is referred to the literature for information as to the analytical techniques which have been found useful.

Chapter Eleven is a brief introduction to recent proposals in Transformational Grammar. In particular, it is shown that Government and Binding is a natural outgrowth of EST, and some of the proposals of this most recent version of Transformational Grammar are illustrated and briefly discussed.

Basic Assumptions

1. First, there are no discovery procedures as such for syntax. Chomsky has pointed this out repeatedly (e.g., Lunt (1964)), but it seems nothing more than a self-evident fact with which it is easy to agree. It is important to note precisely what he means, however. Specifically, what is lacking--and apparently unattainable--is a series of MECHANICAL discovery procedures, such that a linguist can simply run the data through some sort of algorithm, with success assured. But it is important to note that Transformational linguists are not UNINTERESTED in discovery procedures; they simply feel that there are none available. Note the following from Chomsky (Lunt (1964:996-7)):

> ...a discovery procedure would constitute a scientific advance of the highest importance. It would, in effect, constitute a theory of language learning, a hypothesis about the intellectual capacities that are utilized to perform this task. My view is not that development of a discovery procedure would be uninteresting, but rather that it is, for the present, hopelessly out of the question, and that we do not know enough about language structure to pose the problem seriously.

To an extent he has softened his stance more recently, specifically by making explicit reference to principles of universal grammar as defining and delimiting what is possible in human language, and thus making the discovery task more reasonable. It is this general notion which I deal with below (see Assumption 3), suggesting that explicit statement of universals can aid discovery, and in fact it is that principle which is the driving force behind this fieldguide. There is, however, a sharp distinction between the sorts of universals I deal with here and the sorts proposed by Chomsky (see Chapter Eleven for some details of the latter).

Chomsky's 'softened' position is stated as follows:

> Given a linguistic theory, it should be possible for the grammar to be determined merely from the kind of primary linguistic data available to the child. If linguistic theory (universal grammar) is understood along these lines, as a function mapping experience into the final state attained, then linguistic theory must provide a "discovery procedure" for grammar from a corpus (along with whatever else is essential for the language learner). Each child provides an existence proof. (Chomsky 1980:285)

However, even though such comments express hope of ultimate success (the claim being that progress is being made in defining universal grammar), it is not yet the case that the claims have been formulated in sufficient detail to serve as a discovery procedure in even the most elementary sense.

The complexity of the analytical task is not anything unique to Transformational Grammar, of course. Linguistics, relating as it does to human cognition, is in terms of analysis, very subtle. Because of this subtlety it is probably best carried out by the native speaker, because only the native speaker has immediate access to all the data of the language. But the essential point is that, whatever the model of language used, the quality of the analysis which is obtainable depends heavily on the amount of knowledge the analyst has of the language. This is true no less--and no more--of Transformational Grammar than it is of other models.

The procedures outlined here, then, are comparable to those proposed in Longacre (1964), which is to say that they are 'guess-and-check' procedures. They make it possible for the analyst to make an immediate start in analysis (even with very little solid knowledge), and by dividing the grammar into modules, they make it possible for each area to be pursued with a certain degree of independence in the early stages.

2. The second assumption here is a practical one--it is not possible to avoid errors of analysis, at least not in the early stages. It should be clear than when little is known about a language, very little that can be said about its structure can be considered definite. Hopefully, as more experience is accumulated, and as more areas of the grammar are investigated, the analysis will be improved. But it remains essentially true that every proposed analysis is tentative, to be reworked repeatedly as the research proceeds to eliminate errors and inadequacies.

Again, I hasten to say that this is nothing new. Whatever the model used, the analysis is constantly under the threat (or promise) of future revision. The linguist must be encouraged to proceed anyway, knowing that mistakes will be made, but knowing also that analysis increases knowledge, just as knowledge improves analysis.

3. The third assumption to be explicitly noted is that languages are in fact far more similar to one another than they are different. It is characteristic of human perception and cognition, of course, that differences are more readily observed than are similarities. And it is empirically demonstrable that wide variation exists in language. But there is a notion of "human language" which can be defined, and it is the characteristics of this notion which make the concept recognizable even in light of the variation.

It is this notion of the defining characteristics of human language which Chomsky has referred to as 'universal grammar', which I mentioned above. From its inception, it has been a primary goal of research in Transformational Grammar to establish the characteristics of this universal grammar, and specifically to build them into the linguistic theory. It is the case, then, that linguistic theory involves necessarily definitional claims about the nature of human language. (As a side-light, it should be pointed out here that it is this universal grammar which Chomsky assumes is innate and unique to the human species, providing the framework within which the child develops an internal grammar based upon primary data which is in most cases less than ideal; see his quote above. I return to this topic in Chapter Eleven.)

The approach in this fieldguide is to set forth at each point in the procedure an analysis which has been proposed and defended for some language, and which is in accord with known universals of language. These analyses then serve as hypotheses which may be assumed to be satisfactory unless the data of the specific language in question shows them to be inadequate for that language. They thus provide a useful, which is not to say conclusive, beginning point.

4. The fourth assumption, then, is that such hypotheses are useful and suitable for establishing procedures to be utilized in analysis, under the assumption that what is true of one language is likely to be true of another, in a broad sense. So the basic approach advocated here is to propose analyses which are accepted for one language, and invite the researcher to test the analysis against the data of the language under investigation. It cannot be emphasized strongly enough that the analysis must be demonstrated to be valid in the language in question, and on the basis of the normal requirement in Transformational Grammar that the evidence be syntactic and otherwise independent of the particular syntactic structure under discussion. While I believe that the proposals are valid as starting points, I have no doubt that at least some revision will be necessary as the analysis proceeds in a particular language.

5. The fifth assumption is a theoretical one, viz. that the so-called Extended Standard Theory of Transformational Grammar (as defined in Jackendoff (1972)) is essentially satisfactory. I outline this model in Chapter Three and discuss three ways in which my proposals depart from it, so I will comment only briefly here. In its essential form, the model is a departure from the Standard Theory (Chomsky (1965)) in that at least some semantic rules must get their input from structures other than the deep structure source which was the sole input to semantic rules in the Standard Theory; in Chapter Nine I propose some procedures for writing such rules. A major innovation in this field-guide is the incorporation of the notion of discourse structure which Chomsky has called for in the Transformational model in recent years

(specifically in Chomsky (1976)); in Chapter Ten some procedures are proposed for writing semantic rules to account for some of these discourse structures.

It seems likely that the more recent Government and Binding model (also known as the Revised Extended Standard Theory or Trace Theory) will ultimately prove to be highly explanatory, and I summarize this approach in Chapter Eleven. But because of its emphasis on universals and constraints, it is presently less useful in analyzing language data in the field situation. In any case, the steps from the Standard Theory to the Extended Standard Theory, and from the Extended Standard Theory to Government and Binding are relatively small ones (although theoretically important), so that an Extended Standard Theory orientation here forms a useful compromise position for the development and implementation of introductory procedures.

6. Finally, in terms of procedure, the approach taken here is to handle major generalizations first, with exceptions and complications to be handled at a second stage of analysis. Thus the major generalities regarding syntactic and semantic structure can be identified and described, and the frustration of attempting to handle all the detailed minutiae simultaneously can be avoided.

I hasten to add, however, that ultimately all syntactic and semantic facts must be accounted for. But it is simply the case that to attempt to handle everything at once is not possible, and in fact it will totally immobilize the researcher. Thus the piecemeal, generalization-based approach.

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CHAPTER ONE

UNIVERSALS OF SYNTAX

In recent years a number of universals have been proposed for syntax (for example, see Greenberg (1963, 1978), and the Working Papers on Language Universals [presented in part in summary form in Burquest (1982)]). Although these proposals might better be thought of as tendencies than as defining characteristics which have universal validity, the fact that most of them have clear exceptions does not detract significantly from their usefulness.

Most importantly, an understanding of the universals which have been proposed allows the linguistic fieldworker to proceed more quickly with the analysis. The universals provide a set of hypotheses regarding what the linguist can expect to find, and as long as she or he is aware that exceptions may be expected from time to time, the beginning hypotheses provide a good starting point which can be tested empirically against the facts of the language under investigation. It is always easier to test a hypothesis than it is to come up with one, and this is precisely what the universals provide for the linguist. Such an orientation lies behind the proposals made in this fieldguide; the universals provide the hypotheses to be tested against the data, with the data providing insight as to the direction in which revision of the universals, and the analysis, must proceed.

Second, though less important from our immediate point of view, when the linguist finds that the data under investigation does not conform to the proposed universals, this provides immediate confirmation of the value of the research. Exceptions to the proposed universals are noteworthy, and a technical paper written well and thoroughly documented to demonstrate the exceptions is highly valued in the field. It may well be the case that the exceptions tend to cluster together, in which case the universals may require more precise statement rather than rejection. But in either case the field is open, and an understanding of the proposals which have been made will help make the value of the data at hand more easily seen by the linguist.

Thus, the study of universals is an important one, even though exceptions exist. I preface my statement of field procedures here by a brief discussion and illustration of some of the syntactic universals which seem to be most interesting. The reader is encouraged to investigate the literature given in the bibliography for more universals and extensive examples.

1. <u>Word Order Patterns</u>

Lehmann 1978 proposes that human languages may be usefully classified into two major types--those in which the verb precedes the object in the basic sentence (VO languages), and those in which the object precedes the verb in the basic sentence (OV languages). Lehmann states that once this basic ordering is discovered, the ordering of other constituents can be statistically predicted. Many exceptions exist, and these exceptions are probably best explained on the basis of syntactic change, specifically that the language is changing from one type to the other.

a. In the OV language type (examples are from Sinhalese, taken from Lehmann 1978), in the basic sentence the verb follows the object:

(i) Jōn ballavə däkka. 'Jon saw the dog'
dog saw

In adpositional phrases, postpositions are used, so that the adposition follows its NP object. In addition, the entire phrase precedes the verb:

(ii) Jōn janēle iňdəla ballavə däkka. 'Jon saw the dog from the
window from dog saw window'

In comparisons of inequality, the topic precedes the standard, which in turn precedes the relator:

(iii) Balla baləlaṭə vaḡā loku y. 'The dog is bigger than the cat'
dog cat-from more big is

Names are found before titles:

(iv) Bāləgē Mahācāryatumā 'Prof. Baləge'

Family names are found to occur before given names:

(v) Bāləgē Jōn 'Jon Baləge'

In additive numerals, the decimal designation precedes that of the units:

(vi) daha-tunə 'thirteen'

daha-hatə 'seventeen'

All nominal modifiers precede the nominal which they are modifying, whether they are relative constructions, genitive constructions, or descriptive adjectives:

(vii) Mas kāpu ballavə Jōn däkka. 'Jon saw the dog that ate
meat eat dog saw the meat'

Jōn eyāge asalväsiyage ballavə däkka. 'Jon saw his
his neighbor's dog saw neighbor's dog'

Jōn taḍi ballavə däkka. 'Jon saw the big dog'
big dog

A question marker, if used in the language, occurs following the main proposition:

(viii) Jōn ballavə däkka də? 'Did Jon see the dog?'
dog saw Q

The negative marker occurs following the main proposition:

(ix) Jōn ballavə däkke nä̅. 'Jon didn't see the dog'
dog saw NEG

If both the question marker and the negative marker occur, the negative precedes the question marker:

(x) Jōn ballavə däkke nä-d-də? 'Didn't Jon see the dog?'
dog saw NEG Q

When a sentential complement occurs, it precedes the verb of which it is the complement:

(xi) Ballaṭə kā̅m dennə kiyəla Mēri Jōnṭə kīva. 'Mary told Jon to
dog eat cause COMP told feed the dog'

b. In the VO language type (examples are from Irish, taken from Lehmann (1978)), the order of elements is just the reverse of that found in the OV language type. In the basic sentence the object follows the verb:

(i) Chonaic Seán an madadh. 'Sean saw the dog'
saw the dog

In adpositional phrases, prepositions are used, with the result that they precede their NP objects. In addition, the adpositional phrases follow the verb:

(ii) Chonaic Seán an madadh ón fhuinneog. 'Sean saw the dog from
saw the dog from-the window window'

In comparisons of inequality, the topic precedes the relator, which in turn precedes the standard:

(iii) Tá an madadh níos mó ná an cat. 'The dog is bigger than the cat'
is the dog bigger than the cat

Titles are found before names:

(iv) an tOllamh MacGabhann 'Prof. MacGabhann'

Given names are found to occur before family names:

(v) Seán MacGabhann 'Sean MacGabhann'

In additive numerals, the units designation precedes that of the decimal:

(vi) trí déag 'thirteen'

seacht déag 'seventeen'

All nominal modifiers follow the nominal which they are modifying, whether they are relative constructions, genitive constructions, or descriptive adjectives:

(vii) Chonaic Seán an madadh a d'ith an fheoil. 'Sean saw the dog that ate the meat'
saw the dog that ate the meat

Chonaic Seán madadh a chomharsan.[1] 'Sean saw his neighbor's dog'
saw dog his neighbor's

Chonaic Seán an madadh mór. 'Sean saw the big dog'
saw the dog big

A question marker, if used in the language, occurs preceding the main proposition:

(viii) An bhfaca Seán an madadh? 'Did Sean see the dog?'
Q saw the dog

The negative marker occurs preceding the main proposition:

(ix) Ní fhaca Seán an madadh. 'Sean didn't see the dog'
NEG saw the dog

If both the question marker and the negative marker occur, the question marker precedes the negative marker:

(x) Nach bhfaca Seán an madadh? 'Didn't Sean see the dog?'
(<in-nad)
Q NEG saw the dog

When a sentential complement occurs, it follows the verb of which it is complement:

(xi) Dūirt Máire le Seán an madadh a chothú. 'Maire told Sean
told to the dog to provide-for to feed the dog'

These patterns of constituent ordering provide a set of hypotheses for potential (and likely) analyses of the language under question. Once the ordering between verb and object is identified, the other areas can be investigated with the hypotheses in mind.

The following chart summarizes the discussion above:

	OV Languages	VO Languages
Basic Order	object-verb	verb-object
Adpositions	postpositions	prepositions
Comparisons	topic-standard-relator	topic-relator-standard
Titles	name-title	title-name
Names	family name-given name	given name-family name
Numerals	decimal-unit	unit-decimal
NP Modifiers	modifier-noun	noun-modifier
Questions	proposition-Q	Q-proposition
Negation	proposition-NEG	NEG-proposition
Complementation	complement-verb	verb-complement

2. Placement of Adverbial Constituents

The following facts have been proposed (Sanders (1972)) as being universally valid. There are no known exceptions, so if any are found they should be duly noted and made available to the scholarly world.

a. All languages have sentences with sentence-initial adverbial constituents. Note the following examples (from Sanders (1972)) from Ibanag (VSO), English (SVO), and Japanese (SOV):

Ibanag: Tatadai ngaragon i pinanuntu na abbing ta mestra.
last year hit the child the teacher
'Last year the child hit the teacher'

I limana i pinanuntu na abbing ta mestra.
with his-hand hit the child the teacher
'The child hit the teacher with his hand'

English: Last year the child hit the teacher.

In the valley, the rain was beginning to fall.

Japanese: Kyonen wa denshachin ga yasukatta.
last-year topic trainfare subj. was-cheap(er)
'Last year the trainfare was cheaper'

Kyōshitsu ni seito ga sanjūnin imasu.
classroom in pupils subj. 30-men are
'There are thirty pupils in the classroom'

b. All languages have sentences with adverbial constituents which are not sentence-initial:

Ibanag: Nachian ta manila i abbing tatadai ngaragon.
lived in Manila the child last year
'The child lived in Manila last year'

Sinuntu na abbing i mestra ta limana.
hit the child the teacher with his-hand
'The child hit the teacher with his hand'

English: The child lived in Manila last year.

The child hit the teacher with his hand.

Japanese: Kare wa hikōki de kimasu.
he topic airplane by comes
'He's coming by airplane'

Boku wa asu Tōkyō e yukimasu.
I topic tomorrow Tokyo to go
'I'll go to Tokyo tomorrow'

This non-sentence-initial distribution is the most 'normal', the most prosaic, and implicationally the most unmarked in most languages, if not in all. In all such cases the adverbial constituent follows either the superficial subject, the superficial object, or both (the first Ibanag example is an exception if *ta Manila* is considered to be adverbial).

c. If a given language has S(O)V ordering, but not SVO ordering, then when adverbial constituents are included it will have S(O)AV ordering, but not S(O)VA; that is, the position of the adverbial parallels that of the object. The following examples are from Japanese:

Gakusei wa hon o kaimasu.
students topic books obj buy
'The students buy books'

*Gakusei wa kaimasu hon o.

Kare ga hikōki de kimasu.
he subj airplane by come
'He's coming by airplane'

*Kare ga kimasu hikōki de.

d. If a language has either the order S-ADV-V-X or the order S-V-X-ADV, it will have both orders. In such a case one of the orders will be normal for a large majority of adverbial constituents, while the other will be normal for the remainder of adverbial constituents. Thus for both English and Chinese both orderings are possible. For English, the ordering S-ADV-V-X is normal for the minority of adverbial constituents:

John never eats apples.

*John eats apples never.

The ordering S-V-X-ADV is normal for the majority of adverbial constituents:

John eats apples in the garden.

*John in the garden eats apples.

In Chinese the situation is just the opposite; the ordering S-ADV-V-X is normal for the majority of adverbial constituents:

John zuotian dale nanhaizi.
John yesterday hit boy
'John hit the boy yesterday'

*John dale nanhaizi zuotian.

The ordering S-V-X-ADV is normal for the minority of adverbial constituents:

John laile wode chia li.
John came my house inside
'John came to my house'

*John wode chia li laile.

3. Differences between Ordering of Constituents in Morphology and Syntax

Differences in ordering between comparable constituents in morphological structures and syntactic structures are not unusual. Where they occur, it is claimed that the order in the morphological constructions represents that which was true of the ordering of those constituents at an earlier point in time than that ordering found in the syntax (Givón (1971)). In English the syntactic order is verb-object, but in some morphological sequences the order is object-verb, which can be demonstrated from historical documents as representing the earlier ordering:

Syntax: John cleans the house every day.

Mary hunts lions with great excitement.

Susie is very eager to repair cars.

The Mayor governs the city.

Morphology: lion-killer

crowd-pleaser

house-cleaning

big-game hunting

car-repair

city-government

mouse-trap

door-stop

In Swahili (and many other Bantu languages) NP objects occur following the verb stem, while pronominal objects are morphologically bound in a position preceding the verb stem (this may be a function also of the universal discussed below that pronouns occur earlier in order than non-pronouns in contexts in which they differ in order):

Syntax:	Ni-li-ona ki-tabu. tns-see book		'I saw the book'
	Na-li-ona mi-ti tns-see tree		'I saw the trees'

Na-uza ku-ku wa-wili. 'I am selling two fowl'
sell fowl two

Wa-zungu ha-wa ha-wa-jui Ki-Swahili. 'The Europeans do not know Swahili'
European the tns know Swahili

Morphology: Ni-li-ki-soma. 'I read it (=the book)'
pst-it read

A-ni-ona. 'He sees me'
me see

Zi-ta-tu-tosha. 'They (=bananas) will satisfy us'
fut-us satisfy

In Angas, NP objects occur following the verb in clauses, but in some restricted and non-productive types of nominalization they occur preceding the verb, suggesting an earlier object-verb ordering:

Syntax: Musa mwa dyip shwe. 'Musa's family is harvesting'
harvest corn

Gurm mwa se nam. 'People eat meat'
eat meat

Mat mwa kop shinkafa. 'The women are planting rice'
plant rice

Mwa kat bi mwa dung-dung. 'They got many things'
get thing pl

Morphology: shwe-dyip 'harvesting'
corn harvesting

mbi-se 'food'
thing eating

mbi-kop 'crop'
thing planting

mbi-kat 'wealth'
thing getting

4. Relativization

It has been proposed that all facts of relativization can be characterized with reference to relativization strategies (Maxwell (1979), from which all examples below are taken). There are four such strategies.

The Non-Reduction Strategy is relatively rare. The examples below include all languages known to use this strategy (it may be more than coincidental that they are all verb-final), which is characterized as having as a relative clause a structure which is virtually identical to a main clause of the same type (if anything is reduced, it is the main clause, not the relative clause). Note the following examples (relative clauses are underlined):

Bambara

Ce be n ye so min ye dyo.
man prog I past house which see build
'The man is building the house which I saw'

Tamil

Jān̲ pāṭu-kir̲-a peṇman̲i(y)-ai kaṇ-ṭ-ān̲.
Jan sing-pres-part woman case see-pst-3ms
'Jan saw the woman who is singing'

Hindi

Aadmii ne jis caakuu se murgii ko maaraa thaa, us
man case which knife case chicken case killed which
caakuu ko Ram ne dikhaa.
knife case Ram case saw
'Ram saw the knife with which the man killed the chicken'

Note that in each instance the relative clause shows virtually no reduction when compared with the main clause structures.

The Anaphoric Pronoun Strategy is characterized by having a pronominal form in the position in the relative clause where the relativized NP would be expected to occur. Most language using this strategy position the relative clause following the head noun, at least in the majority of cases. Note the following examples:

Aoban

John lehi na toa a tubui wehea.
saw the chicken the woman killed-it
'John saw the chicken that the woman killed'

Arabic

Al-walad yaʕraf al-rajul allathi darabat-hu al-sayeda.
the-boy knows the-man that hit him the-woman
'The boy knows the man that the woman hit'

Fulani   Walaa suudu ndu mi-ndaar-aayi nder muuḍum.
there-is-not hut which I-looked-neg in it
'There is not a hut in which I haven't looked'

Note that in each instance a pronominal form (distinct from the relative pronoun) appears in the position which would be occupied by the relativized NP if the clause were a main clause.

The Relative Pronoun Strategy requires that a relative pronoun appear, but in each instance this pronoun alone is the only morpheme whch encodes the function of the relativized NP. Note the following examples:

French   l'homme qui regarde la femme
the man who look-at the woman
'the man who looks at the woman'

la femme que l'homme regarde
the woman who the man look-at
'the woman who the man looks at'

Rumanian   bărbat-ul care a venit
man the who has come
'the man who has come'

bărbat-ul cu care mergi la bibliotecă
man the with who you-go to library
'the man with whom you are going to the library'

English   the man with whom you are going to the library

the man whom you are going to the library with

Note that in each instance the form of the relative pronoun encodes the function of the relativized NP within the relative clause.

The Word-Order Strategy is characterized by the fact that a relative pronoun may or may not occur, but if it does it does not encode the function of the relativized NP. The strategy may be subclassified as Postnominal if the relative clause follows the noun it modifies, as in the following examples:

English   the girl who I saw yesterday

Yoruba   iṣu ti mo ra lana naa
yam rel I buy yesterday that
'that yam which I bought yesterday'

Malagasy ny vehivavy <u>izay nohitan ny mpianatra</u>
the woman rel seen the student
'the woman who was seen by the student'

A Prenominal Word-Order Strategy also occurs, in which the relative clause precedes the noun it modifies, as in the following examples:

Japanese <u>Tanaka-san ga kite iru</u> yoohuku
case put-on suit
'the suit that Mr. Tanaka put on'

Basque <u>emakume-a-ri liburu-a eman dio-n</u> gizon-a
woman-the-case book-the give has-rel man-the
'the man who has given the book to the woman'

Note that a relative pronoun may occur, although it is not always obligatory (e.g., it is optional in English in some contexts, and it does not occur in Japanese). In each instance the relative clause itself gives no clue by its structure as to the function of the relativized NP.

Now, it is the case that a given language may make use of more than one of the strategies described above (e.g., English makes use of both the Relative Pronoun Strategy and the Word-Order Strategy, as the examples indicate). There are, however, constraints on the distribution of the strategies in languages which make use of more than one.

It has been proposed that NPs may be classified hierarchically as to their function (Keenan and Comrie 1977 (1972), (1979)). That is, there are universal constraints on relativization of NPs, constraints which can be stated in terms of a Noun Phrase Accessibility Hierarchy of the following form:

SU>DO>IO>OBL>GEN>OCOMP

This formalism states that subjects are more accessible than direct objects, which are more accessible than indirect objects, which are more accessible than NPs in an 'oblique' relationship, which are more accessible than NPs in a genitive relationship, which are more accessible than NPs which are objects of comparison. In this regard Keenan and Comrie define 'accessibility' in terms of the hierarchy as making reference to whether or not an NP in a given function can be relativized; if it can, it is 'accessible,' if it cannot, it is not. (It should be noted that they explicitly deny any claim as to accessibility for languages in which the better conceptualization is that of topic-comment rather than subject-predicate (Keenan and Comrie (1979)).)

From the above discussion, two universals may be proposed:

1) all languages may relativize subjects
2) any relativization strategy which is used applies to a continuous segment of the NP Accessibility Hierarchy.

The first claim is transparent, and there are no known exceptions to it. The second claim also lacks exceptions, but is somewhat more difficult to test. It says simply that given the proposed hierarchy

SU>DO>IO>OBL>GEN>OCOMP

relativization strategies must apply to adjacent entities on it. Thus, we may expect that a language will use a given strategy for SU and DO, but not for SU and IO, skipping DO. If a language uses only a single strategy, of course, the claim is simply that only a continuous segment of the hierarchy may be relativized at all. If more than one strategy is used, the entire range of accessible NPs must be a continuous segment. Because all languages relativize subjects, this means that we may expect languages with only the following relativization patterns:

SU
SU,DO
SU,DO,IO
SU,DO,IO,OBL
SU,DO,IO,OBL,GEN
SU,DO,IO,OBL,GEN,OCOMP

Here and elsewhere above OBL represents locative and temporal expressions which are closely tied to the predicate (i.e., nuclear as opposed to marginal), and OCOMP refers to the object of comparison in comparative constructions. Relativization of SU, DO, and IO is sufficiently illustrated above; the following examples illustrate the others:

OBL: Hyənşik-i kɨ lä-lɨl ttäli-n maktäki (Korean)
SU the dog-DO beat-REL stick
'the stick with which Hyənsik beat the dog' (English)

OCOMP: oshale na l-iMary rho n-o (Urhobo)
man the REL big than-him
?'the man that Mary is bigger than' (English)

GEN: chaki-ɨj lä-ka chongmyəngha-n kɨ salam (Korean)
he of dog-SU smart REL the man
'the man whose dog is smart' (English)

From the point of view of fieldwork, the approach to be suggested is as follows: discover (probably in text) the relativization strategy used to relativize subjects in the language under investigation; attempt then to apply the same strategy to DO, IO, OBL, etc. until it fails to work; at that point, a second relativization strategy may be discovered, which can then be tested for application at points farther down the hierarchy (and possibly higher in the hierarchy too, overlapping with the first strategy). Any language which fails to relativize subjects, or which violates the proposed hierarchy by skipping segments, is of immediate significance to linguists currently investigating the relativization process.

5. Agreement

Verb-agreement patterns found in languages of the world are heavily constrained (Moravcsik (1974)). The following are examples of the sorts of constraints which hold universally as far as is known.

A particular language may show no agreement at all (e.g., Chinese), but if there is any kind of verb agreement in the language, it is first of all the subject which agrees with the verb. Note examples from Englsh:

I am coming home
John is coming home
You are coming home
We are coming home
They are coming home

If a language shows subject-verb agreement, it may show also object-verb agreement. Note the following examples from Hungarian (the agreement in Hungarian has to do with the definiteness of the object):

Az	almat	lat-om.	'I see the apple'
the	apple-accus	see-I	
Egy	almat	lat-ok.	'I see an apple'
an	apple-accus	see-I	

If a language shows both subject-agreement and object-agreement, it may also show indirect-object-agreement. Note the following examples from Swahili (agreeing morphemes are underlined):

SU: <u>Ki</u>-kombe <u>ki</u>-mejaa. 'The cup is full'
cup be-full

DO:[2] Na-<u>ki</u>-ona <u>ki</u>-tabu 'I see the book'
I see book

10;[3] A-li-m-pa m-tu ki-tabu. 'He gave the man the book'
he-pst-him-give man book

It is claimed that if a language shows subject-agreement, object-agreement, and indirect-object-agreement, it may also show adverbial agreement. Amharic is proposed as an example of such a language, although the relevant data is unavailable (though the analysis is assumed here to be an accurate portrayal of the facts of the language).

