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ABSTRACT

This first volume of a three-part language research study states and illustrates that the point of departure for comparative analysis of two languages rests on a comprehensive typology in each of a number of areas of grammar. The report suggests that a limited set of functions can be isolated, and that the range of grammatical possibilities open to any given language within each of these areas can be narrowly delimited. The two grammar points considered here as examples are relative clause formation rules and case marking phenomena. Both issues are discussed in detail, and numerous examples from widely varying world languages are provided. For Volumes 2 and 3 of this study, see FL 003 683 and FL 003 684. (VM)

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RESEARCH ON SYNTACTIC TYPOLOGY

Stephen R. Anderson
Principal Investigator

Language Research Foundation
131 Mount Auburn Street
Cambridge, Massachusetts 02138

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VOLUME I

OF III VOLUMES

SYNTACTIC TYPOLOGY AND CONTRASTIVE STUDIES

Stephen R. Anderson

and

Avery D. Andrews

Language Research Foundation

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Syntactic Typology and Contrastive Studies

Stephen R. Anderson
and
Avery D. Andrews

Preface

This final report on work supported by contract number OEC-0-70-4986(823) to the Language Research Foundation (principal investigator: Professor Stephen Anderson) is in three parts. This volume, "Syntactic Typology and Contrastive Studies", is the first; Michael Szamosi's sketch of Hungarian syntax is the second; and the third is a volume of various studies related to the work of the project.

This volume presents the thesis that contrastive analysis of a pair of languages must rest on a comprehensive typology in each of a number of areas of grammar. We suggest that a limited set of functions can be isolated, and the range of grammatical possibilities open to any given language within each of these areas narrowly delimited. Given the choices made in each area by the languages being compared, many other apparently independent divergences will turn out to be predictable in terms of the interaction of these general processes with either a) other language particular features; b) universally delimitable dependencies between areas of grammar; or c) universally establishable restrictions on the operation of grammatical processes. This volume attempts to contribute toward such a project, in addition to suggesting

the hypothesis of narrow limitations in each of several domains of syntactic function, by providing concrete studies of two such areas of grammar. One of these, the study of relative clause formation, is a traditionally syntactic study: we attempt to study the class of relative clause formation rules in the languages of the world, with a view to establishing the range of such processes and such conditions and restrictions as are imposed either universally or as language particular options on such processes. The other area dealt with, the study of case marking rules, is traditionally considered part of the study of morphology, perhaps; but our interest is in the question of the relation of case marking phenomena to fundamental typological parameters of syntactic structure. Again, we attempt to establish a universally valid notion of a type of rule (in this case, case-marking rules), and to limit the operations of this type that a language may have as narrowly as possible. We also attempt to derive some conclusions about the consequences for a given language of having chosen a particular case-marking rule.

In Volume II, Szamosi presents a sketch of the major points of Hungarian grammar in comparison with English. He attempts, where possible, to relate divergences between Hungarian and other languages (English in particular) to universally valid constraints on rules or types of rules. Inevitably, since this is an attempt to present the structure of most of a language, it involves many areas that are little known at present.

The studies of volume III are, of course, much more diverse, and show some of the areas with which we have been concerned in our work. They include studies of particular languages (including Bengali, Hungarian, Tunisian Arabic, Serbo-Croatian, and Polynesian) and more general methodological studies, such as Perlmutter's two articles, which both deal with the general properties of certain types of rules (in particular, deletion phenomena), and the papers which concern the relation of language contrasts to particular pedagogical problems in speakers of Arabic and of various dialects of India. Though these papers are not all directly represented in the present volume, they have all influenced the direction of our work.