It appears, then, that a hierarchy can be proposed; if a language has agreement at any level, it will have agreement at all higher levels as well:

SU>DO>IO>ADV

It is unclear if this hierarchy is related to the Noun Phrase Accessibility Hierarchy discussed above.

In addition to syntactic role being relevant to verb agreement, definiteness is relevant as well. Specifically, if a language shows agreement at all, it will show agreement with definite NPs, although it may show agreement also with indefinite NPs. No language is known which shows agreement with indefinite NPs but not with definite. Note the following examples from Hungarian, which show agreement with both definite and indefinite NP objects:

Lat-ok egy embert. 'I see a man'
see-I a man

Lat-ok embereket. 'I see some men'
see-I men

Lat-om az embert. 'I see the man'
see-I the man

Lat-om öt. 'I see him'
see-I him

János lat-Ø egy embert. 'Janos sees a man'
see-he a man

János lat-Ø embereket. 'Janos sees some men'
sees-he men

János lat-ja az embert. 'Janos sees the man'
see-he the man

János lat-ja öt. 'Janos sees him'
see-he him

There are, however, no known languages which show agreement only with indefinite NPs.

6. Variations in NP Ordering

There is a proposed correlation between definiteness and topicality, such that only definite NPs can be topics, and as a result definite NPs commonly precede indefinite NPs (Givón (1979)). This is especially seen in those cases in which the definite NP is manifested as a pronominal form, which may be considered the most definite construction possible. In such cases it is true in all languages studied that if NPs and pronouns differ in order when in the same function, it is always the case that pronouns occur earlier in the string than do NPs. Note the following examples:

French	Il cherche le livre	'He is looking for the book'
	he seek the book	
	Il le cherche.	'He is looking for it'
	he it seek	
	Il donne le livre à Jean.	'He is giving the book to Jean'
	he give the book to	
	Il lui donne le livre.	'He is giving the book to him'
	he to-him give the book	
Spanish	Yo leo el libro.	'I am reading the book'
	I read-I the book	
	Yo lo leo.	'I am reading it'
	I it read-I	
	Yo dije la verdad a Juan.	'I told the truth to Juan'
	I told-I the truth to	
	Yo le dije la verdad.	'I told him the truth'
	I to-him told-I the truth	
Swahili[4]	Na-ki-ona ki-tabu.	'I see the book'
	I it see book	
	Na-ki-ona.	'I see it'
	I it see	
	A-li-m-pa m-tu ki-tabu.	'He gave the man the book'
	he-pst-him-give man book	

A-li-m-pa ki-tabu. 'He gave him the book'
he-pst-him-give book

It may be the case that this same principle is the driving force behind rules such as Particle Movement in English. Here a particle may be moved around an object NP optionally (if the NP is not complex), but it MUST be moved around a pronominal object, thus moving the pronoun closer to the front of the sentence:

John called up the man.

John called the man up.

John called him up.

*John called up him.

The evidence for definite NPs preceding indefinite NPs is not as strong because it is not found in as many languages as the NP-pronoun variation illustrated above. Mandarin is one language which illustrates it, as the following examples show (Givón (1978), with orthographic changes):

Wǒ bǎ chuāngzi dǎ-pò le. 'I broke the window'
I window hit-broken aspect

Wǒ dǎ-pò le chuāngzi. 'I broke a window'

Nèi-ge kèrén zuò-gōng. 'The guest works'
that-cls guest work

Yǒu kèrén zuò-gōng. 'A guest works' (lit., there
be is a guest who works)

The last pair of examples above are comparable to the English process of THERE-Insertion, which may be interpreted as a result of the same general principle. THERE-Insertion is conditional upon the presence of an indefinite NP and a verb of a restricted sort, and it moves that NP around the verb and inserts in its place the dummy subject THERE. This THERE is existential, not locative. Note the following examples:

Some people were playing basketball.

There were some people playing basketball.

A man was in the park.

There was a man in the park.

Some people were forced to eat spinach.

There were some people forced to eat spinach.

Crucial to the discussion here is the fact that THERE-Insertion cannot apply if the NP is definite:

John was playing basketball.

*There was John playing basketball.

John was in the park.

*There was John in the park.

John was forced to eat spinach.

*There was John forced to eat spinach.

NOTES

[1] The fact that the pronominal *a* here precedes the noun rather than following it is perhaps a result of the universal tendency for pronominal forms to occur earlier in the string than non-pronominal forms, in cases where they differ in order. See the discussion below.

[2] The second morpheme in the verb here is an object marker which agrees with the class of the NP object. Its occurrence is optional.

[3] The fact that ONLY IO-agreement is shown here, and not both IO-agreement and DO-agreement, may suggest that *m-tu* 'man' here is really direct object, having been 'promoted' from indirect to direct object by a rule comparable to Dative Movement.

[4] Here again the placement of an object marker agreeing with the NP object can be seen, and its identity with the pronominal object form is evident. The point here is that it is significant that the pronominal copy occurs preceding the verb stem, while the NP object occurs following it.

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CHAPTER TWO

THE LEXICON

Although the lexicon in and of itself is distinct from syntax, it is necessary that it be discussed here because some syntactic rules can be formulated only in terms of an understanding of the nature of lexical entries. It is clear that the concept "lexical entry" is determined in part by one's view of phonology, particularly as regards allowable abstractness. Thus, the discussion here is essentially a statement of possible alternatives, with the choice to be made partly with reference to the view of phonology within which the analysis is presented.

The major concern in the discussion of the lexicon has to do with morphology, a subject unfortunately relatively ignored until recently in Transformational theory. Within linguistics generally it is commonly considered to be the case that morphology can be usefully discussed as being either inflectional (having to do with patterns of case-marking and agreement of one kind or another, e.g. he/him/his), and derivational (having to do with changing a word from one class to another, e.g. sing/singer). In addition, and more important to the discussion here, morphology can be characterized as being productive or non-productive. Following Hooper (1976:46-7), productive morphology may be characterized as follows:

1) the meaning of the derived form is entirely predictable from the combination of the meaning of the stem and affix.
2) the affix in question can combine freely with any member of the appropriate syntactic class
3) the affix in question is uniform phonologically, with variants accounted for by phonological rules

It should be clear that the distinction between productive and non-productive morphology is a useful one, and I make use of it in the discussion which follows.

There are essentially two questions to be dealt with here:

1) when agreement must be formalized for a given pattern in a given language, how can this best be done?
2) when morphemes have different forms in different contexts (whether because of agreement or some other syntactic or lexical pattern), how can these differences be accounted for?

Let us turn our attention initially to the second question.

The vast majority of languages--if indeed not all--exhibit instances of a single morpheme which has different shapes in different contexts. Such variations are commonly the result of language change of one kind or another, but they must be accounted for in the synchronic grammar because they are part of the speaker's knowledge about the language. In the discussion below, the facts of English noun plurals are taken as examples.

A. First, consider the case of additive productive morphology. In English, forms like the following are the most common (here and elsewhere phonetic detail is omitted):

cat	[kæt]	cats	[kæts]
cap	[kæp]	caps	[kæps]
dog	[dɔg]	dogs	[dɔgz]
song	[sɔŋ]	songs	[sɔŋz]
rose	[roz]	roses	[rozɨz]
bush	[bʊš]	bushes	[bʊšɨz]

Given a view of phonology which allows a rule of voicing agreement (which in this case is morphophonemic because of the contrast between [s] and [z] elsewhere in the language), and a rule of vowel-insertion (relevant to the last two forms), all the plural forms here can be considered to be sequences of noun stem plus plural suffix -z. There are three ways the plural morpheme might become associated with the noun stem, all of which are approaches the analyst might take in different morphological contexts.

1. The plural morpheme can be generated in the phrase-structure rules. Here the assumption would be that a node pl would be generated as a daughter either of NP (e.g., NP → (det)(adj) noun (pl)(PP)), or as a daughter of the noun node (e.g., noun → N(pl)). In either case there would of necessity be a lexical entry for the plural marker specified partly as follows:

$$\begin{bmatrix} \text{-z} \\ \text{+pl} \\ \text{+Attach} \end{bmatrix}$$

where -z is the phonological shape, [+pl] is the category for its lexical insertion, and [+Attach] indicates that it is phonologically bound to the preceding morpheme. Under such an approach the choice of pl would be an option in the PS rules, and by convention it could be assumed to characterize the entire NP (or it could be spread to it by an agreement rule comparable to those discussed below). Note that in this case the plural form of the nouns in question will be produced without reference to further syntactic rules, simply because its phonological form and suffixation is accounted for by the lexical entry and phonological rules.

2. The plural morpheme can be characterized as an obligatory choice of a lexical feature at the time of lexical insertion. This approach has been used for some lexical features in Stockwell, et al. (1973) (see esp. p. 749). Rather than utilizing PS rules to generate a separate node, the feature in question is simply represented as unspecified (formally represented as * instead of + or -) in the lexical entry itself, and by convention a free choice is obligatorily made to replace the * by either + or - when the lexical item is selected for insertion into a string. E.g., given a lexical entry like the following (the dots indicate that further features are present which need not concern us here)

$$\begin{bmatrix} \text{dog} \\ +\text{N} \\ +[\text{det}\underline{\quad}] \\ *\text{pl} \\ \cdot \\ \cdot \\ \cdot \end{bmatrix}$$

when that lexical entry is inserted into a string, the feature [*pl] is arbitrarily replaced by either [+pl] or [-pl]. There must then be incorporated for each lexical entry so specified an appropriate Spell-Out rule to produce the correct form, e.g.:

$$\begin{bmatrix} \text{dog} \\ +\text{N} \\ +[\text{det}\underline{\quad}] \\ *\text{pl} \\ \cdot \\ \cdot \\ \cdot \\ \text{Spell-Out:} \\ \text{dog} \rightarrow \text{dogz} \\ [+\text{pl}] \end{bmatrix}$$

There would be no need to specify by a Spell-Out rule the form for *dog* when it is [-pl] because it is unchanged from the basic lexical form. It should be pointed out that this is the least attractive approach when the morphology involved is productive, because it makes it impossible to capture the generalization that there is a plural morpheme -z which is suffixed to nouns as a general rule; instead it treats all plural forms, whether regular or irregular, as being of the same type because all make use of a Spell-Out rule (which is normally reserved for irregular forms). It may, however, be useful when the morphology involved is not productive.

3. The plural morpheme can be generated by a lexical rule. Under this approach, when a lexical item is selected for insertion into a string, it is passed through a set of optional word-formation rules. For example, given the data above, it may be proposed that English utilizes a pluralization rule as follows:

Pluralization Lexical Rule (optional)

$$\underset{[+\text{count}]}{\text{noun}} \rightarrow \text{noun}+\ \underset{\begin{bmatrix}+\text{pl}\\ +\text{Attach}\end{bmatrix}}{\text{-z}}$$

That is, count nouns may optionally be pluralized at the time of lexical insertion by being suffixed by the plural marker. The specification for pl requires that the lexicon be consulted again; the entry for pl would be the same as in the first alternative above. This approach is probably the most useful in instances in which the morphology is highly productive, because it captures the generality of *-z* as the plural morpheme and at the same time avoids positing a separate pl node in the PS rules. Note that it would be possible to combine 2 and 3, with [*pl] specified in the lexical entry as in 2, and an obligatory lexical rule as in 3, as follows:

Pluralization Lexical Rule (obligatory)

$$\underset{[+\text{pl}]}{\text{noun}} \rightarrow \text{noun}+\ \underset{\begin{bmatrix}+\text{pl}\\ +\text{Attach}\end{bmatrix}}{\text{-z}}$$

B. We turn our attention now to those morpheme variants which differ from each other more than the analyst's view of phonology can account for, even though a phonological relationship can be seen. For example, English has forms like the following:

man	[mæn]	men	[mɛn]
woman	[wʊmən]	women	[wɪmən]
foot	[fʊt]	feet	[fit]
mouse	[maws]	mice	[mays]
fish	[fɪš]	fish	[fɪš]
deer	[dɪr]	deer	[dɪr]

Again, we have the same options for analysis.

1. The plural morpheme can be generated in the PS rules. Assuming the same rules as stated above, each of these lexical items will require a Spell-Out rule specific to it, because they do not pluralize in *-z*. For example, lexical entries like the following might be proposed (only information under discussion is shown):

$$\left[\begin{array}{l} \text{man} \\ \text{+N} \\ \quad\cdot \\ \quad\cdot \\ \quad\cdot \\ \text{Spell-Out:} \\ \text{man} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}} \rightarrow \text{men} \end{array}\right]$$

(Here and elsewhere it is necessary to distinguish the plural -z from the possessive -z, because *man's* is a perfectly correct form.)

$$\left[\begin{array}{l} \text{mouse} \\ \text{+N} \\ \quad\cdot \\ \quad\cdot \\ \quad\cdot \\ \text{Spell-Out:} \\ \text{mouse} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}} \rightarrow \text{mice} \end{array}\right]$$

$$\left[\begin{array}{l} \text{deer} \\ \text{+N} \\ \quad\cdot \\ \quad\cdot \\ \quad\cdot \\ \text{Spell-Out:} \\ \text{deer} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}} \rightarrow \text{deer} \end{array}\right]$$

2. The plural morpheme can be characterized as an obligatory choice of a lexical feature at the time of lexical insertion. As in the discussion above, this analysis would require a feature [*pl] in the lexical entry, to be obligatorily specified as [+pl] or [-pl] at the time of lexical insertion. Under this analysis the examples above would have the following lexical entries:

$$\begin{bmatrix}\text{man}\\ \text{+N}\\ {\ast}\text{pl}\\ \cdot\\ \cdot\\ \cdot\\ \text{Spell-Out:}\\ \text{man} \rightarrow \text{men}\\ \text{[+pl]}\end{bmatrix} \qquad \begin{bmatrix}\text{mouse}\\ \text{+N}\\ {\ast}\text{pl}\\ \cdot\\ \cdot\\ \cdot\\ \text{Spell-Out:}\\ \text{mouse} \rightarrow \text{mice}\\ \text{[+pl]}\end{bmatrix} \qquad \begin{bmatrix}\text{deer}\\ \text{+N}\\ {\ast}\text{pl}\\ \cdot\\ \\ \end{bmatrix}$$

No Spell-Out rule is necessary for *deer* because the plural form is the same as the singular form. Note that a combination of star notation and lexical rule is not useful in this case.

3. The plural morpheme can be generated by a lexical rule. The assumption here is that there is a lexical rule comparable to that discussed above, but obligatory in this case and sensitive as to whether [*pl] is specified as [+pl] or [-pl]. E.g.:

Pluralization Lexical Rule (obligatory)

$$\underset{\text{[+pl]}}{\text{noun}} \rightarrow \text{noun} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}}$$

Because the forms in question here do not pluralize with *-z*, they must employ Spell-Out rules in their formation, even though the lexical rule is operative and specifies a phonological shape for pl. The Spell-Out rules in this case would be as follows:

$$\begin{bmatrix}\text{man}\\ \text{+N}\\ \cdot\\ \cdot\\ \cdot\\ \text{Spell-Out:}\\ \text{man} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}} \rightarrow \text{men}\end{bmatrix} \qquad \begin{bmatrix}\text{mouse}\\ \text{+N}\\ \cdot\\ \cdot\\ \cdot\\ \text{Spell-Out:}\\ \text{mouse} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}} \rightarrow \text{mice}\end{bmatrix}$$

Note that the entry for *deer* would also require a Spell-Out rule, in this case stating that the plural form of *deer* is *deer:*

$$\text{deer} + \underset{\begin{bmatrix}\text{+pl}\\ \text{+Attach}\end{bmatrix}}{\text{-z}} \rightarrow \text{deer}$$

Note that in instances like these the use of a phrase-structure rule is clearly inferior, because it fails to distinguish exceptional forms from the general case, because they all must make use of Spell-Out rules. In fact, the star notation would seem to have a clear superiority in such cases because it does not first produce one phonological form and then obligatorily change it into another, requiring a Spell-Out rule even for the cases like *deer*.

It should be pointed out here that the exceptions to general patterns commonly arise through historical development. In English particularly many examples which are exceptional to the general rule are artifacts of patterns which were productive at an earlier stage of the language. For instance, both *man/mèn* and *mouse/mice* are representative of a pattern of umlaut marking plural, productive at an earlier stage but no longer. In such a case, given a number of forms which alternate in precisely the same way, a second lexical rule could be formulated, and the different lexical items referred by feature to the appropriate rule to be used in each case. Thus the general rule might be labeled Pluralization Lexical Rule I, with a second pluralization rule (Pluralization Lexical Rule II) formulated for the umlaut cases. Then those entries which utilize umlaut (e.g., *man, mouse*) would carry a feature [+PLR II], with the more general cases (e.g., *dog, cat*) specified as [+PLR I], or better, left unspecified as the general case and utilizing the general rule by convention.

C. As the third type of morpheme alternant, consider cases in which the alternants appear not to be phonologically related, or at least only in an idiosyncratic, non-productive, one-item-at-a-time manner. The most common examples in English have to do with past tense forms:

go	[go]	went	[wɛnt]
can	[kæn]	could	[kʊd]
bring	[brɪŋ]	brought	[brɔt]
catch	[kɛč]	caught	[kɔt]
are	[ar]	were	[wɛr]
am	[æm]	was	[wəz]

It seems unlikely that any view of phonology, however powerful, could capture any generality among such pairs of forms. Again, the same three options are open to us, but it seems that in this construction the syntax shows clearly that the past tense is produced by the PS rules as a realization of Aux. Thus while an approach making use of an obligatory choice of a lexical feature in the lexicon, and an approach making use of a lexical rule, are theoretically possible, they will not be the preferred approach in this instance.

But because of the irregularity in these examples, our real concern here is principally with the relationship which holds among forms which are related in this way. The primary option is a treatment using Spell-Out rules (the forms below are appropriate after Affix-Hopping, the form which is most useful because some transformations (e.g., Passive) insert information which is not present in the PS string but nevertheless affects the verb form):

go	bring	can
+V	+V	+V
.	.	.
.	.	.
.	.	.
Spell-Out:	Spell-Out:	Spell-Out:
go + past → went	bring + past → brought	can + past → could
[+Attach]	[+Attach]	[+Attach]
go + -en → gone	bring + -en → brought	
[+Attach]	[+Attach]	

Alternatively, because of the wide variation in form, it is possible that these alternants should be recognized as constituting distinct lexical entries. If so, the forms for *go* could be presented as follows:

go	went	gone
+V	+V	+V
+[pres___]	+[past___]	+[en___]

Note that Spell-Out rules would be needed to give a zero manifestation of pres, past and en after Affix-Hopping. This approach treats the different forms as being contextually determined, and essentially unrelated (although their semantic features would be similar). Note that the Passive transformation will cause problems for transitive verbs described using this approach, because the form which occurs must be the form occurring with *en*, even though the *be en* which calls for the form is not present in the PS rules and thus not available for statement in the lexical environment. That is, the passive form for the sentence *Many people saw "Gandhi"* is *"Gandhi" was seen by many people*, with *seen* occurring instead of *saw*, even though the PS environment calls for *saw*. More threatening to the analysis, however, is the fact that it captures only in a tangential way (through semantic similarity) the fact that speakers consider the different forms to be actually the same verb. Thus in this case the approach is inadequate, although it is an option which may be used in some contexts in some languages.

(Again, a parenthetical comment is necessary. A major part of the thrust of the Generative Semantics approach to Transformational Grammar has to do with lexical decomposition. From this point of view words such as *die, kill, murder, assassinate,* etc., are related by the fact that they are associated with similar PS trees. The details need not concern us here, but if the analyst considers that such words should be related, the problem would be parallel to that of having separate lexical entries for *go* above, viz. that the relationship can be captured in the theoretical orientation advocated in this fieldguide only with reference to their semantic similarity.)

By way of summary: Given the three options discussed above, the analyst should take the approach for a given set of facts which is most revealing as regards those facts. If the morphology is productive, simple affixation by PS rule or lexical rule may best be used; if it is not productive, its exceptional nature can be shown by Spell-Out rules or by different lexical rules (or by different lexical entries altogether). Thus although these three options are theoretically available, their application must be determined by the nature of the phenomena to be accounted for. Each set of alternants must be considered on its own terms and treated accordingly.

Let us turn to the second topic, that of agreement. As the first example let us consider the very common phenomenon of number agreement between subject and verb. Whichever approach is taken in associating pl with the NP, as discussed above, the NP ends up with a feature specification [+pl]. What is required, then, is a rule to spread that feature to the verb, and a means to associate the spreading of the feature with the form which properly results.

First, note that the same sorts of patterns are found in English in cases of third person singular present tense verbs as were seen in the discussion above regarding noun plurals. Most of the forms are predictable phonologically (the forms here are third person plural vs. singular):

hit	[hɪt]	hits	[hɪts]
wrap	[ræp]	wraps	[ræps]
build	[bɪld]	builds	[bɪldz]
run	[rən]	runs	[rənz]
choose	[čuz]	chooses	[čuzɨz]
pitch	[pɪč]	pitches	[pɪčɨz]

Again, some pairs of forms seem to be related, but their phonological relationship is not a productive one:

have	[hæv]	has	[hæz]
may	[mey]	may	[mey]
can	[kæn]	can	[kæn]

And finally, some forms appear to be suppletive:

are	[ar]	is	[ɪz]

Thus, whatever the source for the features which represent the difference between the forms here, the same options hold in this case regarding the lexical entries for the verbs as were discussed above in relation to nouns and their plural forms.

The main question to direct our attention to is the means by which agreement is carried out. Essentially, there are three options.

1. The agreement can be accounted for by generating a new node. This is probably best considered an option only in those instances in which the node to be generated matches a node in the string which is the basis for the agreement. Thus the discussion of this option is best delayed until NP agreement is discussed below.

2. The agreement can be accounted for by copying features from one constituent to another. This is probably the most common option employed theoretically. In the discussion at hand, a transformational rule could be formulated to spread the relevant features (in this case actually person in addition to plural) from the subject NP to the verb. For English the following rule could be proposed (the features are spread here to the tense marker, and then the whole is hopped onto the following verbal element by Affix-Hopping):

Subject-Verb Agreement (obligatory)

$$
\begin{array}{lcc}
\text{SD:} & \underset{\begin{bmatrix}\alpha\ \text{pers}\\ \beta\ \text{pl}\end{bmatrix}}{\text{NP}} & \begin{Bmatrix}\text{pres}\\ \text{past}\end{Bmatrix} \\
 & 1 & 2 \\
 & & \\
\text{SC:} & 1 & \underset{\begin{bmatrix}\alpha\ \text{pers}\\ \beta\ \text{pl}\end{bmatrix}}{2}
\end{array}
$$

Thus, whatever the feature for [pl] carried by the subject NP, and whatever the feature for [pers], they will both be spread onto the verb in the derivation. Then the lexicon must be consulted, and whatever option is being utilized regarding lexical entries (i.e., Spell-Out rules or lexical rules) will be employed to produce the correct form in a fashion parallel to that discussed for plurals above.

3. The third option is to have no agreement rule at all, but to account for the agreement by reference to universal constraints. Because of the fact that agreement patterns tend to be very similar in languages of the world (i.e., they make use of similar features in similar contexts), this approach develops all variations in the lexicon (probably by lexical rules) and inserts the results freely into the syntactic strings. The constraints come into play in that if the appropriate features (in this case [pl] and [pers]) do not match between the appropriate constituents in the appropriate environment (in this case NP - V), the string is identified as being ungrammatical and thus it does not constitute a legitimate derivation. This may ultimately be the best option, but there are two negative considerations:

a. Our present knowledge of languages of the world is vastly incomplete, so that some feel it is premature to propose universal constraints of this type.

b. In fieldwork (for which this fieldguide was designed) it is fundamental to understanding that the rules be stated as explicitly and rigorously as possible so that they can be tested empirically against increasing amounts of data. The approach using universal constraints assumes that a matching of a certain type takes place, but in research (at least in the initial stages) explicit statement of known facts is probably the preferable course until it is clear that the language in question does not violate the proposed constraints.

As stated above, this may ultimately be the best approach, especially when the facts of agreement are better known. But for now the suggested approach is to state explicitly the agreement patterns which are found, either through node-copying or feature-copying, whichever is appropriate.

As a second example of agreement, let us turn now to the types of agreement which characteristically are found within the NP. For illustrative purposes Portuguese will be used because of the paucity of such agreement in English. The following examples are typical:

moça	alta	'tall girl'
moças	altas	'tall girls'
homem	alto	'tall man'
homens	altos	'tall men'

Agreement holds necessarily between nouns and adjectives that modify them, and the agreement consists of both gender and number. We consider first gender agreement.

The noun forms generally do not have variants encoding the different genders, so it is preferable to treat them as being inherently either [+masc] or [-masc] (other features could, of course, be used). Now the three options discussed above can be employed.

1. Account for the agreement by a rule of node-copying. It is unlikely that [masc] would be a node separate from the noun because it is inherently associated with it. Thus there would in this case be no [masc] node to be copied, so again this is not the preferred option (but see the discussion of plural agreement below).

2. Account for the agreement by a rule of feature-copying. Under this approach the feature [masc] would be spread to the adjective from the noun. The rule could be formulated as follows:

Gender Agreement (obligatory)

SD:	adj	noun [αmasc]
	1	2
SC:	1 [αmasc]	2

This requires, of course, that a pass be made through the lexicon so that the correct surface form can be produced (probably in this case by a lexical rule because of the high productivity of the forms involved).

3. Account for the agreement by a universal constraint. Such a constraint may be of great usefulness here, because the patterns of agreement which hold within the NP in languages of the world are better understood than are the patterns of agreement which hold between subject and verb. Thus, to formulate a universally valid statement may be possible. Nevertheless, the need for explicitness in fieldwork (especially in the early stages) points toward the desirability of using one of the other approaches instead.

Let us turn now to examine the options available to capture the plural agreement shown in the examples.

1. Account for the agreement by a rule of node-copying. This is a possibility if pl is generated as a separate node as a daughter of either NP or noun by the PS rules (see the model alternatives in the discussion of the English examples above). If so, the rule would be something like the following:

Plural Agreement (obligatory)

SD:	adj	noun	pl
	1	2	3
SC:	1+pl	2	3

Such a rule would generate a new pl node, this time associated with the adjective. Assuming that pl can be expressed in the general case as *-s*, the suffixation would be handled without further rules for those forms which are not exceptional.

2. Account for the agreement by a rule of feature-copying. If [pl] is considered to be a feature of the noun (whether chosen lexically or produced by a lexical rule), it could be spread as a feature to the adjective. The rule to do this would be something like the following:

Plural Agreement (obligatory)

$$\begin{array}{lll} \text{SD:} & \text{adj} & \underset{[\alpha\,\text{pl}]}{\text{noun}} \\ & 1 & 2 \\ \\ \text{SC:} & \underset{[\alpha\,\text{pl}]}{1} & 2 \end{array}$$

Again a pass through the lexicon would be necessary to get the correct form. Note that this rule could be neatly combined with the feature-based rule for gender agreement, as follows:

Gender-Plural Agreement (obligatory)

$$\begin{array}{lll} \text{SD:} & \text{adj} & \underset{\begin{bmatrix}\alpha\,\text{masc}\\ \beta\,\text{pl}\end{bmatrix}}{\text{noun}} \\ & 1 & 2 \end{array}$$

$$\text{SC:} \quad \underset{\begin{bmatrix}\alpha\,\text{masc}\\ \beta\,\text{pl}\end{bmatrix}}{1} \qquad 2$$

To summarize: The analyst should use whichever presentation of agreement best captures the facts of the language in question in the particular case. Different sorts of agreement might best be handled in different ways.

Now, once the agreement features are associated with the adjective, how can the correct form be produced in the second lexical pass? It could, of course, be handled by Spell-Out rules:

$$\begin{bmatrix}
\text{alto} \quad \text{'tall'} \\
\text{+adj} \\
\cdot \\
\cdot \\
\cdot \\
\text{Spell-Out:} \\
\underset{\begin{bmatrix}\text{-pl}\\ \text{-masc}\end{bmatrix}}{\text{alto}} \rightarrow \text{alta} \\
\underset{\begin{bmatrix}\text{+pl}\\ \text{-masc}\end{bmatrix}}{\text{alto}} \rightarrow \text{altas} \\
\underset{\begin{bmatrix}\text{+pl}\\ \text{+masc}\end{bmatrix}}{\text{alto}} \rightarrow \text{altos}
\end{bmatrix}$$

But because such forms are in accord with the general case, totally productive, the generality of the association of *-s* with plurality, and *-o* and *-a* with masculine and feminine respectively, is lost. Spell-Out rules are best used in cases in which the morphology is not productive (see such examples below); they represent idiosyncratic lexical information.

A better approach in this case is to utilize a lexical rule. Notice that the gender-marking morpheme occurs next to the stem, and then the plural morpheme (if present). Thus, two word-formation lexical rules can be formalized as follows, to be applied in the order indicated:

1. $\underset{[\text{+masc}]}{\text{adj}} \rightarrow \text{adj} + \underset{[\text{+Attach}]}{\text{o}}$

   $\underset{[\text{-masc}]}{\text{adj}} \rightarrow \text{adj} + \underset{[\text{+Attach}]}{\text{a}}$

2. $$\underset{[+\text{pl}]}{\text{adj}} \rightarrow \text{adj} + \underset{[+\text{Attach}]}{\text{s}}$$

Thus the features will be added to adj by the agreement rule, and the expression of the features will be carried out by lexical rules to give the features their phonological form and order them correctly.

But as might be expected, not all adjectives in Portuguese are regular. Note the following examples:

moça	boa	'good girl'
moças	boas	'good girls'
homem	bom	'good man'
homens	bons	'good men'

We may assume in such a case that the same features are spread to the adjective from the noun, and in the same way. But in this instance the lexical rule alone will not produce the correct forms in every case, so that Spell-Out rules are needed. Depending on the facts of the language in question, the variation in the regular case discussed above would be handled either by Spell-Out rule or by lexical rule. If there is no lexical rule, the Spell-Out rule for the adjective *good* would be as follows:

$$\begin{bmatrix} \text{bom} \quad \text{'good'} \\ +\text{adj} \\ \cdot \\ \cdot \\ \cdot \\ \text{Spell-Out:} \\ \quad \underset{\begin{bmatrix}-\text{masc}\\-\text{pl}\end{bmatrix}}{\text{bom}} \rightarrow \text{boa} \\ \quad \underset{\begin{bmatrix}-\text{masc}\\+\text{pl}\end{bmatrix}}{\text{bom}} \rightarrow \text{boas} \\ \quad \underset{\begin{bmatrix}+\text{masc}\\+\text{pl}\end{bmatrix}}{\text{bom}} \rightarrow \text{bons} \end{bmatrix}$$

Instead of selecting a particular form as being basic, of course, an incomplete form such as *bo-*, or a composite form, could be posited as the lexical form, in which case an additional Spell-Out rule would be needed for [+masc, -pl].

If there is a lexical rule which is used to derive the productive forms, the lexical entry for *good* would be somewhat different:

```
┌ bom    'good'                                ┐
│+adj                                          │
│   .                                          │
│   .                                          │
│   .                                          │
│Spell-Out:                                    │
│  bom +     a      →    boa                   │
│       [+Attach]                              │
│  bom +     a      +     s    →    boas       │
│       [+Attach]    [+Attach]                 │
│  bom +     o      →     bom                  │
│       [+Attach]                              │
│  bom +     o      +     s    →    bons       │
└       [+Attach]    [+Attach]                 ┘
```

Alternatively, in cases like this in which more than one feature is involved, the Spell-Out rules might best be presented in a matrix form (as a sort of shorthand), as follows:

```
┌ bom    'good'          ┐
│+adj                    │
│   .                    │
│   .                    │
│   .                    │
│Spell-Out:              │
```

+masc	-masc	
bom	boa	-pl
bons	boas	+pl

In the discussion in this chapter we have considered some matters of morphology and the lexicon, and we have presented an introduction to agreement. Much more could be said about such matters, but the preceding should serve as a useful introduction to the field linguist.

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CHAPTER THREE

THE EXTENDED STANDARD THEORY

In this chapter I will summarize briefly the orientation of the Extended Standard Theory (hereafter EST). EST is the point of view advocated here, but with certain reservations. Thus for those already familiar with the theory this chapter will provide useful information in terms of ways in which I depart from it. And for those who are familiar only with the so-called Standard Theory of *Aspects* (Chomsky (1965)) it will provide enough information so as to make the remainder of the fieldguide intelligible.

The major work outlining EST is Jackendoff (1972). I will summarize his proposals here, but only with enough detail to show the innovations he suggests.

As always in Transformational Grammar, the major interest is to constrain the theory in such a way as to produce all and only grammatical sentences, but within an orientation that is compatible with the facts of language acquisition by children. Thus the theory must be rich enough to account for all the facts, but not so rich as to be beyond the apparent capabilities of acquisition when the orientation is assumed to be innate.

Jackendoff's proposal can be understood as being characterized by one new constraint: transformational rules cannot make use of the notion of coreference. This weakens the grammar fundamentally by eliminating an entire class of rules which have been proposed, including such favorites as Equi-NP Deletion, Pronominalization, Reflexivization, and Relativization, all of which require some notion of identity for their application.

It should be clear, of course, that rules such as those eliminated by this approach are in fact proposed by their proponents to capture something about the knowledge of the language user. Thus in the Standard Theory a structure like

[John pres want it[for-to John tns go to town]s]s

coupled with the rule of Equi-NP Deletion, represents the fact that the speaker knows that in the sentence

John wants to go to town

John is subject of both *want* and *go*. The Standard Theory captures that fact by generating *John* in subject position for both verbs.

Jackendoff eliminates such rules from his inventory of possible rule types, so he must account for the knowledge of the language user in some other way. He does this by developing a more sophisticated model of the semantic component. In particular, in EST as Jackendoff describes it the semantic component consists of four subcomponents, each with its own interpretive rules:

1. Functional Structure Subcomponent. Jackendoff discusses sentences like the following:

(a) Charlie opened the door.
(b) The door opened.

In these two sentences (and many others like them), the semantic relationship between *the door* and *open* is the same. However, in the first *the door* is deep structure (and surface structure) object, while in the second it is deep structure (and surface structure) subject. Thus in a model that recognizes only deep and surface syntactic structure in determining syntactic function the parallelism cannot be captured.

Fillmore (1968) attempted to account for the relationship between such sentences by positing a level of deep structure cases. Thus in both sentences *the door* would be marked as being in the Patient case. The two surface sentences differ in that in the first there is an NP in the Agent case (*Charlie*), and it becomes the subject; in the second, however, there is no NP in the Agent case, so the Patient NP becomes subject. But the relationship between *the door* and *open* is the same in both sentences in underlying structure.

Jackendoff rejects Fillmore's proposal on the grounds that it violates Emonds' (1970) structure-preserving constraint, which (to Jackendoff) can be demonstrated to be useful in other contexts. In essence, this constraint blocks transformational rules which produce strings which are different in structure from those which can be produced by the base rules. Given the fact that in Fillmore's analysis the base rules generate a verb followed by a series of case-marked NPs, the transformation which moves an NP into subject position produces a string which the base rules cannot match structurally, thus violating Emonds' constraint. Thus Fillmore's analysis must be rejected.

Instead, Jackendoff proposes a set of rules of functional structure to accomplish the same end. These rules take into account the deep structure grammatical relations and the functional semantic properties of lexical items (particularly verbs) and derive a functional structure from them. For the above sentences, for example, Jackendoff proposes two lexical entries for *open*. In the first, *open* is a transitive verb; associated with it in the lexical entry is the information that the first NP (the subject) is an agent governing the semantic notion CAUSE, which effects a physical CHANGE on NP2 (the object) so that its state is changed from NOT OPEN to OPEN (the use of capitals here identifies semantic primitives). In the second case, the verb *open* is intransitive; associated with it in the lexical entry is the information that the first NP (the subject) is governed by the semantic notion CHANGE (there is no CAUSE notion in the intransitive entry) so that its state is changed from NOT OPEN to OPEN. Crucial to the discussion here is the fact that in such an analysis the relation holding between *the door* and *open* is the same in the two sentences. The rules of functional structure capture this fact by interpreting the deep structure relations and the lexical information involved and developing a functional structure from them.

In this fieldguide I make no attempt to deal with functional structure. I do discuss deep structure grammatical relations (see Chapter Nine), especially as represented in languages in which the proposed universal relations are violated so that the subject cannot be simply the NP dominated directly by S, and the object the NP dominated directly by VP. It should be an easy matter for readers to derive rules of functional structure from the information found there, if they choose to do so.

2. Modal Structure Subcomponent. Jackendoff discusses sentences like the following:

(a) Not many of the arrows hit the target.
(b) Many of the arrows didn't hit the target.
(c) The target wasn't hit by many of the arrows.

In these sentences the two active forms ((a) and (b)) differ in meaning in the sense that for (b) it can be the case that although many arrows didn't hit the target, it is also true that many did; this meaning is not possible for (a). The problem arises in that the passive form for both is (c), where the additional meaning available for (b) is impossible.

To account for the various readings available for these sentences (and many others) Jackendoff proposes rules of modal structure. Such rules are intended to provide unequivocal interpretations of whether a given constituent is specific or nonspecific (in the above example *many* in (a) is specific, while in (b) it is nonspecific and thus allows for another (large) group of arrows concerning which no comment is made in the sentence itself). Such rules are considered to apply at various levels of structure in a given derivation. The major innovation here in terms of the Standard Theory is that not all semantic rules apply at the level of deep structure. In particular, the rules interpreting the scope of negatives and quantifiers (including *many)* apply at the level of surface structure. Thus in (a) *not* precedes *many* and thus has a wider scope, while in (b) the opposite is the case. The rule of negative placement obligatorily positions the negative uniquely in the passive sentence (c), viz. in a scope relation identical to that of (a), in which *not* precedes *many*.

In Chapter Nine I discuss what a semantic rule to interpret the relative scope of negatives and quantifiers might look like informally, but other than that I do not deal with matters of modal structure in this fieldguide. However, the proposals throughout are not in conflict with the point of view espoused by Jackendoff.

3. Rules of Coreference. In the sentences below, the underlined NPs must be interpreted as having the same referent:

(a) John saw himself.
(b) John tried to hide, but Bill saw him.
(c) John is looking for the man who came yesterday.

In addition, in sentences like the following *John* must be interpreted as being subject of both *want* and *go*.

(d) John wants to go.

In the Standard Theory it is possible to capture this information by generating in the deep structure identical NPs in the appropriate positions, with the rules of Reflexivization, Pronominalization, Relativization, and Equi-NP Deletion respectively affecting them. Thus suitable underlying structures would be like the following:

(a') [John pst see John]s
(b') [[John pst try [for-to John tns hide]s]s [but Bill pst see John]s]s
(c') [John pres be ing look for [the man[the man pst come yesterday]s] np]s
(d') [John pres want it [for-to John tns go]s]s

The transformational rule required in each case specifies a condition that it applies always and only if the NPs in question are identical.

As mentioned above, Jackendoff rejects all rules which make use of such a condition of identity. Among his arguments is the fact that in some cases infinite embedding would be necessary. Consider the following sentence:

(e) The man who deserves it will get the prize he wants.

Here *it* must refer to *the prize,* and *he* must refer to *the man,* but because of the bidirectionality of the relativization relation, there is no non-infinite deep structure possible which will allow a condition of identity to be enforced.

Jackendoff's solution instead is to include pronouns in the lexicon as potential items to be inserted under NP, and to propose a set of rules of coreference. These rules apply at the end of each cycle and determine whether or not pairs of NPs in a given string are coreferential. The result of the application of such rules is a Table of Coreference, which lists all NPs in the string in pairs and states whether or not they are coreferential. For example, note the following sentences:

(f) I told Bill a story about myself.
(g) I told Bill a story about himself.

For (f) the rules of coreference do the following:

(i) interpret *I* and *myself* as coreferential because they share features of person, number, and gender, *myself* is reflexive, and they are within the appropriate syntactic configuration;

(ii) interpret *Bill* and *myself* as non-coreferential because they do not share features of person;

(iii) interpret *I* and *Bill* as non-coreferential because they do not share features of person.

The appropriate Table of Coreference for (f) then is the following:

I	coref	*myself*
Bill	-coref	*myself*
Bill	-coref	*I*

For (g), the rules of coreference do the following:

(i) interpret *I* and *himself* as non-coreferential because they do not share features of person, although all other relevant factors are satisfied;

(ii) interpret *Bill* and *himself* as coreferential because they share features of person, number, and gender, *himself* is reflexive, and they are within the appropriate syntactic configuration;

(iii) interpret *I* and *Bill* as non-coreferential because they differ in person.

The appropriate Table of Coreference for (g) then is the following:

I	-coref	*himself*
Bill	coref	*himself*
Bill	-coref	*I*

There is one particular set of structures which must be discussed in this regard. In the Standard Theory sentences like (d) (repeated here for convenience) are derived from structures like (d') by a rule of Equi-NP Deletion:

(d) John wants to go.
(d') [John pres want it [for-to John tns go]s]s

Because such a rule of Equi-NP Deletion requires a condition of identity, it is not a possible rule in Jackendoff's theory. Rather, such structures as (d) must be interpreted by the rules of coreference. It is, of course, a fact of English that every verb has an NP subject. To designate such a subject for a verb such as *go* in (d) which lacks a surface subject, Jackendoff proposes that an empty NP be generated. Such an NP consists simply of the dummy symbol Δ rather than lexical information. Thus for (d) the underlying structure is something like the following:

(d'') [John pres want it [for-to Δ pres go]s]s

Now no rule of Equi-NP Deletion is needed, only a rule of coreference to identify *John* and Δ as coreferential. Because of the unique status of Δ (i.e., as an unspecified NP), a special rule of coreference will apply to structures such as (d'') to produce the correct interpretation. In the following case, the same rule will mark *Bill* and Δ as coreferential also:

(h) [John pres want Bill [for-to Δ pres go]s]s

The crucial facts regarding Jackendoff's view of coreference are as follows:

(i) pronouns, including reflexives, may occur as lexical entries under NP;

(ii) a given NP may be unspecified, a fact which is represented by Δ (an empty node) under NP;

(iii) there are no transformational rules of Reflexivization, Pronominalization, Relativization, and Equi-NP Deletion, because all such rules require a notion of identity;

(iv) rather, the same task is carried out by semantic rules of coreference, which for a given sentence identify whether each pair of NPs is or is not coreferential.

In this fieldguide I in essence adopt Jackendoff's position (see Chapter Nine). In addition, in Chapter Ten I extend the notion of coreferentiality to apply across sentence boundaries to provide information regarding coreference within text structure. In both cases I state the rules informally, rather than assuming a universal formalism as Jackendoff does, and I stop short of building a Table of Coreference, although it should be possible for the reader to do so from the rules given.

4. Rules of Focus and Presupposition. In the following sentence, *John* is in focus, and there is a presupposition that there is someone who writes poetry:

(a) Is it *John* who writes poetry?

Thus a reply like the following is inappropriate:

(b) No, it is *John* who writes short stories.

Sentence (b) is inappropriate because it re-establishes focus on *John* (which is unnecessary because *John* is the focused element in the question), and instead of carrying the presupposition that there is someone who writes poetry, it carries the presupposition that there is someone who writes short stories (so that (a) and (b) do not share presuppositions). To account for such facts Jackendoff proposes rules of focus and presupposition. Such matters are beyond the scope of this fieldguide and are not dealt with other than being mentioned briefly in Chapter Nine.

I have mentioned in the discussion above that matters of focus and presupposition, and thematic relations are not dealt with in this fieldguide, and that coreference and modal structure are not treated rigorously. In addition I ignore adverbs, although I assume that Jackendoff is correct in generating them both under S and under VP, depending upon their transportability.

It is necessary, however, to point out two further ways in which the proposals here depart from that suggested by EST. The first is X-Bar Syntax. In EST it is commonly held that not only are transformations constrained (by not being able to make use of the notion of coreferentiality), but base rules are constrained too, so that they are all of a heavily restricted type. This is called X-Bar Syntax because of the formalism that can be proposed for the class of base rules:

$X'' \rightarrow A\ X'$

$X' \rightarrow B\ X$

That is, there is a definite hierarchical arrangement, but there are comparable hierarchical structures at different levels. Thus the following show a parallelism (Stockwell et al., (1973.7)):

V'' The enemy destroyed the city

N'' the enemy's destruction of the city

That is, the relationship between *enemy* and *destroy/destruction* and between *destroy/destruction* and *city* is the same in the two constructions.

A theory which adopts X-Bar Syntax thus heavily constrains the form of base rules because they must all conform to the abstract structure cited above. In my opinion the time has not yet come for such a strong stand to be taken on basic structure, given the relative paucity of languages yet investigated in detail. Further, in initial fieldwork, for which this fieldguide is intended, the assumption of the validity of such a constraint may blind the researcher to patterns which are actually present. I prefer here to propose working in the opposite direction: describe the structures which are actually found, and then orient them to the discussion of the constraints on human language.

In relation to the above, it is only fair to say also that I fail to take a position on the question of lexical organization. That is, part of the issue here is syntactic to be sure, but it is closely related to the view of phonology being advocated as well. Thus, even if it is advisable to associate *destroy/destruction* on syntactic grounds, given a certain view of phonology a lexical derivation may be impossible.

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CHAPTER FOUR

NOUN PHRASE PROCEDURES

The following chapters present suggested procedures for developing a beginning analysis of several types of syntactic structure. As stated above, there is no attempt to be exhaustive, only to illustrate some of the structures known to occur in natural language, and to suggest ways in which they might be treated within EST. It is assumed here that the morphemes have already been identified. The suggested procedures are directed toward identifying the various structures in which the morphemes appear, and providing tentative analyses for them.

Two points mentioned in the Introduction to this fieldguide bear repeating here. First, it must be emphasized again that there is NO MECHANICAL DISCOVERY PROCEDURE. The techniques proposed here will lead to a beginning analysis, but that analysis must be tested against further data, and refined as necessary. The strength of the techniques is that they allow analysis to begin immediately, thus making it possible for both further analysis and language learning to proceed more efficiently.

Secondly, crucial to research in Transformational syntax is the establishment of proper MOTIVATION for the proposed analysis. Essentially this entails identifying other constructions, apparently unrelated, for which the same analysis provides useful insights. Other than making that simple statement, I offer no techniques for this, but it must be emphasized that without substantial motivation every analysis must be considered tentative.

I have chosen to deal with the following structures in this fieldguide: noun phrases, simple clauses, relative clauses, questions, and structures manifesting marked topicalization. For each level, the presentation is the same:

(1) procedures are proposed in moderate detail, and they are illustrated by application to English data

(2) the same procedures are then applied to turn to data from Angas, Swahili, and Kalinga

While it cannot be claimed that the same procedures will work in EVERY language, the four presented here represent four divergent language families (English is IndoEuropean, Angas is a Chadic language spoken in Nigeria, Swahili is a Bantu language spoken in eastern Africa, and Kalinga is a Malayo-Polynesian language spoken in the Philippines), and thus they may be considered representative to at least some degree. I make no attempt to treat all the data from any one language, of course; rather, I simply outline introductory field techniques, and restrict the data accordingly. Nevertheless, the data considered is representative both in scope and complexity, and the fact that the techniques proposed provide the degree of success which they do may be considered indicative of their usefulness.

a. NPs are terms of reference (by one definition), which commonly contain elements such as nouns, determiners (*a, the, some* in English), adjectives, numerals, prepositional phrases. Make a list of various structures which are likely to be NPs. E.g.:

    John
    the dog
    a big dog
    a big black dog
    some big black dogs
    the two big black dogs on the farm

b. Commonly relative clauses occur with NPs as well. In English these are at times similar to full clauses and are introduced frequently by a relative pronoun. Make a note of such constructions, but leave them unanalyzed for the present. E.g.:

$$\text{the dog which is } \left\{\begin{array}{l}\text{big}\\ \text{brown}\\ \text{on the farm}\end{array}\right\}$$

$$\text{the dog which } \left\{\begin{array}{l}\text{ran home}\\ \text{the man saw}\end{array}\right\}$$

    the dog the man saw

c. Make a surface structure rule for the sequences in (a) above (the deep structure will be worked out as the analysis progresses). E.g.:

    NP → (det)(num)(size)(color)N(PP)

d. Commonly NPs are marked for plurality. If this appears to be best handled as a separate morpheme on the phrase level, this should be taken care of here (e.g., see the Angas example below). If it appears to be best handled at the word level (i.e., by affixation of some sort), make a note of it here to be treated later along the lines of the alternatives discussed in Chapter Two. E.g.:

> Nouns are marked for plurality by suffixing *-s* to the noun stem.

e. Commonly some sort of agreement is found among words which occur together in the NP. There are no significant examples of such in English (perhaps the *a/some* alternation is an example), but see the Angas and Swahili examples below. The convention followed here is that features of the head noun of the NP are understood as characterizing the entire NP, so that the NP structure can be referred to in the agreement rules.

f. Commonly nouns differ in their distribution, in which case they must be put into classes. Such classes as the following are common in the languages of the world:

   (1) nouns which cannot occur with a determiner (proper nouns)--John, Mary, Dr. Johnson

   (2) nouns which cannot be pluralized (mass nouns, proper nouns)--wheat, corn, dirt, Joy

Representative data should be examined and checked by elicitation to determine what sorts of classes are found in the language being analyzed. Such nouns must be marked with lexical features to designate such restrictions. Only as much information as is necessary to distinguish the relevant classes should be included in the distributional features in the lexicon. E.g.:

$$\begin{bmatrix} \text{dog} \\ +\text{N} \\ +[(\text{det})\underline{\quad}(\text{pl})] \end{bmatrix} \qquad \begin{bmatrix} \text{John} \\ +\text{N} \\ +[\underline{\quad}] \end{bmatrix} \qquad \begin{bmatrix} \text{wheat} \\ +\text{N} \\ +[(\text{det})\underline{\quad}] \end{bmatrix}$$

g. Keep track of representative members of each class of words and structures referred to in your surface structure NP rule. E.g.:

det	num	size	color	PP
a	one	big	brown	on the farm
the	two	small	black	at the store
some	three	large	white	in town

Any structures which contain more than a single word (here, PP) must be analyzed further at some point.

h. Before NP analysis can proceed further, basic clause structures must be analyzed (see Chapter Five).

The following illustrates application of these principles to some Angas data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected NPs

mus	'cat'
mus ce	'a cat'
mus ce mwa	'some cats'
mus bijim ce	'a big cat'
mus nan-nan ce mwa	'some big cats'
mus nan-nan ce mwa bap	'two big cats'

b. NPs containing apparent relative clauses

mus me po ji	'cat which is coming'
mus me po ji mwa	'cats which are coming'
mus me mu ye	'cat which we caught'
mus me mu ye mwa	'cats which we caught'

c. Surface structure rule

NP → N(aj)(det)(pl)(num)

d. Plurality. Plurality in Angas is expressed by a free morpheme *mwa*, which occurs final in the phrase except for numbers which follow. It is thus included in the phrase-structure rule for NP above.

e. Agreement. In Angas, if the plural morpheme occurs any adjective which occurs within the NP must also be plural (the form is not always different, but compare *bijim* and *nan-nan* in the examples). All such transformational rules should be formalized, then stated in words (the formalization, as always, is subject to revision). E.g.:

Adjective Agreement (obligatory)

SD:	[X -	aj -	Y -	<u>mwa</u> -	Z]np
	1	2	3	4	5
SC:	1	2 [+pl]	3	4	5

Any adjective occurring in the same NP as the plural marker *mwa* will be assigned the feature [+pl], the precise effect of which will be accounted for in the lexicon.

f. Noun classes

$$\begin{bmatrix} \text{mus} & \text{'cat'} \\ \text{+N} & \\ \text{+[\_\_\_(det)(pl)]} & \end{bmatrix} \quad \begin{bmatrix} \text{Musa} & \text{'(name)'} \\ \text{+N} & \\ \text{+[\_\_\_]} & \end{bmatrix} \quad \begin{bmatrix} \text{am} & \text{'water'} \\ \text{+N} & \\ \text{+[\_\_\_(det)]} & \end{bmatrix}$$

g. Morpheme classes

<u>aj</u>	<u>det</u>	<u>pl</u>	<u>num</u>
bijim 'big' (sg)	ce 'a'	mwa	gak 'one'
nan-nan 'big' (pl)	ɗa 'the'		bap 'two'
rit 'good'	nyi 'this'		kwan 'three'

The following illustrates application of these principles to some Swahili data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected NPs

m-tu	'person'
wa-tu	'people'
wa-tu wa-wili	'two people'
wa-tu wa-refu	'tall people'
wa-tu wa-refu wa-wili	'two tall people'
ki-tabu	'book'
vi-tabu	'books'
vi-tabu vi-tatu	'three books'
vi-tabu vi-dogo	'small books'
vi-tabu vi-dogo vi-tatu	'three small books'

b. NPs containing apparent relative clauses. Here NC designates noun class prefixes, sub is the subject marker (which agrees with the subject), obj is the object marker (which agrees with the object), rel is the relative marker (which agrees with the relativized noun), and asp is aspect.

wa-tu wa-na-o-soma
NC-person sub-asp-rel-read
'people who are reading'

Ø-kengele zi-li-zo-lia
NC-bell sub-asp-rel-ring
'bells which rang'

m-tu a-si-ye-soma
NC-person sub-asp-rel-read
'person who doesn't read'

b. (Continued)

wa-toto a-li-o-wa-ita Hamisi
NC-child sub-asp-rel-obj-call
'boys whom Hamisi called'

wa-tu amba-o wa-me-choka
NC-person which-rel sub=asp=be-tired
'people who are tired'

Ø-kazi amba-yo hu-ku-i-fanya jana
NC-work which-rel sub-asp-obj-do yesterday
'work which you didn't do yesterday'

c. Surface structure rule

NP → N(adj)(num)

d. Plurality. In Swahili nouns are marked for singular and plural by their occurrence with different noun class prefixes (see (g) below).

e. Agreement. Nouns are classified in Swahili, and the classification calls for rigorous agreement within the NP. The assumption here is that the agreement which results is best handled syntactically as a spreading of the features from the noun to the other elements occurring within the NP.