We are indebted to many people who have helped us in various ways at various stages of this work. Among informants for various languages, we can mention Sheila Jasanoff, Hayat Mauch, Dimitri Konstantinidhis, Aise Underhill, Sonny Joe, Dale Oldhorn, Engin Sewer, Nethala Chatara, Gregory Nagy, and many others. Students and faculty at MIT and Harvard who have helped us with various points include Hu Mathews, Paul Kiparsky, Mary Lou Walch, Roy Wright, Bob Underhill, John Robertson, Rudolph DeRijk, and, again, many others. We would especially like to express our gratitude to David Perlmutter, whose studies have been in many ways fundamental to our work, and to Kenneth Hale, without whose encyclopedic knowledge of a vast number of languages none of this could have been seriously attempted. Finally, we would like to express our gratitude to those who have worked on various areas under this project. Michael Szamosi, Sandy Chung, Collette Craig, Jeff Gruber, Sheila

Jasanoff, Alan Timberlake, Nancy Stenson, Arlene Berman, and Carol Buckley; and to the staff at the Office of Education, including most importantly, Dr. Richard Thompson, for their help and understanding.

Stephen R. Anderson
Avery D. Andrews

Cambridge, Massachusetts
August 22, 1972

Part I. Contrastive analysis, universal grammar, and syntactic structure

1. Introduction

It has long been assumed that the process of comparing one language with another can result in an increase in our knowledge of the structure of each. This is presumably because such a comparison makes us aware of the ways in which languages can differ from one another, and hence of the features that characterize any given language. If we can isolate some range of structural features, and say that the choices made by a particular language in these respects are the only ones available to it, we would have a theory of language: a conceptual framework which could considerably improve the precision with which we examine and specify the structure of any one language, since we would know that some features are worth looking at while others are either predictable or irrelevant.

Whenever we compare two languages, then, we may find some features that will help us in the project of characterizing linguistic structure. Obviously, any way in which two languages are found to differ is a way in which it is possible for languages to differ, and hence a feature which might be added to our proposed inventory. Before this procedure can make any sense however, there are at least two requirements that must be met. First, we must know what sort of thing counts as an element of linguistic structure. that is, what is a feature of a language. While this may seem trivial, the question of what constitutes a feature of a language's structure is that of the fundamental nature of language, and hence the main concern of all research in linguistics. Traditionally in linguis-

tics, languages have been regarded as sets of inventories: an inventory of possible phonetic segments, an inventory of possible groupings of these segments into larger units, an inventory of possible associations of these larger units (words or morphemes) with semantic material, an inventory of possible arrangements of these units into complete words, phrases, and sentences, etc. In one way or another, the study of these inventories is partitioned among phonetics, phonology, morphology, syntax, semantics, lexicon, etc.

For a number of years, however, this conception of a language as a set of inventories of structural elements has been undergoing revision. Contemporary linguistics still recognizes the need to delimit at least the class of possible sound elements, the class of possible morphemes, and the class of (some poorly understood sort of) semantic elements. But in addition to these inventories, much more importance is attached, for the purpose of describing and characterizing a language, to the set of rules by which these elements are combined and related to one another. The reasons for considering a language as primarily a system of rules have been widely discussed (cf., e.g., Chomsky, 1970), and need not be rehearsed here. The import of this conception, however, is that when we compare languages, the primary comparanda are not linguistic items, but linguistic rules. Accordingly, it is only in the presence of a reasonably well articulated conception of linguistic rule that such comparison is possible at all.

The second prerequisite for establishing a theory of the contrasts that can exist between languages is the assumption that there are reasonably narrow limits to the range of potential differences.

Clearly, if languages can differ from one another without limit and in unpredictable ways, it makes no sense to talk about a theory of possible differences. If we found no coherence to the set of observed differences among languages, we could never be satisfied that we had in fact delimited the parameters of linguistic variation: the next language we look at might perfectly well show some totally new structural property. Obviously also, we can never demonstrate, in the absence of a comprehensive study of all of the world's languages (past, present, and future) the limitations to possible linguistic variability. When we actually look at a number of diverse languages, however, we do not get the impression that the range of variation is at all arbitrary, but rather that it is confined to a relatively small number of reasonably coherent choices within each of a small number of areas. The assumption that some such limits exist is not, as we say, a demonstrable proposition, but rather a necessary methodological assumption. We trust that the present study will contribute to its plausibility.