NP Agreement (obligatory)

SD:	[noun [αclass]	- adj	- num]np
	1	2	3
SC:	1	2 [αclass]	3 [αclass]

Within the noun phrase, adjectives and number words are marked to show agreement with the noun class of the head of the phrase, the precise effect of which will be accounted for in the lexicon.

f. Noun classes (the numbers here refer to the traditional classes proposed for the Bantu languages)

[m-tu 'person' / +N / class 1] [wa-tu 'people' / +N / class 2] [ki-tabu 'book' / +N / class 7] [vi-tabu 'books' / +N / class 8]

h. Morpheme classes

<u>adj</u>	<u>num</u>
refu 'tall'	wili 'two'
dogo 'small'	tatu 'three'

The following illustrates application of these principles to some Kalinga data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected NPs

na ain	'skirt'
na ain	'skirts'
cha ain	'skirts'
na sachi wi ain	'that skirt'
na sachi wi chuwa wi ain	'those two skirts'
na sachi wi chuwa wi magkit wi ain	'those two pretty skirts'
cha sachi wi chuwa wi magkit wi ain	'those two pretty skirts'
na sachi wi chuwa wi magkit wi ain wi nakastos	'those two pretty, expensive skirts'
na foroy	'the house'
na foroy ta filig	'the house on the mountain'
na chuwa wi chakkor wi foroy ta filig	'the two big houses on the mountain'
cha chuwa wi chakkor wi foroy ta filig	'the two big houses on the mountain'

b. NPs containing apparent relative clauses

na ain wi iningwan na fufai	'the skirt which the girl made'
na fufai wi nangwa ta ain	'the girl who made the skirt'

c. Surface structure rule

$$NP \rightarrow Det(Dem\ \underline{wi})(Num\ \underline{wi})(Adj\ \underline{wi})N(\begin{Bmatrix} \underline{wi}\ \ Adj \\ PP \end{Bmatrix})$$

d. Plurality

Plurality is marked only on Det, and it is optional (i.e., if the sense of the NP is plural, Det may be marked by the plural form *cha*, although the singular form *na* may occur instead).

e. Agreement

There is no apparent agreement operating within NP.

f. Noun classes (NB: proper nouns have a distinct Det which is not shown here)

$$\begin{bmatrix} \text{foroy 'house'} \\ +\text{N} \\ +[(\text{Dem } \underline{\text{wi}})\underline{\quad}] \end{bmatrix} \qquad \begin{bmatrix} \text{Juan 'Juan'} \\ +\text{N} \\ +[\underline{\quad}] \end{bmatrix} \qquad \begin{bmatrix} \text{isna 'rice'} \\ +\text{N} \\ +[(\text{Dem } \underline{\text{wi}})\underline{\quad}] \\ [-\text{pl}] \end{bmatrix}$$

g. Morpheme classes

<u>Det</u>	<u>Dem</u>	<u>Num</u>	<u>Adj</u>	<u>PP</u>
na	sachi 'that'	chuwa 'two'	magkit 'pretty'	ta filig
			chakkor 'big'	'on the mountain'
			nakastos 'expensive'	

CHAPTER FIVE

BASIC CLAUSE PROCEDURES

In this chapter proposals are made for the analysis of basic clause constructions, interpreted here to refer to predications which are complete but expressed in the simplest possible independent form. The discussion of suggested procedures is illustrated with application to some English data (no attempt is made to be exhaustive).

a. Assume that there is a single predication to each simple clause, and make a list of various structures which are likely by that definition to be simple clauses. E.g.:

   The dog ran home
   The dog is big
   The dog bit the man
   The dog bit the man in the car
   The dog bit the man on the leg
   The man was bitten by the dog
   The dog barked

   Such a list is likely to be lengthy; the above is only a small sample for illustration.

b. Universally such constructions contain elements such as noun phrases, verb phrases, prepositional phrases, negatives. By convention within the theory (there is some evidence for this) NP objects commonly are treated as part of VP unless there is motivation otherwise.

c. Make surface structure rules for such sequences, writing a separate rule for each different type. E.g.:

$$S \rightarrow \left\{ \begin{array}{l} \text{NP V Loc} \\ \text{NP } \underline{\text{be}} \text{ Adj} \\ \text{NP V NP} \\ \text{NP V NP} \\ \text{NP V NP PP} \\ \text{NP V} \end{array} \right\}$$

   (Final NP contains PP as modifier)

   Make a note of any types which cannot be treated within the basic generalizations which can be found (e.g., passive constructions in English might best be treated separately in the early stages).

d. The basic clause constituents within the theory are commonly NP subject, VP (which may contain NP object), and possibly Aux (including tense if nothing else). Attempt to combine the surface structure rules in (c) above into a single rule, writing a separate rule for VP as necessary (in this preliminary analysis I do not specify an Aux node). E.g.:

$$S \rightarrow NP \quad VP$$

$$VP \rightarrow \left\{ \begin{array}{lll} V & NP & \\ \underline{be} & Adj & \\ V & NP & PP \\ V & & \end{array} \right\}$$

e. Combine the VP rules developed in (d) into a single rule by notational conventions. E.g.:

$$VP \rightarrow \left\{ \begin{array}{lll} V & (NP) & (PP) \\ \underline{be} & Adj & \end{array} \right\}$$

Note that if later procedures reveal that some patterns are better handled by transformational rules (e.g., the fronting of pronominal objects in French), any phrase-structure rule describing the same phenomenon must be revised.

f. Commonly VPs are marked for tense/aspect and show agreement with NP subject. If this is handled on the phrase level, it should be taken care of here (see the Angas example below). If it is handled at the word level (i.e., by affixation of some sort) make a note of it here to be treated later in accordance with the alternatives discussed in Chapter Two above. E.g.:

Verbs are marked for tense and, at times, show number agreement with NP subject.

g. Commonly some sort of agreement is found between subject and verb, and frequently between object and verb, and less frequently between indirect object and verb (see the discussion above in Chapter One). The statement regarding agreement in (f) relates to this, but it is not as evident in English as it is in some other languages. Making use of the convention that features which characterize the head noun are taken as characterizing the entire NP, write an agreement transformation to account for the facts you notice (the formalization, as always, is subject to revision), and state in words what the rule is intended to do. E.g.:

Number Agreement (obligatory)

$$
\begin{array}{llll}
\text{SD:} & [\text{NP} & \text{V} & \text{X}]_s \\
 & \begin{bmatrix}\alpha\ \text{pers} \\ \beta\ \text{pl}\end{bmatrix} & & \\
 & 1 & 2 & 3 \\
 & & & \\
\text{SC:} & 1 & 2 & 3 \\
 & & \begin{bmatrix}\alpha\ \text{pers} \\ \beta\ \text{pl}\end{bmatrix} &
\end{array}
$$

The verb must agree with the NP subject in terms of person and number. Whatever those features are on the subject NP, they are added to the features of the verb; the precise effect will be accounted for in the lexicon.

h. In some languages there is agreement between subject and complement in those clauses which use the equivalent of BE or no verb at all. This is not true of English in cases in which the complement is an adjective, but it is true if the complement is NP. Note the following examples:

The man is a thief
The men are thieves
This man is the one I saw yesterday
These men are the ones I saw yesterday

In such cases write an agreement transformation to account for the facts you notice (the formalization, as always, is subject to revision), and state in words what the rule is intended to do. E.g.:

Complement Number Agreement (obligatory)

$$
\begin{array}{llll}
\text{SD:} & [\text{NP} & \underline{\text{be}} & \text{NP}]_s \\
 & [\alpha \text{pl}] & & \\
 & 1 & 2 & 3 \\
 & & & \\
\text{SC:} & 1 & 2 & 3 \\
 & & & [\alpha \text{pl}]
\end{array}
$$

In stative clauses, the two NPs which are joined by the verb BE must carry the same specification for the feature [pl]. Whatever the specification of that feature on the subject NP, it is spread also to the complement NP, the results to be accounted for precisely in the lexicon.

i. Commonly verbs differ in their distribution, in which case they must be put into classes. Such classes as the following are commonly found:

i. (Continued)

(1) verbs which require a following NP object (transitive)--BITE, HIT, CRUSH

(2) verbs which do not allow a following NP object (intransitive)--BARK, SNIFF, LAUGH

(3) verbs which may be followed by adjectives (in many languages there is no verb at all in such constructions)--BE, BECOME, STAY

(4) verbs which require an indirect object (di-transitive)--GIVE, SELL

Representative data should be examined and checked by elicitation to determine what sorts of classes are found in the language being analyzed. It should be kept in mind that deletions can take place in discourse context, and some verbs which are 'normally' transitive may at times occur intransitively when the object is understood to be the most generic possible in the culture (e.g., EAT (food), DRINK (alcoholic beverage), DRIVE (car)). Verbs must be marked with lexical features to designate such restrictions (those which are 'normally' transitive are best treated as obligatorily so for the time being, although notice should be taken of their intransitive possibility also). E.g.:

$$\begin{bmatrix} \text{bite} \\ +\text{V} \\ +[\_\_\ \text{NP}] \end{bmatrix} \quad \begin{bmatrix} \text{bark} \\ +\text{V} \\ +[\_\_] \end{bmatrix} \begin{bmatrix} \text{be} \\ +\text{V} \\ +[\_\_ \begin{Bmatrix} \text{Adj} \\ \text{NP} \end{Bmatrix}] \end{bmatrix} \begin{bmatrix} \text{give} \\ +\text{V} \\ +[\_\_\ \text{NP}\ \underline{\text{to}}\ \text{NP}] \end{bmatrix}$$

j. Keep track of representative members of each class of words referred to in your surface structure S and VP rules. E.g.:

Loc	Adj	PP
home	big	in the car
away	brown	on the leg
	tall	by the dog

Attempt to match these classes with those already set up for NP (so that *big* and *tall* might better be considered as size words, *brown* as color).

The following illustrates application of these principles to some Angas data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected clauses

ma mwa mwa ne shwe sheep pl they see corn	'the sheep saw the corn'
ma mwa mwa po ji at coming	'the sheep are coming'
ma mwa po ji	'the sheep are coming'
ma mwa nan-nan big big	'the sheep are big'
ma bijim big	'the sheep is big'
ma mwa mwa long mwa animal pl	'sheep are animals'
ma mwa mwa ji they come	'the sheep came'
ma mwa n-limar in farm	'the sheep are in the farm'

c. Surface structure rules (here VN refers to verbal nouns, nouns derived from verbs)

$$S \rightarrow \left\{\begin{array}{l} \text{NP pro V NP} \\ \text{NP pro prep VN} \\ \text{NP ??? prep VN} \\ \text{NP Adj} \\ \text{NP pro NP} \\ \text{NP pro V} \\ \text{NP ??? PP} \end{array}\right\}$$

Here ??? is used to identify those sentences in which it appears that deletion has taken place, but it is unclear which element (pl or person-aspect) is deleted.

d. Tentative combined rules

$$S \rightarrow \text{NP} \quad \text{(pro)} \left\{\begin{array}{l} \text{VP} \\ \text{PP} \\ \text{Adj} \\ \text{NP} \end{array}\right\}$$

$$VP \rightarrow V(NP)$$

$$PP \rightarrow P \quad NP$$

f. Agreement patterns

Pro which follows NP subject agrees with it in number and person. Adj which occurs in complement agrees with NP subject in number. NP which occurs in complement agrees with NP subject in number.

g. Agreement rules

Pro Agreement (obligatory)

$$\begin{array}{lccc} \text{SD:} & [\ \underset{\begin{bmatrix}\alpha\,\text{pers}\\ \beta\,\text{pl}\end{bmatrix}}{\text{NP}} & \text{pro} & \text{X}]_{\text{s}} \\ & 1 & 2 & 3 \\ \\ \text{SC:} & 1 & \underset{\begin{bmatrix}\alpha\,\text{pers}\\ \beta\,\text{pl}\end{bmatrix}}{2} & 3 \end{array}$$

Any pronominal element directly following the NP subject must agree with that subject in person and number. Whatever those features are on the NP, they are added to the features of the pro; the precise effect will be accounted for in the lexicon. (NB: This assumes that pro is already present in deep structure as a node.)

Complement Agreement (obligatory)

$$\begin{array}{lccc} \text{SD:} & \Big[\ \underset{[\alpha\,\text{pl}]}{\text{NP}} & (\text{pro}) & \left\{\begin{matrix}\text{Adj}\\ \text{NP}\end{matrix}\right\}\Big]_{\text{s}} \\ & 1 & 2 & 3 \\ \\ \text{SC:} & 1 & 2 & \underset{[\alpha\,\text{pl}]}{3} \end{array}$$

Any adjective or NP construction which occurs as the complement of an NP in a single clause must agree with the subject NP in number. Whatever the specification of the feature [pl] on the subject NP, it is spread to the complement as well (a pronominal element may intervene); the precise effect of this feature-spreading will be accounted for in the lexicon.

i. Verb classes

$\begin{bmatrix} \text{ne 'see'*} \\ +V \\ +[\_\_\text{NP}] \end{bmatrix}$ $\begin{bmatrix} \text{ji 'come'} \\ +V \\ +[\_\_] \end{bmatrix}$

j. Tentative lexical classes and constructions

Adj	Noun	PP
bijim 'big'(sg)	ma 'sheep'	n-limar 'in the farm'
nan-nan 'big'(pl)	long 'animal'	po ji 'at coming'
	limar 'farm'	
	shwe 'corn'	

The following illustrates application of these principles to some Swahili data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected clauses

Hamisi a-me-ki-leta ch-akula
sub-asp-obj-bring NC food
'Hamisi has brought some food'

Ø-ng'ombe wa-me-kufa
NC cow sub-asp-die
'the cows have died'

Hamisi ni m-pishi
be NC cook
'Hamisi is a cook'

Mimi si mw-ivi
I be-not NC crook
'I am not a crook'

Ni na ki-su
I with NC knife
'I have a knife'

wa-li-kaa karibu na Ø-ziwa
sub-asp-live near with NC lake
'they lived near a lake'

Ali a-me-wa-jengea wa-zazi wa-ke ny-umba
sub=asp=IO=build-for NC parent NC his NC house
'Ali has built a house for his parents'

Ali a-me-jenga ny-umba
sub-asp-build NC house
'Ali has built a house'

Hamisi ni m-refu
be NC tall
'Hamisi is tall'

c. Surface structure rule

$$S \rightarrow \left\{ \begin{array}{llll} NP & V & NP & \\ NP & V & & \\ NP & \underline{ni} & \left\{ \begin{array}{l} NP \\ Adj \end{array} \right\} & \\ NP & \underline{si} & NP & \\ NP & \underline{na} & NP & \\ V & PP & & \\ NP & V & NP & NP \end{array} \right\}$$

The data are too meager to be conclusive regarding the ordering between direct object and indirect object. In the only example the indirect object precedes, so this is taken as the basic order.

d. Tentative combined rules

$S \rightarrow NP \quad VP$ (this rule assumes that the subject NP has been deleted in the one case in the examples where it does not occur)

$$VP \rightarrow \left\{ \begin{array}{l} V \left\{ \begin{array}{c} (NP) \quad (NP) \\ (PP) \end{array} \right\} \\ cop \left\{ \begin{array}{l} NP \\ Adj \end{array} \right\} \end{array} \right\}$$

$V \rightarrow tense \quad verb$

f. Agreement patterns

The verb always agrees in class with NP subject.
The verb frequently agrees in class with NP object (conditions where it does not need to be determined).
The verb sometimes agrees in class with NP indirect object whenever one is present, instead of the direct object.
An adjective in the complement agrees in class with NP subject.
An NP in the complement agrees in number with NP subject.

g. Agreement rules

Subject-Verb Agreement (obligatory)

$$SD: \left[\begin{array}{cccc} \begin{array}{c} NP \\ [\alpha\, class] \end{array} & tense & verb & X \end{array} \right]_S$$
$$\begin{array}{cccc} 1 & 2 & 3 & 4 \end{array}$$

```
SC:     1  subj + 2    3    4
        [αclass]
```

The tense-verb sequence produced by the PS rules is obligatorily prefixed by a pronominal form which agrees with the NP subject in class; the precise form of the prefix will be accounted for in the lexicon.

Object-Verb Agreement (optional)

```
SD:  [X       verb      NP       Y]
                     [αclass]     s
      1        2         3       4

SC:   1 obj + 2          3       4
     [αclass]
```

The verb is optionally prefixed by a pronominal form which agrees in class with the following NP (which will be direct object unless the verb is a benefactive form, in which case it will be indirect); the precise form of the prefix will be accounted for in the lexicon. Conditions under which the agreement takes place remain to be determined, therefore the rule is described as optional.

Adjective Agreement (obligatory)

```
SD: [    NP    cop      Adj]
     [αclass]               s
         1      2        3

SC:      1      2        3
                      [αclass]
```

Adjectives occurring in complements must agree in class with the NP subject of the sentence.

Number Agreement (obligatory)

```
SD:  [   NP     cop     NP]
       [αpl]               s
         1       2      3

SC:      1       2      3
                      [αpl]
```

NPs occurring in complements must agree in number with the NP subject of the sentence. Note that this requires that the noun class markers which occur must be identified in the lexicon as being either [+pl] or [-pl] (this is necessary for semantic interpretation also), with the feature [pl] associated by convention with the head noun of the NP, and thus with the entire NP.

i. Verb classes

$$\begin{bmatrix}\text{leta 'bring'}\\ \text{+V}\\ \text{+[\_\_NP]}\end{bmatrix} \begin{bmatrix}\text{kufa 'die'}\\ \text{+V}\\ \text{+[\_\_]}\end{bmatrix} \begin{bmatrix}\text{kaa 'live'}\\ \text{+V}\\ \text{+[\_\_]}\end{bmatrix} \begin{bmatrix}\text{jenga 'build'}\\ \text{+V}\\ \text{+[\_\_NP]}\end{bmatrix}$$

$$\begin{bmatrix}\text{jengea 'build for'}\\ \text{+V}\\ \text{+ben}\\ \text{+[\_\_NP NP]}\end{bmatrix} \begin{bmatrix}\text{ni 'be'}\\ \text{+cop}\end{bmatrix} \begin{bmatrix}\text{si 'be not'}\\ \text{+cop}\end{bmatrix}$$

Probably benefactive verbs like *jengea* are to be derived by a lexical rule from the basic non-benefactive form.

j. Tentative lexical classes and constructions

Adj	N	PP
refu 'tall'	ch-akula 'food'	karibu na Ø-ziwa 'near the lake'
	m-pishi 'cook'	
	wa-pishi 'cooks'	
	mw-ivi 'thief'	
	ki-su 'knife'	
	wa-zazi 'parents'	
	ny-umba 'house'	

The following illustrates application of these principles to some Kalinga data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected clauses

nasachut na larai	'the boy is lazy'
nasachut cha larai	'the boys are lazy'
nasachut na chuway larai	'two boys are lazy'
nasachut na fufai	'the girl is lazy'
foonà nasachut na larai	'the boy is not lazy'
manadchadcharan na larai	'the boy is walking'
manadchadcharan na larai ta payaw	'the boy is walking in the field'

chinogchog na larai na forò	'the boy is chasing the pig'
foonà chinogchog na larai na forò	'the boy is not chasing the pig'
inadchon na larai na forò à misturu	'the boy gave the pig to the teacher'
inadchon chan larai na forò à misturu	'the boys gave the pig to the teacher'

c. Surface structure rules (some category revision may be necessary)

$$S \rightarrow \begin{Bmatrix} \text{Adj NP} \\ \text{Neg Adj NP} \\ \text{V NP} \\ \text{V NP NP} \\ \text{Neg V NP NP} \\ \text{V NP NP NP} \end{Bmatrix}$$

d. Tentative combined rules

$$S \rightarrow (\text{Neg}) \begin{Bmatrix} \text{Adj NP} \\ \text{V NP (NP) (NP)} \end{Bmatrix}$$

f. Agreement patterns

There is no agreement apparent.

i. Verb classes

$$\begin{bmatrix} \text{manadchadcharan 'is walking'} \\ +\text{V} \\ +[\_\_\text{(NP)}] \end{bmatrix} \begin{bmatrix} \text{chinogchog 'is chasing'} \\ +\text{V} \\ +[\_\_\text{NP}] \end{bmatrix} \begin{bmatrix} \text{inadchon 'gave'} \\ +\text{V} \\ +[\_\_\text{NP NP NP}] \end{bmatrix}$$

j. Tentative lexical classes

<u>Adj</u>	<u>N</u>	<u>Neg</u>
nasachut 'lazy'	larai 'boy'	foonà
	fufai 'girl'	
	misturu 'teacher'	

CHAPTER SIX

RELATIVE CLAUSE PROCEDURES

In this chapter proposals are made for the analysis for relative clauses. The discussion of suggested procedures is illustrated with application to some English data (no attempt is made to be exhaustive). The strategies used for relativization in natural language are discussed in Chapter One above, to which the details of the language in question should be compared.

a. Compare simple clauses analyzed in Chapter Five above with relative clauses which appeared in the NP data in Chapter Four above. It is commonly the case that the head word of the NP in which the relative clause occurs does not occur in the relative clause itself, but rather a 'relative pronoun' of some sort occurs instead. This relative pronoun usually occurs either first or last in the relative clause; at times it occurs in the verb word as an affix. E.g.:

Clauses	Relative clauses within NPs
The dog is big	The dog which is big
The dog is black	The dog which is black
The dog is on the farm	The dog which is on the farm
	The dog on the farm
The dog ran home	The dog which ran home
The man hit the dog	The dog which the man hit
	The dog the man hit
The fleas lived on the dog	The dog the fleas lived on

b. Begin with the assumption that in addition to the NP rule you already have, NP has a second expansion as NP → NP S, with the S to consist of the relative clause constructions. Provide a bracketing for the relative clauses above which is consistent with this assumption, including a relative pronoun for those examples in the data which lack one. E.g.:

[the dog [which is black]s]np
[the dog [which is on the farm]s]np
[the dog [which ran home]s]np
[the dog [which the man hit]s]np
[the dog [which the fleas lived on]s]np

c. Within EST the assumption is that the relative pronoun is itself an NP (there is some theoretical debate as to whether it is a full NP, or a noun, or a determiner, but the position taken here is that it is an NP), with syntactic function within the sentence in which it occurs. It is a lexical item which occurs with no modifiers within the NP structure, and a rule of co-reference is required to interpret its reference. In the examples above, it is always to be identified as coreferential with the head NP of the NP within which it occurs. To determine the function of the relative pronoun in the sentences of the data of the language being analyzed, replace it by an NP identical with the head NP which the relative clause modifies, and re-write the sentence. E.g.:

which is black	the dog is black
which is on the farm	the dog is on the farm
which ran home	the dog ran home

In these three cases its function is clearly subject. Now note the following:

which the man hit	the dog the man hit

In this case *the dog* is the object of the man's hitting, so it is functioning as syntactic direct object, not as subject. And in the following *the dog* is functioning as object of the preposition *on*:

which the fleas lived on	the dog the fleas lived on

d. If the structure now matches a possible clause type (as it does in the first three examples in (c) above), write a semantic rule of coreference to interpret the referent of the relative pronoun, and compose a lexical entry for the pronoun itself, including a specific feature [+rel] to identify it as the relative pronoun. E.g.:

SR: The relative pronoun is [+coref] with the head noun of the NP within which the relative clause occurs.

$$\begin{bmatrix} \text{which} \\ +\text{N} \\ +[\_\_\_] \\ +\text{rel} \end{bmatrix}$$

Here SR identifies the rule as a semantic rule. For English other relative pronouns occur (*who, whom, that*) and would need to be identified in addition to *which*.

e. For those examples in which the operation in (c) above does not result in a possible clause, note how it differs, treating one example at a time. Frequently the difference is one of ordering (e.g., note that the sequence *the dog the man hit* is not a clause found in the analysis of (2) above, but the sequence *the dog* is moved out of place, occurring first in the structure rather than following the verb of which it is the object). In such cases, note the position from which the relative pronoun has been moved (commonly to first or last position in the clause), and write a tentative rule to move it to the position in which it actually occurs (remembering that it carries the lexical feature [+rel]). (In some languages a pronominal form is found in the position from which the relative pronoun was moved; this is not true of English, but note the Angas example below.) E.g.:

Relative Fronting (obligatory)

SD:	[X	NP	[Y	NP [+rel]	Z]s]np	
	1	2	3	4	5	
SC:	1	2	4+3	Ø	5	

An NP which carries the feature [+rel] is obligatorily moved to initial position in the embedded sentence in which it occurs.

f. Reconstruct these exceptional cases in a form in which they match clause structures discovered in (2) above, and check that the rule established in (e) has the desired effect. If it does not, revise it appropriately. E.g.:

(1) [the dog [the fleas lived on which]s]np

[the dog [which the fleas lived on]s]np Rel-Fronting

(2) [the dog [the man hit which]s]np

[the dog [which the man hit]s]np Rel-Fronting

For a dialect in which the proper expression is *the dog on which the fleas lived,* rather than the above rule, the following is operative:

Relative Fronting (obligatory)

```
SD:  [X  NP   [Y  (prep)   NP    Z]s]np
                         [+rel]
      1  2     3    4       5    6

SC:   1  2  4+5+3   Ø       Ø    6
```

An NP which carries the feature [+rel] is obligatorily moved to initial position in the embedded sentence in which it occurs. If it is within a PP, the entire PP is moved.

g. There are in some languages constructions in which the relative marker does not occur, or does so optionally (e.g., note the English *the dog on the farm* above). Examine the data to determine the specific environments in which this is the case, and write a rule to delete the specific morphemes involved as appropriate. E.g.:

Rel Deletion I (optional)

```
SD:  [  NP     NP   X]s
      [+rel]
        1      2    3

SC:     Ø      2    3
```

A relative pronoun may optionally be deleted (conditions to be determined) when it directly precedes an NP within the same embedded sentence.

This rule is intended to handle such cases as *the dog the man hit*. Note that it does not handle cases like *the dog on the farm*, and in fact in such cases the verb BE is deleted also. Thus a second Rel Deletion rule is needed:

Rel Deletion II (optional)

```
SD:  [  NP     be   PP]s
      [+rel]
        1      2    3

SC:     Ø      Ø    3
```

A relative pronoun and the verb BE may optionally be deleted when directly preceding a PP within the same embedded sentence.

If possible, such rules which perform similar functions should be combined (these two cannot be).

h. A common assumption is that adjectives occuring within NPs are derived from relative clauses. In English it appears that this is performed in two steps--Rel Deletion II applies (its SD must be modified to apply before Adj in addition to before PP), and then the adjective is obligatorily moved into a position preceding the noun (note from the discussion in Chapter One that in VO languages like English it is expected that modifiers follow nouns; this is true for relative clauses, but not for simple adjectives, thus the necessity for this rule). Note the following sample derivation:

[the dog [which is big]s]np	
(applies vacuously)	Rel Fronting
[the dog [big]s]np	Rel Deletion II (Modified)
[the dog big]np	non-branching S node deleted by convention
[the big dog]np	Adj Movement

By theoretical convention any S which does not branch is deleted in the derivation. Although it is not actually a rule which does this, I show that stage in the derivation above.

The Rel Deletion II rule must be revised as follows:

Rel Deletion II (optional)

SD:	[NP [+rel]	be	{PP / Adj}	X]s
	1	2	3	4
SC:	Ø	Ø	3	4

A relative pronoun and the verb BE may optionally be deleted when directly preceding PP or Adj within the same embedded sentence.

The Adjective Movement rule can be formulated as follows:

Adj Movement (obligatory)

SD:	[X	N	Adj	Y]np
	1	2	3	4
SC:	1	3+2	Ø	4

Adjectives are obligatorily moved into a position directly preceding the noun which they modify.

i. Although some languages may limit the NP structure to a single modifier, many languages allow multiple modification. There may be cases in which an entire class of modifiers occurs only directly modifying a noun and never in a relative clause (e.g., in English we have *the two dogs* but not *the dogs which are two*). In such cases it may be preferable to generate that particular class directly within the NP as modifiers, but all other modifications are probably best derived along the lines of the above. However, it must be determined whether a certain ordering among the modifiers is required, and if so a rule must be written to order them correctly because it is not possible to order the generation of the relative clauses. Such an ordering rule (or set of rules) can be based on the surface structure NP rule formulated in Chapter Four above. For example, for English a rule like the following is needed to handle those cases in which a color modifier ends up preceding a size modifier within the NP:

Modifier Ordering (obligatory)

SD:	[X	color	size	N]np
	1	2	3	4
SC:	1	Ø	Ø	3+2+4

In the surface structure NP, modifiers are obligatorily ordered in the sequence size-color.

(This rule may not be adequately formulated as it stands. It is given here for purposes of illustration only.)

j. Note that as mentioned in (b) above, this proposal calls for a different phrase-structure rule for NP. A revision must be made to allow S to appear within NP as the source for the various modifiers discussed (including of course the relative clause itself), and to the extent that the modifiers are not thus derived as in the surface structure rule formulated in (2) above, they must be eliminated from that rule. E.g.:

$$NP \rightarrow \left\{ \begin{array}{l} NP \quad S \\ (det)\,(num)\,N \end{array} \right\}$$

The NP may have an S following it; its internal structure consists of three possible elements: a determiner, a number word, and a noun. Only the noun is obligatory.

Note that the embedded S will contain an occurrence of the relative pronoun (if it does not, the rule of coreference cannot apply, and the sentence will be marked as ungrammatical because no semantic interpretation will be possible for it). The NP rule is recursive, so that any number of modifications can occur; the various transformations proposed are intended to produce the correct surface forms for these modifications and position them correctly, with the rule of coreference establishing semantic interpretation of reference.