Given the assumptions that a) it is primarily rules that we want to compare, and b) the range of possible rules is interestingly limited, there are still difficulties in going about the comparison, which spring from our lack of knowledge in many areas of linguistic structure. Just what descriptive mechanisms must be encompassed by an adequate linguistic theory? How are different descriptive devices to be related to one another? For example, within the domain of syntax it is clear that we need to countenance a set of rules which specify the set of basic sentence structures in a language, and a set of rules which specify the

actual shapes that may be associated with any given basic structure ('base rules' and 'transformations' respectively, in one terminology), but is it also necessary to include principles that assign interpretations to surface shapes without regard to underlying configuration ('surface structure interpretation' rules), principles that rule out certain surface configurations, regardless of the fact that they arise from perfectly well-formed underlying structures by the application of general rules ('surface structure constraints'), etc.? And how do we compare one such device in language X with a different device which happens to have a similar effect in language Y? Such questions arise repeatedly in syntactic research, and will be seen many times in what follows. The extent of their indeterminacy forms the horizon of comparison in syntax.

Let us consider the various domains in which we might compare two languages. When we wish to compare the phonetic systems of two languages, it seems reasonable to start by comparing the inventories of phonetic segments. It is, however, quite obvious that the set of segments in one language cannot meaningfully be opposed to the set of segments in another. For instance, the fact that both English and Spanish have phonetic voiced and voiceless interdental spirants does not mean that the segments in question are at all comparable, or that the languages bear any significant similarity by virtue of possessing these segments. The segments in question have totally different phonological values in the two languages, and their acoustic and articulatory similarity is essentially accidental. No comparison of inventories

alone can reveal this, however: it is only by comparing the rules of phonological structure in the two languages that we see that while [θ] and [ð] are basic, unitary segments in English, both underlyingly dental spirants, the Spanish [θ] is phonologically related to the velars, while the Spanish [ð] is basically a dental stop. We have a reasonably good understanding of the nature of phonological structure, and comparisons such as this are not particularly difficult to arrive at. Thus, while contrastive phonological analysis does not, by itself, present a great deal of intrinsic interest, the theoretical apparatus involved is fairly clear.

The situation with respect to semantics and lexicon is not so fortunate. Here the entities involved in an adequate linguistic description are not nearly so well known. It is difficult to compare the rules of one language's semantic system with those of another in the absence of any clear notion of what semantic representations and rules are like. Lexical differences are fairly easy to describe, but only in anecdotal, atomistic terms that are difficult to systematize in any meaningful way. We see, then, that while the comparison of phonological systems is rather straightforward, in the present state of knowledge, the comparison of semantic and lexical systems is essentially impossible.

What of the domain of syntax? Most contrastive discussions in syntax have been based on the conception of a syntactic system as simply an inventory of constructions, and consist simply of a comparison of those aspects of surface structures that are different in the two languages. The results tend to be unsystematized

in much the same way as lexical comparisons are, and to shed little light on the essential points of structure in the languages concerned.

If the discussion above is correct, a contrastive description of the syntactic systems of two languages must be based on a comparison of the systems of rules they consist of. Furthermore, if the comparison is to provide a characterization of the essential points of difference between the languages, it must be possible to isolate those from other incidental differences that are either consequences of other facts about the grammars involved, or incidental. It must, accordingly, be based on a theory of syntactic structure which is able to describe the syntactic systems involved, and which is sufficiently articulated to indicate the parameters that serve to characterize an individual language in its essentials.

We take as the basis for the ensuing discussion of syntactic structure the general framework of transformational grammar, as it has been developed in numerous works since 1957. We assume that a grammar is organized around a set of base rules, which describe a (potentially infinite) class of underlying sentence structures, and a set of grammatical rules which can affect these structures by deleting, permuting, and inserting elements. From time to time, we will be forced to countenance other devices in the grammar, such as a set of rules which assign interpretations to sentences, largely on the basis of their underlying structure, but perhaps also (in part) on the basis of aspects of derived structure. The grammar may also contain a set of surface structure constraints or filters, such that any sentence violating one of these is judged

ungrammatical in the language, even if it is otherwise constructed according to the rules of the grammar. The representation of a given sentence is in the form of a sequence of labeled constituent structure or phrase markers, with each one derived from the preceding one by the application of a grammatical rule. A grammatical sentence is one which can be produced in this way by the rules of the grammar without violating any surface structure constraint, and which can be given a non-anomalous interpretation by the rules of semantic structure.

In numerous studies over a number of years, this general conceptual framework has demonstrated its suitability for the description of syntactic processes in a large number of languages. It thus meets the first requirement set forth above, in that it makes it possible to compare the essential parts of the syntactic systems of two languages: the systems of rules. Comparative discussions of syntactic structures couched simply in terms of constructions are rather like phonetic comparisons in terms of segment inventory alone. Unless we know the source and derivation of a given construction, and the other structures to which it is related, we cannot assess its structural place in the language. The transformational framework of grammar gives us a way of discussing these issues, and of arriving at an insightful comparison of different languages.

The theory of transformational grammar by itself does not go anywhere near far enough toward the satisfaction of our other goal, however: the provision of a limited range of syntactic parameters, that give a narrow definition of the range of possible

syntactic processes in natural languages. As has been pointed out in various places, the formal devices of transformational grammar make it possible to express some processes, but not to express others. The limited range of operations which can be performed by a rule make it impossible, for example, to express a grammatical process which consists of deleting exactly the middle element of a sentence of arbitrary length; and in fact such processes do not seem to occur in any natural language. Such limitations as provided by the theory and its formalism alone, however, are not nearly restrictive enough, as it still allows many processes to be formulated which do not seem to be possible rules in a natural language. One can, for instance, formulate perfectly well a process which interchanges the first and last Noun Phrases (NP's) of a sentence, perhaps leaving a mark on its verb; but processes such as this do not seem to occur in natural languages without severe restrictions. Other examples could easily be constructed of processes that are perfectly formulable in terms of the formalism of transformational grammar, but which do not appear to be possible syntactic processes.

A major step toward further constraining the power of grammatical description has been the supplementing of its basic formalism with a set of universal constraints on the operation of rules. Linguists including Chomsky, Ross, Postal, and others have noticed that rules performing certain sorts of operations are only allowed to apply under certain structural conditions and that these limits are not facts about a particular language, but can be formulated

so as to be valid for all languages. Such proposals as the A-over-A constraint, the complex NP constraint, the coordinate structure constraint, the cross-over principle, and others can then be taken as refinements of the basic formalism of syntactic processes, a part of the theory of grammar. Under these conditions, it may frequently arise that some difference between two languages can be shown to be not a fact about one or the other, but an automatic consequence of other properties of the rules of one or the other. Examples of this sort, which it is highly desirable to investigate in detail, will appear in various places below. Their interest for our purposes is that they narrow the range of parameters that need to be considered in comparing languages: some differences count, but others can be shown to be universally determined consequences. This is precisely the sense of "explanation" in syntax.

Even when supplemented by an extensive and highly articulated set of constraints on the sorts of operation that can be performed by grammatical rules, however, this theory of syntactic structure is far from narrow enough. Under any set of proposals that have been made, or are likely to be made, for limiting the formal power of grammatical rules, it is still unlikely that such a theory can be limited to the expression of possible syntactic processes only. It seems unlikely, for example, that the formalism of syntactic description can be modified so as to prevent the expression of a process by which yes-no questions corresponding to a given declarative sentence are formed by interchanging the subject and object of the sentence. The operation involved is one which

syntactic theory must permit, if it is to allow the description of common processes of passive formation; the problem is that this simply doesn't seem to be a possible process of question formation in any natural language. A different sort of example would be a process by which a verb is made to agree in gender and number with an NP in an immediately following prepositional phrase. This is surely a formally possible operation, but it is also clear that no language has such a rule.