The following illustrates application of these principles to some Angas data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Comparison of relative clauses and independent clauses (the data from Chapter Five above is supplemented here)

mus po ji	cat at coming	'the cat is coming'
mus me po ji	rel	'the cat which is coming'
mus mwa mwa po ji	cat pl they at coming	'the cats are coming'
mus me po ji mwa	rel pl	'the cats which are coming'
mwa ye mus	they catch cat	'they caught the cat'
mus me mwa ye	rel	'the cat which they caught'
mwa ye mus mwa	they catch cat pl	'they caught the cats'
mus me mwa ye mwa	rel they pl	'the cats which they caught'

mwa	mar	limar	shi	cen	'they farm with a hoe'
they	farm	farm	with	hoe	

cen	me	mwa	mar	limar	shi	shik	'the hoe which they farm with (it)'
	rel					it	

ma	mwa	nan-nan	'the sheep are big'
sheep	pl?	big	

ma	me	mwa	nan-nan	mwa	'the sheep which are big'
	rel	they		pl	

b. Restoring structure

mus me po ji	[mus [me po ji]s]np
mus me po ji mwa	[mus [me po ji]s mwa]np
mus me mwa ye	[mus [me mwa ye]s]np
mus me mwa ye mwa	[mus [me mwa ye]s mwa]np
cen me mwa mar limar shi shik	[cen [me mwa mar limar shi shik]s]np
ma me mwa nan-nan mwa	[ma [me mwa nan-nan]s mwa]np

c. Comparisons with full clauses

me po ji	mus po ji
me mwa ye	mus mwa ye
me mwa mar limar shi shik	cen mwa mar limar shi shik
me mwa nan-nan	ma mwa nan-nan

d. Rule of Coreference, relative pronoun lexical entry

SR: The relative pronoun is [+coref] with the head NP of the NP within which it occurs.

$$\begin{bmatrix} \text{me} \\ +\text{N} \\ +[\underline{\quad\quad}] \\ +\text{rel} \end{bmatrix}$$

e. Ordering problems

The structures in (c) above do not always match legitimate clause structures, particularly for the following:

me mwa ye
me mwa mar limar shi shik

In each case here the relative pronoun does not occur in the same position in the reconstruction as that in which it occurs in the basic clause. In the first case it should follow the verb *ye* because *mus* is functioning as direct object in the equivalent clause; in the second case it should follow the preposition *shi* because *cen* functions as object of the preposition in the equivalent clause (note that a pronominal trace (*shik*) does in fact appear in this position in the relative clause). Thus a movement rule is needed:

Rel Fronting I (obligatory)

SD:	[NP	[X	prep	NP [+rel]	Y]s	Z]np
	1	2	3	4	5	6
SC:	1	4+2	3	4 [-rel, +pro]	5	6

Rel Fronting II (obligatory)

SD:	[NP	[X	NP [+rel]	Y]s	Z]np
	1	2	3	4	5
SC:	1	3+2	Ø	4	5

There are two movement rules which affect the relative pronoun, which must be ordered as indicated above. A relative pronoun is moved obligatorily into initial position within the embedded sentence. If it occurs within a prepositional phrase, a pronominal trace is left behind in the position from which it is moved (the precise form of the trace will be accounted for in the lexicon).

f. Tested reconstruction and derivation

(1) [mus [mwa ye me]s]np

[mus [me mwa ye]s]np — Rel Fronting II

(2) [cen [mwa mar limar shi me]s]np

[cen [me mwa mar limar shi me [-rel, +pro]]s]np — Rel Fronting I

For (2) a Spell-Out rule is needed, which may temporarily be formulated by revising the lexical entry for the relative pronoun as follows (but see Chapter Eight on Topicalization below):

$$\begin{bmatrix} \text{me} \\ +\text{N} \\ +[\_\_\_] \\ +\text{rel} \\ \cdot \\ \cdot \\ \cdot \\ \text{Spell-Out:} \\ \quad \text{me} \rightarrow \text{shik} \\ \begin{bmatrix} -\text{rel} \\ +\text{pro} \end{bmatrix} \end{bmatrix}$$

h. Adjective derivation

There being no evidence to the contrary, the same analysis as that proposed above for English is hypothesized here for Angas as well; adjectives which occur in NPs are derived from relative clauses embedded under NP.

Adjective Incorporation (optional)

$$\begin{array}{lllll} \text{SD:} & [\text{NP} & [\text{NP} & \text{Adj}]\text{s} & \text{X}]\text{np} \\ & [\alpha\text{pl}] & [+\text{rel}] & & \\ & 1 & 2 & 3 & 4 \\ & & & & \\ \text{SC:} & 1 & \emptyset & 3 & 4 \\ & & & [\alpha\text{pl}] & \end{array}$$

The relative pronoun may optionally be deleted when it precedes only an adjective (note that by convention the S node will be deleted at the same time because it no longer branches), and the adjective is marked to agree in number with the head NP of the phrase (the precise effect of the agreement will be accounted for in the lexicon).

Note that it may be possible to order this rule after Complement Agreement (see Chapter Five above), and to revise that rule so that the adjective will agree with the head NP of the NP in which the embedded sentence occurs (the relative pronoun is not marked for [pl] so that without revision agreement will not be made). It is simpler at this point, however, to perform that task by this rule instead. In that the order in Angas is noun-adjective, no movement rule is needed.

i. Modifier ordering

It appears that any ordering among modifiers in the Angas NP is determined by discourse context, so I do not pursue this here. It appears that, as in English, number words are best seen as part of the deep structure NP, and not derived from relative clauses.

j. Modified NP phrase-structure rule

$$NP \rightarrow \begin{Bmatrix} NP & S \\ N & (det)(pl)(num) \end{Bmatrix}$$

The NP may have a sentence following it; the internal structure of NP consists of four possible elements: a noun, a determiner, a plural marker, and a number word. Only the noun is obligatory.

The following illustrates application of these principles to some Swahili data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Comparison of relative clauses and independent clauses

```
wa-tu      wa-na-soma                'people read'
NC-person sub-asp-read

  wa-tu wa-na-o-soma                 'people who read'
              rel

Ø-kengele zi-li-lia                  'bells ring'
NC-bell   sub-asp-ring

  Ø-kengele zi-li-zo-lia             'bells which ring'
                  rel

m-tu       a-si-soma                 'a person doesn't read'
NC-person sub-asp-read

  m-tu a-si-ye-soma                  'a person who doesn't read'
            rel

Hamisi  a-li-wa-ita     wa-toto      'Hamisi called the boys'
        sub-asp-obj-call NC-child

  wa-toto a-li-o-wa-ita Hamisi       'the boys whom Hamisi called'
               rel
```

```
wa-tu     wa-me-choka               'people are tired'
NC-person sub=asp=be-tired

  wa-tu   amba-o   wa-me-choka      'people who are tired'
         which-rel

hu-ku-i-fanya  Ø-kazi    jana       'you didn't do work yesterday'
sub-asp-obj-do  NC-work yesterday

Ø-kazi  amba-yo hu-ku-i-fanya jana  'work which you didn't do
      which-rel                        yesterday'
```

b. Restoring structure

```
wa-tu  wa-na-o-soma                 [wa-tu[wa-na-o-soma]s]np
Ø-kengele  zi-li-zo-lia             [Ø-kengele [zi-li-zo-lia]s]np
m-tu a-si-ye-soma                   [m-tu [a-si-ye-soma]s]np
wa-toto a-li-o-wa-ita Hamisi        [wa-toto [a-li-o-wa-ita Hamisi]s]np
wa-tu amba-o wa-me-choka            [wa-tu [amba-o wa-me-choka]s]np
Ø-kazi amba-yo hu-ku-i-fanya jana   [Ø-kazi [amba-yo hu-ku-i-fanya
                                      jana]s]np
```

c. Comparison with full clauses

```
wa-na-o-soma              wa-tu wa-na-soma
zi-li-zo-lia              Ø-kengele zi-li-lia
a-si-ye-soma              m-tu a-si-soma
a-li-o-wa-ita Hamisi      Hamisi a-li-wa-ita wa-toto
amba-o wa-me-choka        wa-tu wa-me-choka
amba-yo hu-ku-i-fanya     hu-ku-i-fanya Ø-kazi jana
  jana
```

From such a comparison it is clear that agreement is in effect (cf. the various relative pronominal forms which occur). It seems also that in fact there are two relative constructions, one with a relative pronoun prefixed to the verb stem, and the other with the relative pronoun suffixed to a relative marker *amba* (the form of the relative pronoun may differ in the two constructions). Because there are these two types, it is preferable to treat them separately at first, then combine them later if possible. The assumption made here (which would have to be verified by syntactic argumentation) is that the two constructions are related, and that the one without *amba* is basic, with the other derived from it. Thus the order of derivation proposed here will be as follows: insertion of a relative pronoun form from the lexicon as the relative marker (it can be specified simply as REL, with no phonological content lexically), spreading of features of class for agreement from the head NP of the NP in which it is embedded, optional insertion of *amba*, movement of the relative copy if *amba* has not been inserted, Spell-Out rules.

d. Rule of coreference, relative pronoun lexical entry

SR: If the relative pronoun is [αclass] with the head NP of the NP within which it occurs, it is [+coref] with it.

The required agreement is best handled by an agreement transformation which spreads the features of the head NP of the phrase to the unspecified relative marker. The marker may then be conceptualized as being simply REL in the lexicon, with appropriate features for occurring unmodified in NP.

Relative Pronoun Agreement (obligatory)

$$\begin{array}{llllll} \text{SD:} & [\ \underset{[\alpha\text{class}]}{\text{NP}} & [\ \text{X} & \underset{[+\text{rel}]}{\text{NP}} & \text{Y}]_{s}]_{np} \\ & 1 & 2 & 3 & 4 \\ & & & & \\ \text{SC:} & 1 & 2 & \underset{[\alpha\text{class}]}{3} & 4 \end{array}$$

Any NP carrying the feature [+rel] which occurs in an embedded sentence, must agree in class with the head NP of the NP in which the sentence is embedded.

The lexical entry for REL is as follows (only a sample of the necessary Spell-Out rules are given here, and they will not be made use of until all transformations have applied):

$$\left[\begin{array}{l} \text{REL} \\ +\text{N} \\ +[\_\_] \\ +\text{rel} \\ \text{Spell-Out:} \\ \quad \begin{array}{l} \text{REL} \\ [\text{class } 2] \end{array} \rightarrow \quad \text{o} \\ \quad \begin{array}{l} \text{REL} \\ [\text{class } 9] \end{array} \rightarrow \left\{ \begin{array}{ll} \text{yo} & /\text{amba}\_\_ \\ \text{zo} & \end{array} \right\} \end{array}\right]$$

That is, for class 2, the relative pronoun is *o* whether *amba* is present or not; for class 9, the form is *yo* if *amba* is present, *zo* if it is not. All other classes will need to be specified as well, and because of the complexity some sort of lexical rule may be desirable.

e. Ordering problems

The morpheme *amba* may optionally be inserted as the element to which the relative pronoun is attached (ultimately it must be determined when this construction is used as opposed to the other); if it is not inserted, the pronoun is moved to a position immediately preceding the verb stem (because the verb stem is the point of reference, and subject and object NPs differ in their basic order in relation to it, two placement rules are needed).

Relative Marker Insertion (optional)

```
SD:  [X        NP      Y]s
              [+rel]
      1         2      3

SC:   1  amba+2        3
        [+Attach]
```

The morpheme *amba* may optionally be inserted and attached as a left sister to an NP carrying the feature [+rel].

Subject Relative Placement (obligatory)

```
SD:  [NP     X       V     Y]s
    [+rel]
      1      2       3     4

SC:   Ø      2      1+3    4
                 [+Attach]
```

An NP which carries the feature [+rel] is obligatorily moved to a position directly preceding the verb stem and attached to it as a left sister. This rule must be ordered after Relative Marker Insertion so that it applies only if the insertion rule does not (by placing the NP carrying the feature [+rel] next to the sentence boundary in the SD it is clear that *amba* has not been inserted). This rule must be ordered preceding Object-Verb Agreement (see Chapter Five) because the latter rule positions the object marker (if any) directly preceding the verb stem.

Object Relative Placement (obligatory)

SD:	[X	obj	V	NP [+rel]	Y]s
	1	2	3	4	5
SC:	1	4+2 [+Attach]	3	Ø	5

An NP which carries the feature [+rel] is obligatorily moved to a position directly preceding the verb stem and attached to it as a left sister. This rule must be ordered after Relative Marker Insertion so that it applies only if the insertion rule does not (by placing the NP carrying [+rel] directly following V in SD, it is clear that *amba* has not been inserted). In addition, it must be ordered following Object-Verb Agreement (see Chapter Five) in order for the agreement pronoun to be produced by that rule. Thus the need for obj in this rule.

The relative pronoun ends up in a position immediately following the tense marker, following all other morphemes which are also prefixed to the verb stem except that identifying object agreement. Thus the other morphemes are placed preceding the stem, and the relative pronoun is placed immediately preceding it by ordering this rule after the others. Then the object agreement marker is placed directly following the relative marker by ordering Object-Verb Agreement after the Relative Placement rules.

There remains one rule to be defined. The data shows that whatever the function of the relative pronoun, in every case the word containing it, whether *amba* or a verb, occurs in initial position in the embedded clause. By convention, it may be claimed that the feature [+rel] characterizes the entirety of whatever word it is associated with, so the necessary rule may be stated as follows:

Relative Fronting (obligatory)

SD:	[NP	[X	$\begin{Bmatrix} \text{V} \\ \underline{\text{amba}} \end{Bmatrix}$ [+rel]	Y]s]np
	1	2	3	4
SC:	1	3+2	Ø	4

Any verb or occurrence of *amba* carrying the feature [+rel] is obligatorily moved to a position initial in the embedded sentence.

f. Tested reconstruction and derivation

(1) [wa-toto [Hamisi a-li-ita REL]s]np
[class 2]

[wa-toto [Hamisi a-li-ita REL]s]np — Rel Pro Agreement
[class 2] [class 2]

[wa-toto [Hamisi a-li-obj-ita REL]s]np — Obj Verb Agreement
[class 2] [class 2] [class 2]

[wa-toto [Hamisi a-li-REL-obj-ita]s]np — Obj Rel Placement
[class 2] [class 2] [class 2]

[wa-toto [a-li-REL-obj-ita Hamisi]s]np — Rel Fronting
[class 2] [class 2][class 2]

wa-toto a-li-o-wa-ita Hamisi — Spell-Out

(2) [wa-tu [REL wa-me-choka]s]np
[class 2]

[wa-tu [REL wa-me-choka]s]np — Rel Pro Agreement
[class 2] [class 2]

[wa-tu [amba+REL wa-me-choka]s]np — Rel Mkr Insertion
[class 2] [class 2]

(applies vacuously) — Rel Fronting

wa-tu amba-o wa-me-choka — Spell-Out

h. Adjective derivation

An analysis which derives adjectives in NPs from embedded relative clauses is not revealing in Swahili. Compare the following:

wa-toto ni wa-refu 'the children are tall'
NC-child be NC-tall

wa-toto wa-refu 'tall children'
NC-child NC-tall

To derive the second of these from the first, the underlying structure would have to be something like the following:

[wa-toto [REL ni refu]s]np

Now a rule is needed (similar to that proposed for Angas above) to spread class features not from REL (which has no such features) but from the head NP of the phrase. Further, given the fact that the verbal element here is a copula, not a 'real verb,' the rules above will not apply unless they are modified to allow for a copula in addition to the verb (or the copula is interpreted as carrying the feature [+V]). In addition, it would be the case that a rule very similar to English Rel Deletion II would be required, to delete the copula along with the REL:

Relative Deletion (obligatory?)

SD:	[NP	[REL	cop	adj]s]np
	1	2	3	4
SC:	1	Ø	Ø	4

Note that adjectives appear not to be possible within relative clauses (there are no NPs like *the book which is red)*, so that ***amba*** must not be inserted, or if it is must be obligatorily deleted; and in any case in such a relative clause the REL and cop must be obligatorily deleted anyway. It would appear that a simpler analysis would be simply to generate adjectives within NPs directly in the PS rules. If however, relative clauses are found which contain adjectives, so that the deletion rule is optional, the derivation mentioned here would be helpful in showing the relationship holding between full sentences and NPs and relative clauses and other NP modifiers.

The assumption throughout this fieldguide is that an analysis which is useful in one language offers itself as a candidate for a useful analysis in a second language, a hypothesis to be tested. However, should it turn out NOT to be useful in a particular language (in this case Swahili may be such an example), it should not be imposed on that language.

i. Modifier ordering

Word order among modifiers in Swahili is determined by the closeness of relationship holding between the various modifiers and the noun. The closer the relationship, the closer the modifier to the noun:

vi-kombe vi-eupe vi-wili 'two white CUPS'
NC-cup NC-white NC-two

vi-kombe vi-wili vi-eupe 'two white CUPS'
NC-cup NC-two NC-white

It is probably the case that discourse considerations play a role in determining such orderings.

j. Modified NP phrase-structure rule

Assuming that adjectives and numbers occurring in NPs are derived from embedded sentences, the rule would be as follows:

$$NP \rightarrow \begin{Bmatrix} NP & S \\ N & \end{Bmatrix}$$

The noun phrase consists of two elements, a head noun and an optional sentential modifier, which is the source (via the relative clause) of all nominal modifiers.

The following illustrates application of these principles to some Kalinga data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Comparison of relative clauses and independent clauses

In the examples here an independent clause is presented first, then three related relative clause constructions.

(1) chinogchog na larai na asu ta payaw
chased the boy the dog in field
'the boy chased the dog in the field'

(2a) inilan na fufai na asu wi chinogchog na larai ta payaw
saw the girl the dog REL chased the boy in field
'the girl saw the dog which the boy chased in the field'

(2b) inilan na fufai na larai wi manogchog à asu ta payaw
saw the girl the boy REL chased the dog in field
'the girl saw the boy who chased the dog in the field'

(2c) inilan na fufai na payaw wi manogchogkan na larai à asu
saw the girl the field REL chased the boy the dog
'the girl saw the field where the boy chased the dog'

b. Restoring structure

(2a) na asu wi chinogchog na larai ta payaw
[na asu [wi chinogchog na larai ta payaw]s]np

(2b) na larai wi manogchog à asu ta payaw
[na larai [wi manogchog a asu ta payaw]s]np

(2c) na payaw wi manogchogkan na larai à asu
[na payaw [wi manogchogkan na larai a asu]s]np

c. Comparison with full clauses

wi chinogchog na larai ta payaw	chinogchog na larai na asu ta payaw
wi manogchog à asu ta payaw	chinogchog na larai na asu ta payaw
wi manogchogkan na larai à asu	chinogchog na larai na asu ta payaw

d. Rule of Coreference, relative pronoun lexical entry

SR; The relative pronoun is [+coref] with the head NP of the NP in which it occurs.

$$\begin{bmatrix} \text{wi} \\ +\text{N} \\ +[\_\_\_] \\ +\text{rel} \end{bmatrix}$$

e. Ordering problems

The relative clauses differ in varying degrees from the full clause. In (2a) *wi* occurs in initial position and the sequence *na asu* is missing; otherwise the string is identical to the full clause. In (2b) *wi* occurs in initial position and the sequence *na larai* is missing, and the verb has a different form; otherwise the string is identical to the full clause. In (2c) *wi* occurs in initial position and the sequence *ta payaw* is missing, and the verb has a different form; otherwise the string is identical to the full clause. Thus in each case *wi* is in initial position, and one NP is missing from the clause; the verb may or may not differ from that of the full clause.

However, in fact further research would show that there is a correlation of the relative clause forms with sentences in which a particular NP is emphasized. Note the following examples (the emphasized NPs are underlined):

(2a) wi chinogchog na larai ta payaw
REL chased the boy in field

na asu chinogchog na larai ta payaw
'the boy chased the dog in the field'

(2b) wi manogchog à asu ta payaw
REL chased the dog in field

na larai monogchog à asu ta payaw
'the boy chased the dog in the field'

(2c) wi manogchogkan na larai à asu
REL chased the boy the dog

na payaw monogchogkan na larai à asu
'the boy chased the dog in the field'

That is, in (c) above in fact the incorrect full clause was used as a comparison. In Kalinga relative clauses correspond most closely to clauses which have undergone a rule of focus-emphasis, which fronts a given NP (or PP). Note that the verb forms correspond identically in form. What is needed, then, is the rule of focus-emphasis, and a representation of the relative pronoun such that it will be obligatorily affected by the rule. I will not formulate the rule here, but assuming that the rule is sensitive to a feature like [+T] (for topic, see Chapter Eight below), the lexical entry for the relative pronoun can be modified as follows:

$$\begin{bmatrix} \text{wi} \\ +\text{N} \\ +[\_\_\_] \\ +\text{rel} \\ +\text{T} \end{bmatrix}$$

Then, assuming that the focus-emphasis rule makes the correct changes in the verb as required, as well as moving the [+T] NP into initial position, no further changes are necessary.

f. Tested reconstruction and derivation

(2a) [na asu [chinogchog na larai wi ta payaw]s]np
[+T]

[na asu [wi chinogchog na larai ta payaw]s]np — NP Focus
[+T]

(2b) [na larai [chinogchog wi à asu ta payaw]s]np
[+T]

[na larai [wi manogchog à asu ta payaw]s]np — NP Focus
[+T]

(2c) [na payaw [chinogchog na larai à asu wi]s]np
[+T]

[na payaw [wi manogchogkan na larai à asu]s]np   NP Focus
[+T]

h. Adjective derivation

From an examination of NP structures, it is clear that all modifiers (not determiners) follow the noun they modify, and are preceded by *wi*. Thus these lend themselves to derivation from full sentences; i.e., they are themselves unreduced relative clauses, and in fact no non-reduced adjectival modification exists. Note the following sentences:

magkit na ain — 'the skirt is pretty'
pretty the skirt

na ain magkit — '<u>the skirt</u> is pretty'
the skirt pretty

In the second sentence here *na ain* has undergone focus-emphasis just as in the examples in the discussion above. Thus the following NP has the full clause parallel as indicated:

na ain wi magkit — 'the pretty skirt'
the skirt REL pretty

[na ain [magkit wi]s]np
[+T]

Application of the NP focus-emphasis rule will result in a surface structure identical to that of the NP.

It may be possible to derive NP modifiers which precede the noun from relative clauses too, supplemented by a movement rule, but I leave this question unanswered at present.

i. Modifier ordering

There is no information available on obligatory ordering of NP modifiers.

j. Modified NP phrase-structure rule

$$\mathrm{NP} \rightarrow \left\{ \begin{array}{l} \mathrm{NP} \quad \left\{ \begin{array}{l} \mathrm{S} \\ \mathrm{PP} \end{array} \right\} \\ \mathrm{Det} \quad (\mathrm{Dem}\ \underline{\mathrm{wi}})\ (\mathrm{Num}\ \underline{\mathrm{wi}})\ \mathrm{N} \end{array} \right\}$$

The NP may have a sentence or prepositional phrase following it; its internal structure consists of four possible elements: a determiner, a demonstrative construction, a number construction, and a noun. Only the determiner and noun are obligatory.

CHAPTER SEVEN

INTERROGATIVE PROCEDURES

The following is a proposal for the analysis of questions. It appears to be universally true that two types of questions are found, both of which I will treat in an introductory manner here, illustrating the discussion with reference to English.

a. Yes-no questions make a statement to the hearer and request a positive or negative response; make a list of sentences which seem to be questions of this type. E.g.:

   Will John come home?
   Is Mary a doctor?
   Has the horse been fed?
   Does Mary like oatmeal?
   Can John run fast?
   Will Bill Rodgers win again?
   Should I continue on with this project?

b. Compare these with clauses found in the clause procedures in Chapter Five above. State how these questions differ from non-interrogative clauses. E.g.:

   The auxiliary precedes the NP subject in yes-no questions, and the intonation lacks the final falling pitch which characterizes statements. Otherwise the structure is the same as for declarative statements.

c. Assume that the symbol Q is present in yes-no questions, absent in statements. Modify your sentence phrase-structure rule to allow for Q optionally, locating Q linearly at that point in the string which most closely shows its effect (initially in English, because it is the FIRST NP which is affected in the order change). E.g.:

   $S \rightarrow (Q)\ NP\ \ VP$

d. Now write whatever transformations are necessary to derive the data in (b) above from clause patterns discovered in Chapter Five, with Q present in the SD of the rule as part of the necessary environment. State in words what you expect the rule to do. E.g.:

Question Formation I (obligatory)

SD:	[Q	NP	Tns	Modal	X]s
	1	2	3	4	5
SC:	1+3+4	2	Ø	Ø	5

For yes-no questions, the subject NP and the constituent tense+modal are inverted in order (NB: this differs from the rule presented in most texts, but it is satisfactory for the data here if DO is considered to be a modal). The correct intonation will be produced by the phonological rules, which will interpret Q as requiring interrogative intonation.

e. The second type of question is information questions, which ask for information from the hearer which is more than simple YES or NO. Make a list of sentences which seem to be questions of this type. E.g.:

Who kissed John?
Who did Mary kiss?
Where did Mary kiss John?
When will Mary kiss John?
Why did Mary kiss John?
How should Mary kiss John?
What will Mary give to John?

f. Compare these questions with clauses found in Chapter Five above. It appears to be the case universally that (1) interrogative words occur in place of NPs and other structures, and (2) they commonly are moved out of the position in which they occur in statements, often to initial position in the sentence; occasionally a pronominal trace is left at the position from which the interrogative word has been moved (this is not true of English, but note the Angas examples below). This typical fronting of interrogative words perhaps reflects a common pattern of showing thematicity (see Chapter Eight below regarding topicalization).

g. Write a statement describing how information questions differ from non-interrogative clauses. E.g.:

The interrogative word occurs first in information questions, and the subject NP and the construction tense+modal are inverted in order unless the subject itself is the interrogative word. The intonation in these questions is the same as that of declarative statements.

h. Assume that interrogative words carry a lexical feature [+WH] in addition to those which they already carry. Develop lexical entries for all interrogative words found, e.g.:

$$\begin{bmatrix}\text{who}\\ +\text{N}\\ +[\_\_\_]\\ +\text{WH}\end{bmatrix}\quad\begin{bmatrix}\text{what}\\ +\text{N}\\ +[\_\_\_]\\ +\text{WH}\end{bmatrix}\qquad\begin{bmatrix}\text{when}\\ +\text{Adv}\\ +\text{time}\\ +\text{WH}\end{bmatrix}\qquad\begin{bmatrix}\text{where}\\ +\text{Adv}\\ +\text{loc}\\ +\text{WH}\end{bmatrix}$$

i. Write a rule (or more than one) to derive the data in (e) above from clause patterns discovered in Chapter Five above, with a constituent marked with the feature [+WH] as part of the SD for the rule. State in words what you expect the rule to do. E.g.:

Question Formation II (obligatory)

SD:	[X	[+WH]	Y]s
	1	2	3
SC:	2+1	Ø	3

Any constituent carrying the feature [+WH] is moved to initial position in the sentence.

Question Formation I (obligatory) [revised--must follow QFII]

SD:	$[\left\{\begin{matrix}\text{Q}\\ [+\text{WH}]\end{matrix}\right\}$	NP	Tns	Modal]s
	1	2	3	4
SC:	1+3+4	2	Ø	Ø

For questions, the subject NP and the constituent tense+ modal are inverted in order. This rule applies if Q is chosen in the phrase-structure rules (i.e., in yes-no questions), or if a constituent carrying the feature [+WH] is moved into initial position by QFII (i.e., in information questions). Thus QFI must follow QFII. This rule does not apply if it is the NP subject itself which carries the feature [+WH], as the rule indicates by the presence of NP preceding Tns.

j. It is frequently the case in language that interrogative words and relative pronouns are related phonologically, and in some cases a historical identity can be proven. Due to the fact that the two sets of morphemes often undergo a similar movement rule (as they do in English), it should be determined whether or not they can be handled by a single rule (in English they could if the feature [+rel] in Relative Fronting (see Chapter Six above) is replaced by [+WH], but then QFI would be inadequate because inversion does not apply in relative clauses. A different analysis may still make a correlation possible, but I do not pursue it here.).

The following illustrates application of these principles to some Angas data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected yes-no questions

mwa ne mus-a? they see cat-Q	'did they see the cat?'
mwa met ji-a? they fut come-Q	'will they come?'
ma bijim-a? sheep big Q	'is the sheep big?'
ma mwa mwa long mwa-a? sheep pl they animal pl Q	'are sheep animals?'
ma mwa n-limar-a? sheep pl in-farm Q	'are the sheep in the farm?'

b. Yes-no question formation

To form a yes-no question, the morpheme *-a* is suffixed to the final word of the sentence, and its characteristic falling tone occurs as the intonational correlate. No other changes occur.

c. Revised phrase-structure rule

$$S \rightarrow NP \quad (pro) \quad \left\{ \begin{array}{l} VP \\ PP \\ Adj \\ NP \end{array} \right\} \quad (Q)$$

d. Yes-no question transformation

No transformation applies in the derivation of yes-no questions. The symbol Q will be manifested by *-a* with falling tone in the lexicon.

e. Tentative list of suspected information questions

we ne mus-e? who see cat-Q	'who saw the cat?'
we Do ne mus-e? who emph see cat-Q	'who saw the cat?'
mwa ne me-e? they see what-Q	'what did they see?'
me Do mwa ne-e? what emph they see-Q	'what did they see?'
mwa met shikoDang-e? they go when Q	'when did they leave?'
shikoDang Do mwa met-e? when emph they go-Q	'when did they leave?'
mwa mar limar shi me-e? they farm farm with what-Q	'what do they farm with?'
me Do mwa mar limar shi shik-e? what emph they farm farm with it Q	'what do they farm with?'
mwa met nine-e? they go where-Q	'where did they go?'
nine Dang Do mwa met-e? where ???? emph they go-Q	'where did they go?'

g. Information question formation

In information questions, the question word may be fronted or left in its non-interrogative position. If it is fronted, it is moved to initial position, and the morpheme *Do* (*Dang Do* if the [+WH] word is *nine*) is inserted directly following it. In either case the interrogative morpheme *-e* is suffixed to the final word of the sentence, with its resulting mid-glide tonal effect. A pronominal trace is left if the word is moved from within a prepositional phrase.

h. Interrogative word lexical entries

$$\begin{array}{cccc} \text{we} & \text{me} & \text{shikoDang} & \text{nine} \\ \begin{bmatrix} +N \\ +[\underline{\quad}] \\ +WH \end{bmatrix} & \begin{bmatrix} +N \\ +[\underline{\quad}] \\ +WH \end{bmatrix} & \begin{bmatrix} +Adv \\ +time \\ +WH \end{bmatrix} & \begin{bmatrix} +Adv \\ +loc \\ +WH \end{bmatrix} \end{array}$$

i. Information question transformation

Question Formation I (optional)

$$\begin{array}{llcccl} \text{SD:} & [& X & \text{prep} & [+WH] & Y]_S \\ & & 1 & 2 & 3 & 4 \\ \\ \text{SC:} & & 3+\underline{Do}+1 & 2 & \begin{array}{c} 3 \\ \begin{bmatrix} -WH \\ +pro \end{bmatrix} \end{array} & 4 \end{array}$$

An interrogative word occurring within a prepositional phrase may optionally be fronted to initial position; if it is, a pronominal trace is left behind at the position from which it is moved.

Question Formation II (optional)

$$\begin{array}{llccl} \text{SD:} & [& X & [+WH] & Y]_S \\ & & 1 & 2 & 3 \\ \\ \text{SC:} & & 2+\underline{Do}+1 & \emptyset & 3 \end{array}$$

Condition: 2 is not within PP

An interrogative word may optionally be fronted to initial position if it is not within a prepositional phrase.

These rules should be combined if possible. In any sentence containing a morpheme carrying the feature [+WH] the Spell-Out rules will give the symbol Q the realization *-e* and attach it to the last morpheme in the sentence, with its accompanying mid-glide intonation. The Spell-Out rule for *Do* will give the form *Dang Do* in the event that the fronted [+WH] word is *nine*.

j. Interrogative/Relative coalescence

There is no apparent value in associating relative pronouns and interrogative words in Angas.

The following illustrates application of these principles to some Swahili data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected yes-no questions

Ø-kazi i-me-ku-isha? NC-work sub-asp-obj-finish	'is the work finished?'
je, Ø-kazi i-me-ku-isha? Q NC-work sub-asp-obj-finish	'is the work finished?'
wa-li-kaa karibu na Ø-ziwa? sub-asp-live near with NC-lake	'did they live near a lake?'
je, wa-li-kaa karibu na Ø-ziwa? Q sub-asp-live near with NC-lake	'did they live near a lake?'

b. Yes-no question formation

A yes-no question may be marked solely by intonation, or the entire sentence may be prefixed by the morpheme *je*.

c. Revised phrase-structure rule

$$S \rightarrow (Q) \quad NP \quad VP$$

d. Yes-no question transformation

No transformational rule is needed for yes-no questions. The symbol Q will optionally be manifested as either *je* or Ø in the lexicon (the significance of the difference remains to be determined), with subsequent intonation differences accounted for phonologically.

e. Tentative list of suspected information questions

u-me-mu-ona nani? sub-asp-obj-see WH	'whom did you see?'
a-na-taka nini? sub-asp-want WH	'what does he want?'
nani wa-toto ha-wa? WH NC-child dem-NC	'who are these children?'

e. (continued)

```
ni   nani   wa-toto  ha-wa?      'who are these children?'
Q     WH    NC-child dem-NC

wa-toto   ha-wa   ni   nani?     'who are these children?'
NC-child dem-NC Q      WH

wa-toto   ha-wa   nani?          'who are these children?'
NC-child dem-NC   WH

 wa-na-taka  Ø-taa  zi-pi?       'which lamps do you want?'
sub-asp-want NC-lamp NC-WH
```

g. Information question formation

A question word may replace an NP or part of an NP in a sentence, but there are no changes in word order (i.e., the WH word is not fronted). If the WH word occurs in a non-verbal sentence type, the morpheme *ni* may optionally be inserted into a position preceding it.

h. Interrogative word lexical entries

nani $\begin{bmatrix} +N \\ +[\_\_\_] \\ +WH \end{bmatrix}$ nini $\begin{bmatrix} +N \\ +[\_\_\_] \\ +WH \end{bmatrix}$ ha $\begin{bmatrix} +Dem \\ +WH \end{bmatrix}$ pi $\begin{bmatrix} +Det \\ +WH \end{bmatrix}$

i. Information question transformation

Ni-Insertion (optional)

SD:	[X	NP [+WH]	Y]s
	1	2	3
SC:	1	<u>ni</u>+2	3

Condition: 1 and 3 do not contain verb

In a non-verbal sentence, if one of the NPs is a question word, the interrogative morpheme *ni* may optionally be inserted as a left sister to it.

j. Interrogative/Relative coalescence

There is no apparent value in associating relative pronouns and interrogative words in Swahili.

The following illustrates application of these principles to some Kalinga data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Tentative list of suspected yes-no questions

chinogchog na larai na asu? 'did the boy chase the dog?'
chased the boy the dog

na asu chinogchog na larai? 'did the boy chase THE DOG?'
the dog chased the boy

na larai monogchog à asu? 'did THE BOY chase the dog?'
the boy chased the dog

inilan na fufai na asu? 'did the girl see the dog?'
saw the girl the dog

b. Yes-no question transformation

Yes-no questions in Kalinga are marked solely by intonation.

c. Revised phrase-structure rule (Q is placed in initial position arbitrarily here)

$$S \rightarrow (Q) \quad (Neg) \quad \left\{ \begin{array}{l} Adj \quad NP \\ V \quad NP \quad (NP) \quad (NP) \end{array} \right\}$$

d. Yes-no question transformation

No transformational rule is necessary for yes-no questions. The symbol Q will be interpreted by the phonological rules to produce the correct interrogative intonation.

e. Tentative list of suspected information questions

sinu na nasachut 'who is lazy?'
WH lazy

sinu na manadchadcharan 'who is walking?'
WH walking

sinu na manadchadcharan ta payaw 'who is walking to the field?'
WH walking to field

sinu na manogchog à asu ta payaw 'who is chasing the dog in the field?'
WH chasing dog in field

e. (continued)

sinu na chinogchog na larai ta payaw 'what is the boy chasing
WH chasing boy in field in the field?'

sinu na manogchogkan na larai à asu 'where is the boy chasing
WH chasing boy dog the dog?'

g. Information question formation

Interrogative words are obligatorily placed at the beginning of the sentence. They apparently are generated under the NP (or PP) node as in the corresponding declarative sentence, and then they undergo the focus-emphasis transformation as described in Chapter Five (and which will be formalized in Chapter Eight). I assume here that *sinu na* is the question word, although it is possible that *na* functions here as indicator of topic, thus suggesting a different structure and rules.

h. Interrogative word lexical entries

sinu na
$$\begin{bmatrix} +N \\ +[\_\_\_] \\ +WH \end{bmatrix}$$

There is only one interrogative word in Kalinga, used to refer to persons, places, and things.

i. Interrogative/Relative coalescence

There is no apparent value in associating relative pronouns and interrogative words in Kalinga.

CHAPTER EIGHT

TOPICALIZATION PROCEDURES

Frequently a given language will have several different orders of elements in the same constructions. The focus of this chapter is ordering variations within the clause. The approach here assumes that there is a 'neutral' or 'unmarked' ordering (comparable to 'elsewhere' in phonology), most likely one in which the deep structure and surface structure most closely match (i.e., one in which there is minimal skewing between the semantic and grammatical patterns). It is this neutral ordering which you should have described in your earlier analysis. Departures from this ordering often mark topicalization, or focus, or emphasis, or thematicity (to some extent those are different terms for the same thing).

The following illustrates application of analytical procedures to some English data.

a. List examples in which the order of elements at the clause level differs from that previously established in Chapter Five above. Focus first on instances in which different items occur in initial or final position (other orderings need to be discussed also, but they will not be treated here). E.g.:

    Mary sent the flowers to John
    The flowers were sent to John by Mary
    John was sent the flowers by Mary

b. Compare these sentences with those discussed in Chapter Five above. Describe how the orderings differ here, treating each type of difference separately. E.g.:

    The direct object may occur initially. If it does, the subject occurs in final position, preceded by *by*, and the verb occurs in its 'passive' form.

    The indirect object may occur in initial position. If it does, the subject occurs in final position, preceded by *by*, and the verb occurs in its 'passive' form.

   Note that in some languages a pronominal trace is left behind when a constituent is moved; this is not true of English (at least the major dialect), but note the Angas examples below.

c. Assume that elements moved into initial position take on a feature of thematicity (here represented by [+T]); this is in accordance with the universal tendency for thematic elements to occur earlier in the string than non-thematic elements, although the facts for each individual language must be investigated (and, of course, the identification of elements carrying the [+T] feature revised as necessary). The semantic rules (see Chapters Nine and Ten) will interpret the [+T]-designated element appropriately in its discourse context. Write rules to perform the tasks appropriately. E.g.:

Object Fronting (optional)

SD:	[X	NP	V	NP	Y]s
	1	2	3	4	5
SC:	4+1 [+T]	Ø	be+en+3	Ø	5+by+2

An NP direct object may be moved into pre-verbal position in a sentence. If it is, it takes on a feature [+T] to be interpreted in the semantic component as designating thematicity; the sequence *be+en* is inserted as a left sister of the verb; the original NP subject is attached as a right sister to an inserted *by*, which in turn is attached as a right sister to the final constituent of the sentence.

This is a simple statement of the passive rule, inadequate as it stands, but useful as an illustration as to methodology.

Indirect Object Fronting (optional)

SD:	[X	NP	V	X	{to / for}	NP	Y]s
	1	2	3	4	5	6	7
SC:	6+1	Ø	be+en+3	4	Ø	Ø	7+by+2

An NP indirect object may be moved into pre-verbal position in a sentence. If it is, it takes on a feature [+T] to be interpreted in the semantic component as designating thematicity; the sequence *be+en* is inserted as a left sister of the verb; the original NP subject is attached as a sister to an inserted *by*, which in turn is attached as a right sister to the final constituent of the sentence; the preposition preceding the fronted NP is deleted.

In an early stage of analysis a rule such as the preceding may be proposed to capture the facts. Further research will suggest that the forms in question are derived by a rule of Dative Movement, followed by Passive, but that analysis is not pursued here.

d. Combine whatever rules you have formulated, if possible. E.g.:

NP Fronting (optional)

SD:	[X	NP	V	Y	$\left(\begin{Bmatrix}\text{to}\\\text{for}\end{Bmatrix}\right)$	NP	Z]s
	1	2	3	4	5	6	7
SC:	6+1 [+T]	Ø	$\underline{\text{be+en}}$+3	4	Ø	Ø	7+$\underline{\text{by}}$+2

An NP which is not in subject position may be moved into pre-verbal position in a sentence. If it is, it takes on a feature [+T] to be interpreted in the semantic component as designating thematicity; the sequence *be+en* is inserted as a left sister of the verb; the original NP subject is attached as a right sister to an inserted *by*, which in turn is attached as a right sister to the final constituent of the sentence; if a preposition preceded the fronted NP, it is deleted.

e. Compare this rule/rules with other fronting rules you have established (e.g., question rules, relative clause rules), and combine these together if possible.

No rule combination is illuminating in English given the present state of the analysis.

f. List other, more complex types of fronting for later treatment (these will not be dealt with here, but the principles of analysis are the same). E.g.:

John is the one Mary sent the flowers to
Flowers are what Mary sent to John
What Mary sent to John was the flowers

The following illustrates application of these principles to some Angas data (the letters refer to the same sections discussed in the procedure outlined above for English).

a. Examples with differing order of constituents on the clause level

mwa pin shwe m-birng mwa — 'they gave corn to the horses'
they give corn to-horse pl

shwe Do mwa pin m-birng mwa — 'they gave CORN to the horses'
corn emph they give to-horse pl

birng mwa Do mwa pin shwe mwa — 'they gave corn to THE HORSES'
horse pl emph they give corn to-them

mwa Den shwe ka po ki lu — 'they put corn at the hut's doc
they place corn at mouth of hut

shwe Do mwa Den ka po ki lu — 'they put CORN at the hut's door'
corn emph they place at mouth of hut

lu Do mwa Den shwe ka po ki-ni — 'they put corn at the HUT'S door'
hut emph they place corn at mouth of-it

mwa Den shwe n-lu — 'they put corn in the hut'
they place corn in-hut

shwe Do mwa Den n-lu — 'they put CORN in the hut'
corn emph they place in-hut

lu Do mwa Den shwe n-Din ki-ni — 'they put corn in THE HUT'
hut emph they place corn in-inside of-it

). Description of variations

The NP direct object may occur initially. If it does, it is followed directly by the emphasis marker *Do*; there is no pronominal trace left behind.

The indirect object may occur initially. If it does, the NP alone is fronted, and it is followed directly by the emphasis marker *Do*; the indirect object marker is left behind and attached to a pronominal trace of the fronted NP.

The object of a possessive phrase may occur initially. If it does, the NP alone is fronted, and it is followed directly by the emphasis marker *Do*; the possessive marker is left behind and attached to a pronominal trace of the fronted NP.

The object of a preposition may occur initially. If it does, the NP alone is fronted, and it is followed directly by the emphasis marker *Do*; the preposition is left behind and attached to an inserted morpheme *Din* (at least if the preposition is *n-*), which is followed by a possessive phrase consisting of the possessive marker and a pronominal trace of the fronted NP. Due to its complexity, this type of fronting is not analyzed here, but left for future analysis. It appears to be a unique construction.

c. Tentative statement of rules

Object Fronting (optional)

```
SD:  [        X    V    Y    NP    Z]s
              1    2    3    4     5

SC:    4 +Do+1     2    3    Ø     5
     [+T]
```

An NP direct object may optionally be moved into initial position. If it is, it takes on the feature [+T] to be read by the semantic rules as designating thematicity, and the marker *Do* is inserted as a right sister of it.

Indirect Object Fronting (optional)

```
SD:  [      X    m     NP    Y]s
            1    2     3     4

SC:  3 +Do+1     2     3     4
    [+T]             [+pro]
```

An NP indirect object may optionally be moved into initial position. If it is, it takes on the feature [+T] to be read by the semantic rules as designating thematicity; the morpheme *Do* is inserted as a right sister of it; and a pronominal trace is left behind at the point from which the NP was moved (its form will be accounted for in the lexicon).

Possessive Phrase Fronting (optional)

```
SD:  [        X    ki    NP    Y]s
              1    2     3     4

SC:    3 +Do+1     2     3     4
     [+T]              [+pro]
```

An NP which functions as the object of the possessive marker *ki* may optionally be moved into initial position. If it is, it takes on the feature [+T] to be read by the semantic rules as designating thematicity; the morpheme *Do* is inserted as a right sister of it; and a pronominal trace is left behind at the point from which the NP was moved (its form will be accounted for in the lexicon).

d. Combination of rules

Prepositional Object Fronting (optional)

$$\text{SD:}\quad [\quad \underset{1}{X} \quad \underset{2}{\begin{Bmatrix} mi \\ \underline{ki} \end{Bmatrix}} \quad \underset{3}{NP} \quad \underset{4}{Y]s}$$

$$\text{SC:}\quad \underset{[+T]}{3} + \underline{Do} + 1 \quad 2 \quad \underset{[+pro]}{3} \quad 4$$

This rule replaces Indirect Object Fronting and Possessive Phrase Fronting, combining them into a single rule.

e. Rule comparison

No further combining of rules is possible at present.

f. Other types of fronting

The fronting of prepositional objects illustrated and discussed above remain to be treated.

The following illustrates application of these principles to some Swahili data (the letters refer to the same sections discussed in the procedure outlined above for English).

b. Examples with different order of constituents on the clause level (here pasv designates a 'passive' morpheme on the verb)

wa-zee wa-li-nunua Ø-shati
NC-parent sub-asp-buy NC-shirt
'the parents bought a shirt'

Ø-shati li-li-nunu-liwa na wa-zee
NC-shirt sub-asp-buy-pasv by NC-parent
'a shirt was bought by the parents'

b. (continued)

wa-zee wa-li-m-nunulia Ø-shati m-toto
NC-parent sub=asp=obj=buy-for NC-shirt NC-child
'the parents bought a shirt for the child'

m-toto a-li-nunu-liwa Ø-shati na wa-zee
NC-child sub-asp-buy-pasv NC-shirt by NC-parent
'the child was bought a shirt by the parents'

Juma a-li-wa-pelea wa-zee m-toto m-bwa
sub=asp=obj=give-to NC-parent NC-child NC-dog
'Juma gave the dog to the child for the parents'

wa-zee wa-li-pel-ewa m-toto m-bwa na Juma
NC-parent sub-asp-give-pasv NC-child NC-dog by
'for the parents the dog was given to the child by Juma'

m-chawi a-li-wa-tupia wa-toto ma-jabali
NC-wizard sub=asp=obj=throw-at NC-child NC-rock
'the wizard threw a rock at the children'

wa-toto wa-li-tup-iwa ma-jabali na m-chawi
NC-child sub-asp-throw-pasv NC-rock by NC-wizard
'the children were thrown a rock at by the wizard'

b. Description of variation

A direct object NP may be fronted. If it is, subject agreement with it is shown in the verb; the verb is in its passive form; and the original subject is moved into final position and preceded by *na*.

An indirect object NP may be fronted. If it is, subject agreement with it is shown in the verb; the verb is in its passive form; and the original subject is moved into final position and preceded by *na*.

c. Tentative statement of rules

Object Fronting (optional)

SD:	[X	NP	asp	(obj)	V	NP	Y]s
	1	2	3	4	5	6	7
SC:	6 +1 [+T]	Ø	3	Ø	5+pasv	Ø	7+<u>na</u>+2

> An NP indirect or direct object may be fronted to initial position in the sentence. If it is, it is assigned the feature [+T] to be interpreted by the semantic rules as designating thematicity; any object marker in the verb is deleted, and the passive morpheme is added to the verb (its exact form will be accounted for in the lexicon); the original subject is sister-adjoined to an inserted morpheme *na*, which is sister-adjoined to the final constituent of the sentence.

This rule as stated must be ordered after Object Agreement but before Subject Agreement. It may be the case that a rule comparable to Dative Movement is involved when the object is indirect.

d. Combined rules

The rules are stated above in their combined form.

e. Rule comparison

No further combining of rules is possible at present.

f. Other types of fronting

There are no further types to deal with at present.

The following illustrates application of these principles to some Kalinga data (the letters refer to the same section discussed in the procedure outlined above for English).

a. Examples with differing order of constituents on the clause level

manogchog na larai à asu ta payaw
chased the boy the dog in field
'THE BOY chased the dog in the field'

chinogchog na larai na asu ta payaw
chased the boy the dog in field
'the boy chased THE DOG in the field'

manogchogkan na larai na payaw à asu
chased the boy the field the dog
'the boy chased the dog IN THE FIELD'

b. Description of variations

(In the above examples it is assumed that *larai* 'boy' is in the agentive case, *asu* 'dog' is in the patient case, and *payaw* 'field' is in the locative case. Kalinga marks focus by simultaneously marking the verb for the case of the focused item, and marking the determiner (which functions as the case indicator in the NP) of the focused item itself. The agent case marker and the focus case marker are identical.)

An NP patient may be focused. If it is, the verb is marked for patient focus; the original subject NP is marked as being out of focus; the patient NP is marked as being in focus. The focused NP may optionally be fronted into initial position.

A locative PP may be focused. If it is, the verb is marked for locative focus; the original subject NP is marked as being out of focus; the locative PP is marked as being in focus and is moved into a position directly following the subject NP. It may optionally be fronted into initial position.

c. Tentative statement of rules

Patient Focus (optional)

```
SD:   [     V            NP             NP       X]s
       [+Ag-foc]   [+foc-case]   [+pat-case]
           1             2              3        4

SC:        1             2              3        4
       [+Pat-foc]  [+agt-case]   [+foc-case]
```

An NP patient may be focused. If it is, the verb is marked for patient focus; the original subject NP is changed from focus-case to agent-case; the patient is changed from patient-case to focus-case.

Locative Focus (optional)

```
SD:   [     V            NP           X       PP      ]s
       [+Ag-foc]   [+foc-case]           [+loc-case]
           1             2            3        4

SC:        1          2   +   4       3        Ø
       [+loc-foc]  [+agt ][+foc ]
                   [case ][case ]
```

A locative PP may be focused. If it is, the verb is marked for locative focus; the original subject NP is changed from focus-case to agent-case; the locative is changed from locative-case to focus-case and is sister-adjoined to the original subject NP.

NP/PP Fronting (optional)

$$
\begin{array}{llllll}
\text{SD:} & [& V & X & \begin{Bmatrix} NP \\ PP \end{Bmatrix} \begin{bmatrix} +\text{foc} \\ \text{case} \end{bmatrix} & Y]_S \\
 & & 1 & 2 & 3 & 4 \\
 & & & & & \\
\text{SC:} & & 3+1 & 2 & \emptyset & 4
\end{array}
$$

An NP or PP which is marked for focus may optionally be fronted into initial position in the sentence.

d. Combined rules

There is no obvious motivation for combining the rules shown above.

e. Rule comparison

No further combining of rules is possible at present.

f. Other types of fronting

There are no further types to deal with at present.

CHAPTER NINE

SEMANTICS

This chapter and the next are closely related, and in fact the separation between them here is for ease of presentation only. In this chapter I will discuss some matters having to do with semantics which seem best considered in terms of sentence structure; in Chapter Ten I will discuss matters of semantics which seem best considered in terms of structures larger than the sentence. Of course, some of the facts to be discussed are relevant at both levels and thus will be treated in both chapters, and in fact the entire discussion is all of a piece in that it all deals with semantics one way or another.

In this chapter, then, I will provide an introduction to the sorts of semantic information which seem best treated at the level of the sentence; it should be emphasized that I make no attempt to be exhaustive here, my goal being to illustrate the sorts of phenomena which are found, and their possible treatment. It should be emphasized also that the semantics I am dealing with here is STRUCTURAL, not lexical. That is, I will be discussing only that semantic information which is carried by grammatical structures and morphemes which have a grammatical as opposed to a lexical function. Note that I ignore numerous theoretical controversies here. Virtually every topic I will discuss is part of a larger topic of theoretical concern and interest, but my intention is simply to present at least one way to handle and describe the material which must be dealt with. I do not claim even that the proposals I make are in fact the best way to handle the material at hand, only that they are acceptable from at least one theoretical point of view. Hopefully the discussion will be explicit and detailed enough so that if an alternative theoretical point of view is preferred, the reader will have little difficulty in proposing an alternative interpretation of the same facts which is more compatible with his or her theoretical preference.

In addition, I must point out that in these two chapters my emphasis is on presentation, not discovery. I assume that the morphemes and structures have been identified as to their function and the position they hold within the syntactic system. My goal here is simply to provide a means by which those structures which have semantic correlates may be represented in a manner consistent with the sort of syntactic presentation developed in previous chapters.

The orientation I pursue here is basically that of the so-called Extended Standard Theory as presented in Chomsky (1971) and Jackendoff

(1972) (see Chapter Three for a brief discussion). The most significant characteristic of this orientation is that the semantic rules interpret information from both deep structure and non-deep structures; this is directly in contrast with the Standard Theory (Chomsky 1965), in which all semantic interpretation was assumed to apply at the deep structure level. It is significant, however, that the sorts of information which can be interpreted from non-deep structure in this orientation is in fact heavily restricted, so that the bulk of the information still comes from deep structure. The significance of the theoretical position here is that some of the semantic rules to be formulated in this chapter apply at the deep structure level, while others apply at surface structure, or at levels in between.

1. Introduction. By way of introduction, I will briefly discuss the sorts of information which the Extended Standard Theory claims are to be read off of structures other than deep structure (the following is from Chomsky (1971); see also Chapter Three).

a. Focus and presupposition. Note the following sentence:

Is it JOHN who writes poetry?

What is required here is that *John* be interpreted as being in focus, and that the existence of someone who writes poetry is presupposed. There is an association between focus and intonation contour center in surface structure, but there is no simple way to identify the focused element with a constituent in deep structure because there may be no clear correspondence. For example, in the sentence:

Is John certain to WIN?

in one reading *certain to win* is in focus but the deep structure is

[[John win] is certain]

in which *certain to win* is not a constituent. In addition, the same deep structure may have different focus. Note the following sentences, which have the same deep structure but different focus:

Did John give the book to BILL?
Did John give Bill the BOOK?

Because of this lack of precise mapping between deep structure and focus and presupposition, the proposal in EST is that such information be read off the surface, taking account of phonology as necessary. In this fieldguide I deal briefly with some matters of focus in 4 below, reading it off the surface but providing that the interpretation be based upon the presence of markers produced by transformational rules. I make no attempt to account here for presupposition.

b. Scope of negation and quantifiers. This matter is discussed in sufficient detail in 5 below.

c. Properties of modal auxiliaries. There is variation in the interpretation of some auxiliaries in English in statements, questions, and negative sentences. For example, in the first sentence below *shall* indicates tense, but in the second it indicates obligation:

I shall go downtown
Shall I go downtown?

Further, in the first sentence below *will* indicates a prediction on the part of the speaker, while in the second it indicates either prediction or refusal:

John will go downtown
John won't go downtown

Because of such facts it has been proposed that the semantic interpretation of modals is based upon surface structure, rather than deep structure. I make no attempt to treat such matters in this fieldguide.

d. Anaphoric processes. There is discussion regarding whether pronominalization should be treated as a transformation, or whether pronouns should be inserted lexically and interpreted appropriately. The assumption commonly is that pronouns are lexical entries, not the result of transformations, and so semantic rules must function so as to interpret their reference. It has been argued that such rules best apply at surface structure, rather than deep structure, because in at least some cases they must be sensitive to stress placement. Note the following:

John hit Bill and then GEORGE hit him
John hit Bill and then George hit HIM

In the first Bill gets hit twice, while in the second Bill and John each get hit once. While it is unclear how the stress comes to be placed where it is, in this fieldguide it is assumed that the reference of pronouns can be read off the surface structure as well as off the deep structure, and since the former appears to have some arguments in its favor it is accepted here (Jackendoff proposes that semantic rules of coreference apply at the end of each cycle, but for the sorts of patterns discussed here application at surface structure is all that is required). For examples of the sorts of rules which are necessary, see 3 below.

e. Miscellaneous. A few miscellaneous facts may be mentioned in conclusion. The English perfect carries with it certain presuppositions which vary according to the final surface structure. Thus the semantic rules which take account of presupposition must read the surface structure. For example, note the following:

John has lived in Princeton	=John is alive
Einstein lived in Princeton	=Einstein is dead
Einstein has visited Princeton	=Einstein is alive
Princeton has been visited by Einstein	non-committal
Einstein has taught me physics	=Einstein is alive
I have been taught by Einstein	non-committal
Marco Polo has climbed Everest	=Polo is alive
Marco Polo and Hilary have climbed Everest	non-committal

In addition, presuppositions involved in the following must be read off the surface as well, because they are a result of the interaction between conjunctions, tense, and placement of constituents:

John is tall for a Watusi	=John is Watusi, Watusi generally not tall
John would be tall for a Watusi	=John not Watusi, Watusi generally not tall
John is tall even for a Watusi	=John is Watusi, Watusi generally tall, John taller than expected
Even John is tall for a Watusi	=John is Watusi, Watusi generally not tall, John is short

I make no attempt to treat such matters in this fieldguide.

2. Noun Phrase Functions. Chomsky (1965 and elsewhere) has suggested that several semantic relations can be described on universal grounds and thus need not be included in a synchronic grammar of any specific language. Thus he claimed that noun phrases can be identified as to their function with reference to the nodes that immediately dominate them; the subject NP is that NP which is dominated directly by S, the direct object NP is that NP dominated directly by VP, and the indirect object NP is one of those NPs dominated directly by PP (at least in English). It should be clear that the functions of these NPs can differ depending on the level of structure which is under investiga-

tion, so that a deep structure subject is that NP dominated directly by S in deep structure, while surface structure subject (which commonly calls for agreement on the verb in English) is that NP which is dominated directly by S in surface structure. Thus in both sentences below *John* is deep structure subject and *Bill* is deep structure object, but in (1) *John* is also surface structure subject while in (2) *Bill* is surface structure subject:

(1) John saw Bill at the store
(2) Bill was seen at the store by John

Thus, to the extent that Chomsky's claim as to universality is true, he has rightly argued repeatedly in the past that it is unnecessary to state explicitly the function that each NP is serving, that specific function being determined unambiguously by the universal rules of interpretation.

In actuality, the principles Chomsky proposed are in fact widely applicable. The only genuine exceptions are those languages in which the verb and direct object are not in sequence, which amounts to being those few languages which have as their basic word order the order verb-subject-object. Obviously, such a language cannot be described as having a VP node which dominates both V and the object NP, at least not without ignoring the basic ordering which does in fact occur.

It would seem to be the case that such languages do not serve to invalidate the usefulness of Chomsky's proposals, however. On the one hand, they are relatively rare, and they all exhibit (strikingly) alternate orderings in which the verb and object NP are in fact contiguous. And on the other hand, a language-specific rule can be written for each of them to interpret the NP functions appropriately in any case, with the general rules of interpretation applying by default to all languages which have no such specific rules. This language-specific approach neatly points out the rarity of languages of this type, and by requiring a specific rule their rarity is identified in terms of a traditional notion of markedness, much as a language with phonemic clicks and laryngealized vowels would require unusual rules and would thus be identified as being heavily marked because of its unusual nature when compared with other languages.

Having said that, however, the position I take here is that, even though the universal proposals seem to be widely applicable, for clarity of presentation and understanding in fieldwork it is advisable to state explicitly even these common semantic facts. For English, and of course most other languages also because of the universal nature of the structures, therefore, rules such as the following can be stated:

(3) SR: The NP which is dominated directly by S in deep structure is deep structure subject.

SR: The NP which is dominated directly by VP in deep structure is deep structure direct object.

SR: The NP which is preceded by *to* or *for* and dominated directly by PP is deep structure indirect object.

Now, suppose instead that the language being described is one of the unusual VSO type; in such a case the comparable rules would be as follows:

(4) SR: The NP which directly follows V in deep structure is deep structure subject.

SR: The NP which directly follows the sequence V-NP in deep structure is deep structure direct object.

Depending upon the specific facts of the language in question, the deep structure indirect object can be specified appropriately in a parallel manner.

3. Pronominal Reference. Pronominal reference is one of those areas of analysis which has extensive theoretical repercussions. My position here is that pronouns may be inserted freely into the phrase-structure string, and that they are not in fact produced by any transformational rules of pronominalization. This is in accord with the Extended Standard Theory approach (see Chapter Three), but I avoid any discussion of a theoretical nature here.

Given such a theoretical orientation, then, the problem for the semantic rules is to interpret the referents of the pronominal forms. My discussion here will relate to English, although it is assumed that there will be a large extent of application to other languages (perhaps nearly universally). The analyst should investigate the facts of each language specifically, however, and write appropriate rules along the lines of the following. The discussion here is based upon the work of Jackendoff (Jackendoff 1972), although it reflects my own interpretation of his proposals (see also Chapter Three).

First, note the following sentences, which exhibit instances of reflexive pronouns:

(5) John saw himself in the mirror
Mary dealt herself a great hand
The nuclear power advocates contradicted themselves

On the basis of such facts, we can propose for English a semantic rule like the following:

(6) SR: NP1 is [+coref] with NP2 if NP1 precedes NP2 and NP2 is [+reflexive] and agrees with NP1 in gender and number.

Such a rule applies to the data in (5) and correctly interprets the pairs *John* and *himself*, *Mary* and *herself*, and *the nuclear power advocates* and *themselves* as being coreferential. It is assumed that sentences like those in (7), in which a reflexive pronoun occurs which is not in agreement with an NP earlier in the sentence, will be identified as being deviant by virtue of the fact that no semantic rule applies to them and thus no interpretation is possible:

(7) John saw themselves in the mirror
The nuclear power advocates dealt herself a great hand
Mary contradicted himself

Further, reflexive pronouns are assumed to carry lexical features which allow their insertion only in non-subject position so as to constrain their distribution appropriately.

Now let us turn our attention to sentences like those in (8), in which non-reflexive pronominal forms occur:

(8) John saw him in the mirror
Mary dealt her a great hand
The nuclear power advocates contradicted them

In such a case, the NP subject cannot refer to the same referent as the pronoun does. Thus a rule like the following is necessary (clearly such a construction has its source in text structure, with the pronominal form referring to an NP which is identified in a preceding context; see Chapter Ten for discussion):

(9) SR: In a simple sentence, NP1 is [-coref] with NP2 if NP1 precedes NP2 and NP2 is [+pro, -reflexive].

There are, however, more complicated cases than these, specifically structures in which sentence embedding occurs. Note the data given in (10):

(10) John thought that he was the greatest
John asked Mary to kiss him
John was aware of Mary's watching him

Here in each case we have precisely the same pattern, viz. an NP subject and pronoun which agree in person and number, with the pronoun following the noun. In addition, in each case the pronoun can be interpreted as referring either to the NP subject, or to another referent (not in the immediate context but present in the larger context). Note that these sentences are thus different from the following:

(11) John thought that she was the greatest
John asked Bill to kiss her
John was aware of Mary's watching her

In the sentences of (11) the pronoun must refer to a referent other than the subject, because there is no gender agreement. Thus a rule like the following can be proposed:

(12) SR: NP1 is [-coref] with NP2 if NP1 precedes NP2 and NP2 is a pronoun but not of the same gender as NP1.

But now in relation to the data in (10), what can be said? The best proposal seems to be that the pronoun in such cases is ambiguous (reflecting the ambiguity which is actually present in the speech-act context), and so an OPTIONAL semantic rule can be proposed:

(13) SR: NP1 is [+coref] with NP2 if NP2 follows NP1 and carries the same features for gender and number.

It is assumed that if this rule fails to apply, a further semantic rule will apply to identify the referent (see Chapter 10 for a proposal for such a rule).

Now let us notice a further set of data:

(14) John left town after he robbed the bank
After John robbed the bank he left town
After he robbed the bank John left town

(15) He left town after John robbed the bank

Note that the sentences in (14) differ in interpretation from that in (15); in (14) the pronoun may refer either to John or to some other masculine referent in the context, but in (15) the pronoun cannot refer to John. This is a result of the fact that in (14) *John* either precedes the pronoun or is a structure in which it COMMANDS the pronoun. Essentially, the command relationship is one in which the NP in question is in a structure which in some way dominates the structure the pronoun occurs in (see Langacker (1966) for details). Thus in the third sentence in (14), even though *John* does not precede the pronoun, the pronoun occurs in a clause (introduced by *after*) which is subordinate to the clause in which *John* occurs. But note that this is in contrast with the pattern in (15); in (15) *John* does not precede the pronoun, and the pronoun occurs in a structure which the structure containing *John* is subordinate to. On the basis of such facts it has been proposed that the facts of interpretation of reference in such sentences can be defined in terms of both a precede and a command relationship as follows:

(16) SR: NP1 is [+coref] with NP2 if NP1 either precedes NP2 or commands NP2 (or both), and NP2 is [+pro] and carries the same features for gender and number.

(16) is an optional rule and replaces (13) given above. It has been suggested that the command relation is of universal validity, but many more languages need to be investigated before the facts can be ascertained with assurance.

Finally, one other sort of construction must be treated here, namely those sentences in which an NP has been deleted (probably by a rule like Equi NP Deletion). Note the following:

(17) John sat down and watched TV
Mary grabbed her briefcase and headed for work
Henry sat down, slipped off his shoes, and closed his eyes

(18) John wanted to watch TV
Mary decided to head for work
Henry prepared to read the paper

In both (17) and (18) the pattern is the same--one NP subject occurs, but it is subject to two or more verbs. Thus *John* is subject of both *sat down* and *watched*, etc. This is a common pattern in languages of the world (the absence of the NP in the complement as in (18) is less common). I assume here (following EST) that a dummy symbol Δ occurs in the position which lacks a surface NP (Δ has no phonological realization). Then rules like (16) above apply to interpret the referent of Δ as for other pronominal forms. Note that Δ carries the features [+pro, -reflexive] and lacks any specification for gender and number, thus allowing it to be interpreted as non-contrastive with the features of other NPs and interpretable as coreferential with them (alternatively the rule could be revised to allow for specific interpretation for Δ). The coreferential rule is obligatory for Δ, not optional as for true pronouns. Thus the sentence

John sat down and watched TV

is derived from

John sat down and Δ watched TV.

And note by comparison that in a sentence like

John sat down and he watched TV

HE is a lexical pronoun which must be interpreted also by the rules of coreference.

Jackendoff proposed developing a Table of Coreference as the rules are applied, identifying each pair of NPs as being either [+coref] or [-coref]. I do not do that here, but it would be a simple matter to do so using the sorts of rules proposed above.

Just a word regarding discovery procedures. It would seem to be the case that the best strategy here is to collect various examples of pronoun distribution, and ask a native speaker of the language to identify the referents. Thus for the sentence *Mary saw herself* the analyst could ask "Who did Mary see?" The reply "Mary" would, of course, confirm the validity of the semantic rule proposed in (6) above. (Possibly in this case "herself" would be the reply, calling for further questioning on the part of the analyst as to the referent, perhaps by setting up the context in more detail.) In addition, it would be expected regarding the first sentence in (14) that if the native speaker were asked "Who robbed the bank?" either "John" or someone else mentioned in the larger context would be the reply. And for the sentence in (15) the question "Who left town?" would elicit a reply referring only to someone other than John.

4. Topicalization. In the discussion in Chapter Eight, it was suggested that various transformations (specifically those that move constituents toward the front of the sentence) have as their function that of topicalizing the constituent so fronted. Languages differ as to how they mark topicalized elements, but assuming that fronting is the method used by the language in question, our analysis will hold. Note that this approach calls for the interpretation of the topic to be read from surface structure, not deep structure.

That being the case, it was the practice in Chapter Eight to have the transformation which moved the constituent also add to the fronted constituent a feature [+T]; I noted there that this feature would have to be interpreted by the semantic rules, which is what I turn to now.

The main data we looked at for English was the results of the passive transformation, either before or after dative movement. Thus, we have sentences like the following:

(19) Mary gave flowers to John
(20) Flowers were given to John by Mary
(21) Mary gave John flowers
(22) John was given flowers by Mary

That is, (19) and (20) differ in the sense that the deep structure subject is topic in (19), while the deep structure direct object is topic in (20). (19) and (21) differ in that (21) shows the results of dative movement; it is unclear just what significance dative movement has as regards topicalization, but the important thing for the discussion here is that (21) and (22) differ in a way parallel to the difference between (19) and (20).

Now, the treatment proposed in Chapter Eight is to have rules such as passive add to the fronted NP the feature [+T]. What is needed now is a semantic rule to interpret the significance of the [+T] feature. We may handle this by a rule such as the following:

(23) SR: An NP which carries the feature [+T] is the topic for the sentence.

This rule will cause *flowers* in (20) and *John* in (22) to be interpreted as topics appropriately. But now, what is to be interpreted as topic in (19) and (21)? Clearly, it is to be the subject NP, in fact that NP which is both deep structure and surface structure subject. To interpret such NPs as topic, a default case can be utilized, to be applied in the event that there is no [+T] NP and thus (23) does not apply. We may tentatively formulate such a rule as follows:

(24) SR: If there is no NP carrying the feature [+T], the subject NP is the topic.

In the case of English, assuming that my analysis is correct (which it may or may not be, but in any case is satisfactory for illustrative purposes), the fact of the matter is that English interprets the first NP as topic for the sentence, whether it got into that position by movement, or simply because it is deep structure subject and thus ends up in initial position simply because no other choice is made. This being the case, it may be more accurate to say of English that the following rule is operative instead of (23) and (24) above:

(25) SR: The NP in initial position in the surface structure is the topic for the sentence.

In such a case, of course, it is no longer necessary for the transformations which move NPs into initial position to add the feature [+T] to the fronted NP, because if they end up in initial position they will be interpreted as topic in any case.

Suppose, however, a language in which topicalization is shown not by fronting, but by some sort of marking via a topicalization particle. In such a case, the semantic rule of interpretation would be something like the following:

(26) SR: The NP which is associated with the topicalization particle X is the topic for the sentence.

Now we notice something of particular interest. Note that while (25) and (26) are maximally simple as regards the specific language in question, they can both be treated as universally interpretable if the [+T] notation proposed earlier is utilized. That is, for English the movement rules add the feature [+T] appropriately, and for the language using particles to mark topic the rule inserting the particle also can be considered to add the feature [+T] to the NP occurring with the particle. Then a single rule of semantic interpretation will handle both cases, viz. the rule stated above in (23). Then rule (24) can function as the default case for both languages also (assuming that in the particle-marking language initial position is topic as the default case), so that the description can be treated as being solely dependent upon universal principles.

For now, I assume that an approach utilizing a specific statement of transformations inserting [+T] and specific rules of interpretation is to be preferred, if only for the purposes of explicit understanding on the part of the analyst. I return to the general topic of topicalization in Chapter Ten, when I look at it from the point of view of text structure.

5. Quantifiers. The final topic treated in this section has to do with the scope of negatives and quantifiers, another semantic fact which seems best to be treated in terms of surface structure.

It is apparent that the English passive rule has an effect on the scope of negatives and quantifiers. Note the following active-passive pairs of sentences:

(27) Many arrows hit the target
The target was hit by many arrows

(28) The arrow did not hit the target
The target was not hit by the arrow
(29) Many arrows did not hit the target
The target was not hit by many arrows

The data in (27) shows that the passive transformation does not change meaning if there is a quantifier present, although it does of course affect the interpretation of the topic of the sentence; the data in (28) shows that the passive transformation does not change meaning if there is a negative present but a quantifier does not occur, although of course again the topic differs in the active and passive sentences.

But note that the data in (29) is different in the effect of the passive transformation which it illustrates. That is, the active form is a true statement in two cases: 1) if many arrows are shot, and only a few hit the target, and 2) if many arrows are shot and many hit the target (but a large number also miss the target). By contrast, the passive sentence is a true statement only in the first sort of case, viz. that only a few arrows hit the target. Thus, when both a negative and a quantifier occur in the same sentence, it is possible that application of the passive transformation may have an effect on the interpretation of the sentence affected.

In English, this is a result of the fact that in the active and passive sentences the negative and quantifier differ in order. Thus in the active form the quantifier precedes the negative, while in the passive form the negative precedes the quantifier (because of the negative placement transformation the negative in English has only a single possible position in which it can occur, with this result). Naturally, if it is not the case that both a negative and a quantifier are involved (as in (27) and (28)), there is no problem. But the effect of the passive in cases like (29) requires a rule of surface interpretation of the scope of negatives and quantifiers:

(30) SR: If both a negative and a quantifier occur in the same sentence, the one which occurs earlier in the string has the wider scope.

The relevance of this principle to languages other than English is not yet clear; most languages seem to position the negative marker either in sentence-initial or -final position, so that it would not be applicable. Should it be the case that comparable patterns are found, however, a rule like that in (30) may be used to account for it.

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CHAPTER TEN

TEXT SEMANTICS

In this chapter I will discuss briefly some of the sorts of semantic information which have as their domain structures larger than the sentence. This area of study, called by various linguists 'discourse grammar,' 'textlinguistics,' 'discourse structure,' etc. is a relatively undeveloped area in Transformational Grammar, but one which has its explicit place in the semantic component of Chomsky's Trace Theory model (see, for example, Chomsky (1975)). Thus it is theoretically sound in its position within the theory, although the details have to this point not been worked out.

What I am concerned with here is a means of interpreting semantically those grammatical particles and structures which have as their function the representation of facts which have to do with textual structure. As with Chapter Nine, my intent here is not on discovery (although I will deal with that briefly, with reference to the literature), but rather with presentation of facts already known. It will be clear that some of the semantic facts discussed in Chapter Nine are relevant here as well, and in fact it is the case that the division of this material into two chapters is for clarity of presentation only. Apparently some rules of language have effects which go beyond sentences and serve to provide the cohesive texture which characterizes a well-formed discourse.

The organization of this chapter will be as follows. First I will present briefly a model for classification of text genres. I will then briefly sketch a model of discourse structure which takes account of the most important sorts of information which must be treated in discourse studies. I will provide a series of brief examples to illustrate the sorts of things which are found to characterize natural language, and I will provide an introduction to the sorts of semantic rules which must be formulated explicitly to characterize these facts. As with Chapter Nine, it is not possible to deal in detail with more than a few of the more interesting sorts of facts, but it is hoped that the sorts of proposals which are made here will be helpful in providing a pattern which the analyst may use to describe the facts characteristic of the language under study. Thus while the material here is only introductory, it is typical. For a more comprehensive discussion the reader is referred to Grimes (1975), Halliday and Hasan (1976), and Longacre (1976).

As a second topic, I will discuss briefly the distinction holding between various levels of information in narrative structures (in fact, my entire discussion will be limited to narrative discourses), particularly with the intent in mind of defining the notion 'event line,' and writing a few rules to illustrate how different languages make use of the notion, and with what effects.

Thirdly, I will discuss briefly the idea of thematicity. In Chapter Eight the notion of topic was discussed, and some semantic rules concerning topicalization were written in Chapter Nine to take account of the facts. Clearly, however, within text structures such as paragraphs the theme remains constant, and it is the same processes which assure this. Thus I discuss the notion briefly here as well.

Finally, I will discuss briefly the notion of 'peak of the discourse' (again focusing on narrative discourse structures); I will provide some illustrative materials to examplify my claims, and I will write a few rules to illustrate how such information might be captured within a Transformational model.

Now, by way of introduction, let me state briefly a theoretical bias with which I approach this topic. We are faced in text analysis with an inherent problem: text structure appears not to be as rigidly rule-governed as structures at the sentence level and below. That is, there is much more variation possible in text structure than there is at lower levels; and while sentence, phrase, and other lower level structures may be evaluated as 'grammatical,' or 'ungrammatical,' texts must for the most part be evaluated as simply rhetorically effective or ineffective. That is, what we deal with in text studies, it seems to me, is a study of TENDENCIES, not behavior which is rigidly rule-governed.

Secondly, the information which is treated in text structure is much more along the lines of SEMANTIC information than it is syntactic. Admittedly, the line between the two is not a sharp one, and in fact one of the major weaknesses of Transformational Grammar historically has been the inability or unwillingness of its practitioners to make such a distinction on explicit grounds, because the theory calls for such a distinction to be made.

In spite of this, however, it is possible to at least some extent to interpret facts which are operative on the discourse level, and to write rules to account for them. My own feeling is that there remains a lot to be learned in this area, so that perhaps when more facts are known about factors which affect discourse structure, better rules will be possible. But even at this point, some statements are possible, and it is my intent here to begin to account for these within the Transformational framework. I should perhaps point out the suggestion of Grimes (1975:33-4) that discourse analysis is most usefully carried out on texts which have been carefully edited by the native speakers. This seems to me to be confirmation of the notion of variation which I mentioned above in the sense that the rhetorical effectiveness can at times be improved, even though both the edited and non-edited forms of the text were equally 'grammatical,' but this fact seems to have no parallel in terms of the clearly grammatical structure of sentences and lower-level units. I must admit, of course, that some linguists consider that the sorts of structure which are found at levels both above and below the sentence are identical in kind (in fact, Grimes himself seems to be in this group), even though my own view is that at the sentence level and below we have what might be considered to be SYNTAX, while above the sentence we have what might usefully be distinguished from it, perhaps by referring to it as COHESION (cf. Halliday and Hasan (1976)).

A. First, let me sketch briefly a possible model of text structure, viz. that proposed by Longacre (1976:197-206).

Longacre proposes that a useful distinction can be made between what he calls 'deep structure genre' and 'surface structure genre.' He establishes the two features of (chronological) [succession] to distinguish those texts which exhibit a series of events applying in chronological sequence from those which do not, and the feature [projected] to distinguish those texts which refer to time in the future from those which do not. On the basis of those two features, then, four deep-structure text genres can be established:

(1)	narrative	[+succession, -projected]
	procedural	[+succession, +projected]
	expository	[-succession, -projected]
	hortatory	[-succession, +projected]

Surface-structure text genres are very similar to deep-structure genres, and it is only in cases of skewing where the distinction is a useful one. For example, the telling of a folktale, which in surface structure is a narrative, may have as its function the exhortation of an individual or a group to proper behavior, which in deep structure has to do with a hortatory function. In such cases the folktale may have a moral included explicitly, but otherwise it is virtually indistinguishable from such a narrative told solely for entertainment purposes (except perhaps for some apparently minor but significant phonological variations).

All discussion in this chapter deals with narrative texts, and specifically narrative texts which have no different deep structure function. The structure of such texts has been worked out with much more thoroughness than that of other genres and thus is more amenable to discussion here. Hopefully, there will be enough discussion and exemplification here to make it possible for the same sorts of principles to be applied also to texts in other genres when the facts regarding their structure are better known.

B. Secondly, let us turn our attention to the notion of levels of information (Grimes (1975:51-70)).

1) A primary distinction must be made in narrative between EVENTS and NON-EVENTS. Because narrative is in essence the presentation of a series of events, this distinction gives us the ability to distinguish those bits of information which have to do with moving the account along, and those which do not. Grimes bases the importance of the distinction on the fact that a summary or abstract of a narrative is possible (in fact, he says that linguistics should aid in the development of strategies to carry out this task), and that this fact should be accounted for, and can be by recognition of the notion of event-carrying information.

Commonly, active clauses are used to characterize events in those languages which have a distinction between active and passive (English is, of course, a prime example). Other languages may use other means to make the distinction. For example, Xavante (a language of Brazil) utilizes a unique aspect pattern to distinguish events and non-events. It seems unlikely that such facts should be constrained in the phrase-structure rules, but the effect of them can be interpreted neatly by a statement of semantic rules. For the patterns of English and Xavante mentioned above, for example, rules such as the following may be appropriate:

(2) SR: In English narrative, information presented in the passive form as a result of the application of the Passive Transformation is not on the event line.

SR: In Xavante narrative, information presented in clauses containing the event aspect pattern is on the event line.

All following discussion in this section has to do with the sorts of information which may be communicated in narrative, but which is not on the event line. Grimes suggests that there are five types of such non-events.

2) SETTING information is not part of the narrative itself, but provides information regarding the spatial or temporal location in which (that particular portion of) the narrative takes place. Such expressions

commonly contain time or locative expressions, as might be expected (English is, of course, an example); in some languages (for example, Maxakalí of Brazil) the presence of such expressions serves also to mark paragraph boundaries. In Mumuye (a language of Nigeria) setting expressions are characterized by the occurrence of the progressive aspect (e.g., 'the horns were blowing for the ceremony'). Again, it seems to be ill-advised to attempt to control the phrase-structure rules so that such constructions are found only at certain points; our choice here is rather to allow the phrase-structure rules to apply freely, and to interpret the results appropriately by semantic rules. Taking the English and Mumuye facts mentioned above as examples, we may formulate such rules as follows:

(3) SR: In English narrative, the occurrence of temporal and locative expressions serves to establish the setting within which the following events take place.

SR: In Mumuye narrative, information carried by clauses occurring in the progressive aspect serve to establish the setting within which the following events take place.

3) BACKGROUND information is not part of the narrative itself, but serves to clarify it. Grimes mentions as typical illustrations such semantic notions as explanations, antecedent events, and foreshadowing.

Such information may be characterized in particular languages in various ways. In English, events which occurred chronologically at a point earlier in the narrative than that point at which they are related are found in the past perfect tense; logical relations are commonly characterized by being introduced by such conjunctions as 'because' and 'therefore.' In Mundurukú (a language of Brazil) there is a distinctive grammatical pattern which marks background material. Taking the facts of English as an example, semantic rules such as the following can be proposed:

(4) SR: In English narrative, information carried by clauses in the past perfect tense is not on the event line, but is background information which is temporally displaced.

SR: In English narrative, information carried by clauses introduced by 'because' or 'therefore' is not on the event line, but is background information which conveys explanatory information of a logical nature.

4) Statements of EVALUATION may be of various types. They may, for example, reflect the views of the narrator, or of one of the participants, or even of the culture itself. They tend to have relatively free

distribution within the narrative, in contrast with the common chronological order characteristic of events (except for cases of temporal displacement mentioned above).

Various means can be used in language to convey evaluative information. Lexical choices (e.g., 'hero' cf. 'fool') are common, as are statements of exhortation (either to one of the participants or to the reader/hearer). Both of these means are used in English, the latter being marked by the use of imperatives, or words like 'should' and 'ought.'

Because of the transparency of evaluative information, I will not formulate any semantic rules here.

5) A very important type of non-event information is referred to by Grimes as COLLATERAL. A common semantic thread suggested by Grimes for such constructions is that of proposing alternatives.

Means by which such alternatives are expressed in different languages include such constructions as negatives and adversative conjunctions (both of which state what might have happened but didn't), questions (which elicit from the hearer a selection of information from among the alternatives the questions suggest), imperatives (which give instructions which may or may not be carried out), and future tense forms (which convey information which may or may not take place). Such notions tend to be of a universal nature. The following are the sorts of rules which might be proposed:

(5) SR: In English narrative, negative clauses express information which is not on the event line, but rather collateral.

SR: In English narrative, imperative constructions express information which is not on the event line, but rather collateral.

6) A further type of non-event information is IDENTIFICATIONAL. Identificational information communicates who or what is involved in the events, using such means as naming, various noun phrase constructions, and anaphoric processes. Thus such patterns as definitization, pronominalization, and deletion as discussed in Chapter Nine are relevant here again. Thus in Chapter Nine the following rules were proposed for English (numbers refer to the numbers given the rules in that chapter):

(6) SR: NP1 is [+coref] with NP2 if NP1 precedes NP2 and NP2 is [+reflexive] and agrees with NP1 in gender and number.

(9) SR: In a simple sentence, NP1 is [-coref] with NP2 if NP1 precedes NP2 and NP2 is [+pro, -reflexive].

(12) SR: NP1 is [-coref] with NP2 if NP2 is a pronoun but not of the same gender as NP1.

(16) SR: NP1 is [+coref] with NP2 if NP1 either precedes NP2 or commands NP2 (or both), and NP2 is [+pro] and carries the same features for gender and number.

Rules (6), (12), and (16) (an optional rule) need no modification here. Rule (9) is correct as it stands, but it is inadequate to account for the patterns which exist across sentence boundaries. Note cases like the following:

(6) John drove into town yesterday. When he(i) got there, he(ii) parked his car and (iii) went into a movie.

Here the *he* marked (ii) will be interpreted as coreferential with the *he* marked (i) by rule (16). The absence of any NP represented by (iii) corresponds to a Δ, which will have its referent interpreted as the same as the *he* marked (ii), also by rule (16). Thus (i), (ii), and (iii) will all be interpreted as having the same referent. But what must be handled in addition here is the referent of the *he* marked (i), i.e., the ultimate referent of all three. Clearly it unambiguously refers to *John*, the explicit NP in the first sentence. While the facts of English pronominalization across sentence boundaries need much more research, the following semantic rule will account for this fragment of data and will form a useful hypothesis to be modified as research proceeds:

(7) SR: If a [+pro] NP is not identified as coreferential with an explicit NP in the same sentence, it is [+coref] with the nearest preceding NP which is identical with it in gender and number.

While grossly oversimplified, such a rule may serve as a model which can be followed to describe whatever facts are operative in the language under investigation. It may be preferable ultimately to give textual patterns precedence over intra-structural patterns.

7) The final type of non-event information discussed by Grimes is PERFORMATIVE. This is information which takes account of the relation holding between speaker and hearer, and the speech situation itself. Such constructions as deictics, certain time words (in English, 'now,' 'ago,' 'yet,' for example), and pronouns differing in person (in English, 'I/we' vs 'you' vs 'he/she/they') serve to convey performative types

of information. Because of their relatively low-level significance, I deal with such matters no further here.

(Before leaving a discussion of Grimes, it should be pointed out that after establishing these various levels of information, he provides a methodology for analysis which has proven to be very useful in field research. The reader is referred specifically to pages 82-100 in Grimes (1975).)

C. Let us turn now to the notion of topicality as it applies to text structures. It is assumed here that one characteristic of a unit such as paragraph is that it has the same theme throughout. Note the following example:

(8) (a) John went into town yesterday (b) and bought some flowers. (c) The flowers were beautiful, (d) although they were inexpensive. (e) They were colored with the softest pastel tints nature can produce, (f) and when put into the vase (g) their beauty filled the room.

Clearly the theme of the paragraph is the flowers, although *John* is referred to also in the first sentence, probably because he is thematic for the larger context in which the paragraph occurs. What I want to draw attention to here is the prominence given to the flowers in each clause. In each case the nominal form referring to them is initial in the clause (this is not completely characteristic of English but will suffice for our example). In (c) and (d) the nominal is topic by default, there being no NP marked [+T] and the nominal referring to the flowers being the deep structure subject. In (e) a passive-like construction occurs, again putting the nominal referring to the flowers in initial position; I assume here that the transformation producing the surface string adds the feature [+T] to the nominal (in this case a pronoun) when it fronts it. A comparable pattern occurs also in (f), and in (g) again the nominal containing reference to the flowers (as a possessive) occurs in initial position by default.

If such patterns are characteristic of English (while details remain to be worked out, patterns like those in (8) are not unusual), we may incorporate this information into the semantic rules for topicalization discussed in Chapter Nine. There I formulated the following rules (the numbers refer to the numbering in Chapter Nine):

(21) SR: An NP which carries the feature [+T] is the topic for the sentence.

(24) SR: If there is no NP carrying the feature [+T], the subject NP is the topic.

I assume that such rules will apply sentence by sentence to the data in (8) above. What is needed, then, is an interpretation of the facts of topicality at the text level. A rule like the following might be used in this case also:

(9) SR: If the topic NP is coreferential throughout a set of sentences, that NP is thematic for the unit containing the sentences.

Alternatively, a rule like the following may be appropriate:

(10) SR: If the topic NP changes between sentences, the point of change marks a paragraph boundary.

Clearly the facts of discourse structure, in English and other languages, require much more research. The proposals presented above will suffice as examples of the sorts of rules which will be needed to capture the facts which are discovered.

D. Finally, let us turn our attention to the notion of peak. At this point, we are searching for those devices used by the language in question to mark that part of the narrative which is most crucial to the account.

Longacre (1976:217-28) mentions a number of markers of peak which are widely used in languages of the world. Most of them are clearly better treated as semantic than syntactic because they take account of no syntactic rules.

1) Rhetorical Underlining. Rhetorical underlining has to do with either wordiness or the number of participants who are involved at a particular time. Many languages (Longacre mentions some English writers as examples) at the peak of the account increase the level of redundancy: paraphrases are found more frequently, parallelism of various sorts occurs, and tautologous statements are given. Such devices serve to slow down the speed at which the information is communicated, to 'drag out' the peak and thus make it more obvious. A related pattern is to find that all (or nearly all) of the participants are included in the immediate context, so that the image is one in which the stage upon which the narrative is being enacted is crowded. Again, Longacre mentions some English authors as examples, but pointing out that other languages may use the same device. It is clear that simple wordiness, or number of participants, is not a matter of syntactic rules. Nevertheless, if it is determined that the language in question makes use of the device of rhetorical underlining, a semantic rule can be written along the lines of the following:

(11) SR: If paraphrases, parallelisms, and/or tautologies are found in increasing number at a certain point in the narrative in Language X, that point is likely to be the peak of the narrative.

SR: If all major participants are found on stage at a given point in the narrative in Language X, that point is likely to be the peak of the narrative.

2) Pace. Closely related to the above is a change of pace in terms of relative size of comparable structures. For example, at the peak of the discourse it may be the case in the language in question that there is a change in sentence length, or in paragraph length. This is true in the French novel *Nuit* by Wiesel (see Burquest and Gibson (1982)), for example, where the length of the sentences decreases dramatically at the peak of the narrative. On the contrary, some authors in some languages may take just the opposite tack, making the units longer at the peak (Longacre mentions the lengthy paragraphs at the climax of Dickens' *A Tale of Two Cities* in this regard). The point here is the contrast between peak and non-peak, and the actual difference in length may go either direction. Again this phenomenon is not a result of a particular syntactic rule, and in fact it must be determined statistically. Nevertheless, if it is true of the language in question, it can be stated as a semantic rule like the following:

(12) SR: If in Language X there is a marked difference in the length of sentences and/or paragraphs at a certain point in the narrative, that point is likely to be the peak.

3) Verb Shifts. Primarily in focus here are shifts in tense/aspect, and shifts in person. For example, in many languages there is commonly a shift from past forms to present forms at the peak of the narrative (Longacre mentions the peak of Hawthorne's *The House of Seven Gables* in this regard). In a parallel fashion, there is often a shift from third person perspective to first or second person (the peak of Crane's "The Open Boat" is cited as an example). Both of these patterns have the same effect, i.e., to heighten vividness by involving the reader more immediately in the actions being portrayed. Again, what is involved here is a choice of a particular option in the syntax, but not the implementation of a specific syntactic rule. But again, appropriate semantic rules can be written:

(13) SR: If there is a shift in tense/aspect from past to present in Language X at a certain point in the narrative, that point is likely to be the peak.

SR: If there is a shift in person from third to first or second at a given point in the narrative, that point is likely to be the peak.

It goes without saying that the facts of the language are, of course, to be described, and so if this is not true of the language in question these particular rules are not applicable.

4) Dialogue. In some languages there is a marked change in the peak in terms of dialogue. For example, there can be either more or less dialogue at the peak than at non-peak; there may be a difference in whether dialogue is presented in direct or indirect form; and some languages show a propensity toward using rhetorical questions at the peak. Just as one example, let me refer to the use of various quotation forms in the work of Herodotus in Greek (Burquest (1981)). Here the relative significance of the content of the quotations to the development of the narrative (its movement along toward the peak) is shown by which of the three forms of quotation Herodotus used for that information (direct, indirect, or direct with *hōs* as a complementizer). Longacre refers also to the use of rhetorical questions as marking the peak in Hebrew in the book of Job in the Old Testament. Again, it seems not to be the case that these facts are the result of syntactic rules as such. But if they are true markers of peak in the language in question, they can be accounted for by semantic rules like the following:

(14) SR: If in Language X the amount of dialogue changes markedly at a certain point in the narrative, that point is likely to be the peak.

SR: If in Language X the form of quotation changes (from direct to indirect, or vice versa) at a certain point in the narrative, that point is likely to be the peak.

SR: If in Language X rhetorical questions are found (which may or may not be marked syntactically) at a certain point in the narrative, that point is likely to be the peak.

5) Role Reversal. In some languages, the peak of the narrative is marked by a reversal in roles of the protagonists. Thus, Character A may change from being subject to object, and Character B may change from being object to subject. Longacre mentions Freyre's "Indian Justice" as an example. From a syntactic point of view, there is nothing going on here; it is simply a different distribution for the lexical items involved. Nevertheless, if it is valid for the language in question, a semantic rule can be written along the lines of the following:

(15) SR: If in Language X there is a role reversal at a certain point in the narrative, that point is likely to be the peak.

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CHAPTER ELEVEN

RECENT DEVELOPMENTS IN TRANSFORMATIONAL SYNTAX

In this chapter I will summarize the most recent version of Transformational Grammar, known variously as the Revised Extended Standard Theory, Trace Theory, and the Theory of Government and Binding. Each of these labels is, in order, a revision of the preceding, so that Government and Binding (hereafter GB) is the name given to the latest version.

Let me emphasize at the outset that I am presenting here only the barest summary. It is not my intention to enable the reader to work within the theory, but only to show the direction in which the field is moving. Thus while I attempt to avoid errors of presentation, I make no attempt to be complete. The reader is referred to the literature (in particular Chomsky (1980, 1981, 1982)) for more details.

From its inception, the major concern of Transformational Grammar has been to attempt to account for the phenomenon of child language acquisition. How is it that a human child, even to a relatively high degree of retardation, acquires the language(s) spoken in the area in which she or he matures, and on the basis of primary data which is at best incomplete and fragmentary, and at times ungrammatical?

The operating assumption has consistently been that it simply cannot be the case that the human child faces the task of language acquisition with a blank slate. The assumption of a blank slate is deemed to be inconsistent with the facts of acquisition as seen in the comparative speed with which it takes place even in the face of such underdetermined primary data.

Rather, the assumption in TG is that there must be an innate capacity for language, a capacity which incorporates constraints which characterize human language. These constraints then would drastically reduce the number of possible grammars which might account for the primary data, because all analyses which are not consistent with them would be eliminated as being in violation of the characteristics of human language. Thus the number of possible grammars which might account for the primary data confronting the child is drastically reduced, and the task of language acquisition is seen as at least possible, if not dramatically simplified.

It is the major goal of the theory, then, to discover and define the nature of these constraints which are taken as defining characteristics of human language. Each step in the historical development of Transformational Grammar can be seen as a more explicit statement of one or more constraints. It is clear that GB is a direct development from EST, and this is in fact the interpretation of Chomsky as well (Chomsky (1982:3)). The historical progression can be (in an oversimplified but accurate way) charted as follows:

Early Transformational Grammar (Chomsky (1957))--essentially no constraints
The Standard Theory (Chomsky (1965))--constraints on RULES (e.g., types of rules, valid operations of transformations)
The Extended Standard Theory (Jackendoff (1972))--constraints on RULE SYSTEMS (e.g., X-Bar Syntax, prohibition of the notion of coreference in transformations)
Government and Binding (Chomsky (1982))--constraints on PRINCIPLES GOVERNING RULE SYSTEMS (see below)

The direction of movement toward increasing abstraction can be clearly seen.

It may be pointed out that this most recent development has resolved a certain conceptual problem. The Standard Theory (Chomsky (1965)) had an organizational beauty that enhanced its attractiveness. The three components of syntax, phonology, and semantics were explicitly defined as standing in specific relationships to one another. In particular, the syntactic component was seen as generative, as producing a structural string. The other two components were seen as simply interpretive, giving a representation of the structural string so generated in terms of sound and meaning. Further, the two interpretive components had unique points of contact with the syntactic component, so that the phonological rules applied to the surface structure output of the transformational rules (thus claiming that all phonology is based on syntactic surface structure), and the semantic rules applied to the deep structure output of the base rules (thus claiming that all meaning is based on syntactic deep structure).

With the development of EST, however, this tidy organization was upset. As discussed in Chapter Three, EST as Jackendoff defined it is characterized by a semantic component containing four types of rules, rather than the one type alluded to in the Standard Theory, and in fact in EST these semantic rules apply at various levels in the syntactic derivation (functional structure rules at deep structure, modal structure rules at least in part at surface structure, rules of coreference at the end of each transformational cycle, and rules of focus and presupposition at surface structure (in fact, taking phonology into account)). It should be clear that from an esthetic point of view the model is not as "neat" as it once was.

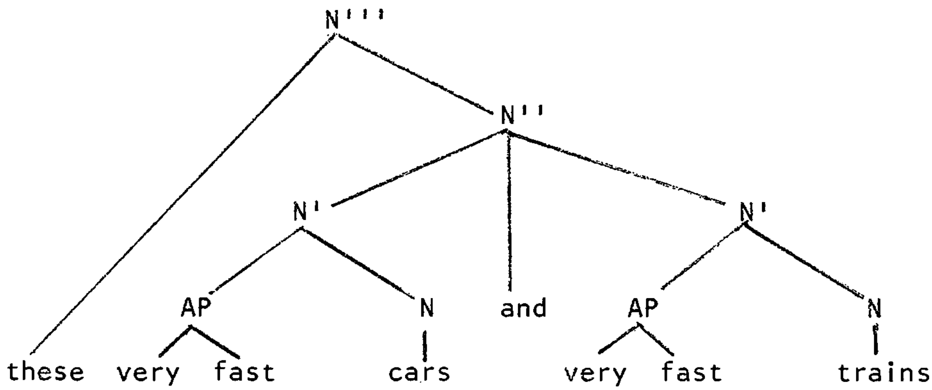
Enter Trace Theory (REST). Trace Theory restores the tidiness of the earlier model by deriving all semantic information again from a single point in the derivation. It may be a surprise that this point, however, is not the level of deep structure; rather, in REST all semantic interpretation is derived from SURFACE structure.

It must be pointed out, however, that this is not a return to Structuralist models characterized by a single level of syntactic structure. Rather, the structure here is more correctly referred to as an 'enriched' surface structure--specifically, it is surface structure which contains within it the characteristics of the deep structure from which it is derived. These "bones" are referred to as traces, hence the name Trace Theory. Such traces (represented as t) are one of the two 'empty categories' for which coreference must be determined; the other is represented as e or PRO and is comparable to Jackendoff's Δ. The various explicit pronominal forms are also subject to rules of coreference as in EST as well.

There is a much more important consideration underlying these developments, however. The driving force behind these stages of development is increasing refinement of the claims which are made regarding universal grammar. To repeat, the key question in Transformational Grammar is still to explain how language acquisition takes place, and the key assumption is still that linguistic capability is innate to the human species. The various stages of development of the theory point to increasingly explicit claims regarding the details which constitute this innate linguistic capability. But now note that more explicit claims, when verified, lead also to accounting for an increasing number of facts in terms of their being in accordance with the universal claims. It is clear that the more that can be attributed to (innate) universal grammar, the less there is to be learned, and thus the phenomenon of language acquisition becomes increasingly more manageable. And it is a corollary that as more linguistic phenomena are attributed to the universal grammar, there are fewer facts to be accounted for in the grammar of any specific human language. The result is that in GB language-specific grammars are severely lacking in detail. In the discussion which follows I first present a summary of the theoretical revisions which have been proposed; later I turn to exemplification of how the theory finds application in language data.

Chomsky (1982:5ff) lists seven specific principles which are operative in constraining rules and representations in GB. I will discuss each of these briefly in turn, where possible relating the discussion to that regarding EST in Chapter Three above. I borrow heavily here from Everett (1984).

1. X-Bar Theory--In essence GB holds to the same notion of constraining phrase-structure rules as that found in EST. In addition to the parallels in structural relationships which can be captured through this constraint, Everett points out that it also makes possible the recognition of important levels of structure otherwise not represented. E.g.:



Here the X-Bar convention allows recognition of the fact that the sequences *very fast cars* and *very fast trains* are constituents, and of the same rank; that the two joined together by *and* form a constitutent at a higher level; and that the whole is modified by *these* to form a constituent at a still higher level.

2. θ Theory--This theory, and especially the 'θ criterion', has to do with the assignment of syntactic roles to NPs; in essence this seems to have the same effect as Jackendoff's Functional Structure subcomponent in that it identifies the syntactic functions within which NPs can occur, but it also serves to constrain the functions into which they may be moved at other levels of structure. The θ criterion states that each θ role is attributed to one and only one argument. Thus, given a structure like the following:

PRO was hit John by Bill

the rule of passivization (in GB characterized as simply Move α, see below) will produce the following:

John was hit t by Bill

with *John* being moved into position replacing PRO, and t left behind at the point from which *John* is moved. Important here is the fact that *John* is interpreted as being patient by virtue of the fact that it is associated with the trace t which occurs in patient position following the verb. But now compare that result with the following, in which *Bill* is moved into the position occupied by *t* and itself leaving a trace *t* behind at the position from which it is moved:

John was hit Bill by t

The rule of Move α could produce such a result, but it would be a violation of the θ criterion because now both *John* and *Bill* are associated with the patient case by virtue of their having a relation to the position following the verb. The θ criterion requires that θ roles such as patient be limited to a single argument, and thus this latter derivation is blocked by the universal convention.

3. Case Theory--This theory assigns abstract cases to NPs in appropriate positions (e.g., NP as object of preposition or verb, or as subject of tensed verb); in his Functional Structure subcomponent Jackendoff made use of a similar notion as well, although it was only in embryonic form. Note that in GB the constraint is more rigorously stated, such that every phonologically realized NP must have case specification. E.g., note the following structure:

   PRO was hit John by who

   Here the rule Move α can apply to either *John* or *who,* moving it into position replacing PRO:

   John was hit t by who

   *Who was hit John by t

   Clearly only the first of these is grammatical, but how is the second to be blocked? The answer lies in Case Theory in that the form *was hit* here is a participial construction which does not assign case. Thus if *John* is left in position following *was hit*, it will get no case assignment and thus the sentence (the second above) will be a violation of Case Theory. Thus the rule Move α can apply so as to produce only the first sentence above.

4. Binding Theory--This theory has to do with the relations of anaphors and pronominals to antecedents; it is part of what is

dealt with in EST in the Rules of Coreference.

5. Bounding Theory--This theory has to do with constraints on movement rules; its parallel in EST is again Rules of Coreference, and the formal notions operative in EST such as PRECEDE and COMMAND.

6. Control Theory--This theory is concerned with the choice of possible antecedents for unspecified NPs; in that Jackendoff proposed using Δ for such NPs, this is dealt with in principle in his Rules of Coreference.

7. Government Theory--This is a collection of principles which constrain application of θ Theory and Case Theory, thereby providing the framework within which the model as a whole operates; there is no direct counterpart in EST, although Jackendoff's principles such as uniquely assigning coreference are perhaps comparable in intent.

In summary, it may be concluded that GB and EST are alike in kind, and that GB has taken major steps toward elaborating on the organization of the model and specifying in more detail the nature of the constraints involved.

The primary novelty in Trace Theory is the emphasis on 'universal grammar' and the distinction drawn between 'core grammar' and 'periphery.' Involved in universal grammar are principles like the above and such notions as the organization of grammar, rule types, explicit formal characteristics of rules, and conditions on rule application. Universal grammar is, in fact, a statement of the defining characteristics of human language, the constraints which characterize it. The notions involved in universal grammar are assumed to be innate.

Core grammar is developed by the child as primary language data is encountered. Chomsky describes the development of core grammar as the establishment of parameters within which the universal grammar functions in a given language. Thus the principles above are universal, part of universal grammar, innate to the human species; the task of the language learner is two-fold--to discover the parameters employed by the language, and to develop a lexicon of appropriate content so as to interact with them. Included among the parameters of English are the following:

configurational--in English grammatical functions are represented in formal structures, so that 'subject' can be defined as that NP directly dominated by S, 'object' can be defined as that NP directly dominated by VP, etc.

'Head first'--in English the head of a construction precedes its complement, so that verb is initial in VP, etc.

subject-VP order--in English the subject precedes any verbal element

Other languages may make use of different parameters, of course, and it is the task of the language learner to discover whatever parameters the language makes use of. Once the parameters are established, the facts regarding the language in question are largely determined. The proviso is necessary because in matters of periphery the parameters may be violated. The violations are thought to be a result of borrowing and language change, which interfere with the consistent application of the parameters. Such matters must be learned separately by the child (a rule like Particle Movement in English might be one such example).

The results of the proposal of such universal principles are extensive. Note that the parameters establish basic word orders, and X-Bar Syntax establishes basic configurations possible. Thus given the parameters and the lexicon (in particular, the statements of contexts in which given lexical items can occur), and the existence of universal principles of mapping, the result is that no phrase-structure rules at all need to be stated for any given language. This is because given the parameters and the lexicon, permissible configurations are predetermined, so that to state them explicitly in a set of rules is redundant. And given the goal of explaining language acquisition, an account which is based upon universal principles always is more to the point than one which treats each language individually, thus the universal account is to be preferred over the language-specific one containing the phrase-structure rules.

The results are no less drastic when transformational rules are considered. Given the constraints on movement and patterns of possible coreference as embodied in the principles stated above, the possible operations which can be performed by transformational rules are heavily restricted. In particular, the claim is that in actuality no details of transformations need to be stated at all, because again such detail would be a redundant restatement of the constraints contained in the universal principles. Thus the only transformational rule any language makes use of is MOVE α ("move any category anywhere"), with all details concerning constituents which can be moved and their source and target locations governed by the principles outlined above. Two facts should be noted in this regard. First, that the effects of the rule(s) of the transformational component are virtually the same as before, although accomplished now by much less formal apparatus.

Second, some rules are redefined, being treated no longer as syntactic transformations but rather as phonological rules (FOR-deletion is an example of such a rule).

Now, on the one hand it should be clear that GB can be viewed as a natural outgrowth of EST. It makes use of a number of the same notions, and the progression is essentially a more rigorous statement of constraints (it is, of course, much more complex than I have described, but its status in the EST tradition is clear). But on the other hand, it should be clear also that such a model does not lend itself to beginning fieldwork. That is, GB assumes a great amount of information to be true and thus it requires the explicit statement of very little detail (viz., as noted above there are no phrase-structure rules, and the only transformation is MOVE α). But what the fieldworker needs to do is to discover the specific facts of the language in question (including peripheral phenomena); if the facts ultimately turn out to be compatible with the claims of GB, this will be a further supportive bit of empirical data. But at the same time, unless explicit statement is insisted upon, it can never be determined whether the proposed universal grammar as contained in GB is valid in the language in question or not. Thus the required detailed explicitness in EST makes it more useful in fieldwork.

There is a very important area, however, in which GB is strongly applicable to fieldwork, and that is in the details of some of the proposed constraints. And here the applicability is two-way: the constraints (consistent with the general approach in this fieldguide) provide beginning hypotheses and thus are an aid to the analyst; and should a language be found which violates the constraints, the facts become immediately of great interest to the linguistic community. Thus the theoretician aids the fieldworker, and the fieldworker aids the theoretician. I turn now to a brief discussion of some of the sorts of detailed constraints which have been proposed. It must again be emphasized that no attempt is made here to explicate the entire approach taken by the theory.

The major innovation within GB of interest to us here is the nature of the more specific constraints that have been proposed. For purposes of discussion I will present four of these constraints, as follows:

Specified Subject Condition
Coordinate Structure Constraint
Tensed-S Condition
Subjacency Principle

Each of these notions is under continual examination and revision, and I present them here in the form which seems to be most easily understood, although my discussion does not in every case correspond in detail with the latest formulation.

The Specified Subject Condition. Defining 'specified subject' as an NP which contains lexical items, or which is a non-anaphoric pronoun, the SSC states that there can be no relation of coreference or movement between an NP in a matrix sentence and an NP in a sentence embedded within it if that embedded sentence contains a specified subject. Thus in (1) *John* and PRO (=Jackendoff's Δ) can be matched because PRO is not a specified subject:

(1) [John expected [PRO to win]s]np John expected to win

Further, in (2) *each* can be moved across PRO because PRO is not a specified subject:

(2) [The candidates each expected [PRO to defeat the other]s]np
The candidates expected to defeat each other

Here, when *each* is moved a trace (indicated by t) would be left behind in the position from which it is moved with the rules of coreference identifying it as having the same referent as *each* in its new position.

But now note (3). Here the ***each*** cannot be moved across *the soldier* because *the soldier* contains lexical information and thus is a specified subject:

(3) [The men each expected [the soldier to shoot the other]s]np
*The men expected the soldier to shoot each other

Rather, the only possible sentence which can be derived from (3) is (3'):

(3') The men each expected the soldier to shoot the other.

Note that the facts of (1)-(3') can be accounted for by reference to the SSC, and it is not necessary to place a specific condition on a rule of EACH-Hopping, or on the semantic rule of coreference (or in the Standard Theory framework, the transformation of Equi-NP Deletion).

The Coordinate Structure Constraint. This constraint is an outgrowth of the older principle (still accepted as valid) known as the A-over-A Principle. Its function is to prevent any movement into or out of a coordinate structure, or the establishment of any coreference relation with any member of a coordinate structure but not the entire structure itself. For example, note the following:

(4) [[John]np and [Bill]np]np saw Mary

The only passive form for this sentence is (5):

(5) Mary was seen by John and Bill

That is, it is not possible, given the validity of the constraint, to derive either of the following from the above, in which only one of the conjoined NPs is moved and not the entire coordinate structure:

(6) *Mary and Bill were seen by John

(7) *Mary John and were seen by Bill

((6) is a grammatical sentence, but it is not related to (4).) Note that this same condition prevents any coreference from being established with only one of the conjoined NPs and not the entire structure. That is, (8) is a grammatical sentence, but (9) and (10) are not:

(8) Mary and John saw themselves.

(9) *Mary and John saw herself.

(10) *Mary and John saw himself.

What is important is that all the ungrammatical sentences here can be accounted for with reference to a single constraint as stated above. Thus there is no need to state any such condition on the rules themselves since the constraint is a fact of human language and thus cannot be violated by natural language.

The Tensed-S Condition. This condition is proposed to distinguish between sentences which carry a specification for tense, and those which are characterized as being sentential complements of some kind. Thus sentences which have FOR-TO or POSS-ING complements are characteristically subject to different patterns of movement and coreference than those which are tensed. The condition has been revised as the Propositional Island Condition, and later as the Nominative Island Condition, because it is claimed that what is involved is a distinction between sentences in which agreement is operative as opposed to those showing no agreement, it being simply accidental that in English the presence of tense and agreement are correlated. I will refer to the principle here as the Tensed-S Condition because in this form it is easiest to explain and understand. Again, this is a constraint on movement, and on the possibility of establishing coreference. For example, in (11) below the NP *the dog* can be moved out of the embedded sentence because that sentence is not specified for tense:

(11) I believe the dog to be hungry
The dog is believed to be hungry (by me)

But note that this is not possible for (12):

(12) I believe the dog is hungry
*The dog is believed is hungry (by me)

This difference is a reflection of the Tensed-S Condition; movement and coreference are possible in (11) because the embedded sentence is not specified for tense (because the tense specification is replaced by the TO complementizer), but there is no such possibility in (12) because the embedded sentence is specified for tense. Notice that the same principle is operative also in (13) and (14):

(13) The candidates each expected the other(s) to win
The candidates expected each other to win

(14) The candidates each expected that the other(s) would win
*The candidates expected that each other would win

Again, the same principle is operative, this time applicable to a rule of EACH-Hopping, to block its application into a tensed-S, but not into a non-tensed-S.

The Subjacency Principle. This principle has to do with a general notion of the structural complexity of the string within which rules of movement and coreference may apply. In particular, two nodes are 'subjacent' if there is no more than one cyclic category (i.e., either NP or S) dominating one which does not dominate the other. If the complexity is more than this, the rule cannot apply. Note (15):

(15) [pictures of [several people]np [which I like]s]np are for sale
pictures of several people are for sale which I like

Here the relative clause can be extraposed because after extraposition it is dominated only by S, and its coreferent *pictures* is dominated only by a single NP node so that each is dominated by only one cyclic category which does not dominate the other. Now note the following:

(16) [pictures of [several people [whom I like]s]np]np are for sale
*pictures of several people are for sale whom I like

Here extraposition is not possible because *several people* after extraposition would be dominated by two NP nodes which do not dominate the extraposed relative clause. Thus the rule is blocked in such cases because it violates subjacency.

This is just the barest sort of introduction to more recent models of Transformational Grammar, given here for introductory purposes, and so the reader can see that the proposals here are a natural outgrowth of the proposals of Jackendoff. That is, just as Jackendoff set up constraints so as to determine possible relations of coreference which a natural language could make use of, in more recent models the same sort of thing is done, but with more rigor. An additional notion which I did not deal with above, is that the current proposals call for semantic rules to take account of text structure and the facts of the speech situation in which communication takes place. This is a significant modification, and one which will have extensive repercussions in future developments (I discuss some facts of relevant discourse structure in Chapter Ten above).

However, it should be pointed out that these proposals are sufficiently innovative that they have not yet been tested widely against real language data. As a result, it is not yet demonstrated that they are supported by all known facts of natural languages. It seems preferable, then, rather than to assume their validity, and thus to write simplified transformations so as to take advantage of them, to write transformations in a format compatible with EST. In this way all facts of the language in question will be accounted for, and if it turns out that the constraints proposed here are validated universally, it will be an easy matter to convert the rules so proposed to a more simplified, universal format.

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