We can get a start on improving syntactic theory in this area by returning to the problem of language comparison. In pre-systematic terms, how do we have any idea what features of language X to compare with what features of language Y? If, as used to be asserted, languages could be arbitrarily different from one another, there could not be any general and non-anecdotal basis for choosing one structure rather than another from language X to compare with a given structure in language Y. The move from comparison of inventories of configurations to comparisons of rules does not really help much here, either. Just as we do not really get very far into a language's structure in comparing modifier-head constructions in X with modifier-head constructions in Y (assuming we can define the notion 'modifier-head construction'), we do not get very far in comparing, say rightward movement rules in X with rightward movement rules in Y. We soon find ourselves comparing, e.g., the subject-postposing part of the English passive with the rule in Turkish that moves indefinite NP's to the position before the verb, which is surely an unilluminating comparison.

Clearly a theory of the ways languages can differ from one

another has to start from a consideration of what they have in common, and it is the notion of what languages have in common that is at the heart of our opinions about what features ought to be compared between two languages. The most important feature that languages have in common is probably the range of functions which are served by their grammatical devices. In all languages, that is, it is possible to make declarative statements, to ask disjunctive (yes-no) questions, to give orders, etc.; and fundamental syntactic processes frequently serve to differentiate sentences serving one of these functions from sentences serving another. Other, less obvious but equally systematic functions are also very generally associated with grammatical processes. Every language has only a finite number of basic vocabulary elements, and therefore there are only a finite number of individuals that could be differentiated (and hence referred to) by means of vocabulary differentiation alone. But every language has ways of specifying reference to individuals more precisely than would be possible by lexical differentiation alone, by allowing a basic description to be made arbitrarily more precise through the mention of other properties, not part of the definition of the word alone. When we have only one bear to talk about, it is fine to say "The bear is looking in the window", but when there are several, we can say "The bear that ate John is looking in the window." A frequent role for grammatical processes is to provide a means for indicating that a given part of a sentence is functioning to provide such a more precise specification of reference.

Another such function is the following: in a sentence describing or making reference to some action or state, there may well be more than one participant to which reference must be made. The roles played by these several participants are not, in general, interchangeable, and it is necessary to provide a means for indicating which participant is referred to as filling which role. This sort of indication is one of the fundamental purposes to which syntactic processes specifying sentence structure are put.

The set of functions just mentioned is not, of course, meant to be exhaustive, but only suggestive. Even in these terms, it is often difficult to associate syntactic processes uniquely with function. Commonly, sentences which have a structure appropriate to one use are employed with quite a different function. For example, the sentence "Are you going to get off my toe, or do I have to punch you in the mouth?" is structurally a disjunctive question, but it is likely to be functionally a threat, or perhaps a request. The study of such transfers of function is still little understood (though some interesting results have been obtained by philosophers, such as Grice and Searle, and linguists, such as G. Lakoff, R. Lakoff, and Fraser). For the present, we have to fall back on a 'notional' definition of the association of function with sentence type: in every language, it is clear that basic sentence types are primarily associated more or less one-to-one with particular functions, even though there will inevitably be some deviation. Further, the set of such functions that seem to be relevantly associated with grammatical processes is comparatively small, and largely the same across languages.

If this sort of thing (namely, a set of basic linguistic functions that might be associated notionally with syntactic devices) were all that languages had in common, it could still provide a basis of sorts for the contrastive description of languages: we could at least, e.g., compare the structure of information questions in language X with the structure of information questions in language Y. This sort of comparison might well be the only thing possible if, indeed, a language could choose any conceivable syntactic process to associate with a given function. If that were true, such an organization would serve well enough for a sort of conversation-manual approach to contrastive language description, but it would have the unfortunate effect of making it intrinsically impossible for contrastive description to give any insight into the fundamental problem of specifying the bases of a language's syntactic structure. Contrasting structures that had absolutely no basis for comparison other than a similarity of function would not really teach us much.

In fact, however, languages have a great deal more in common than just a set of functions served by grammatical devices. When we look at a variety of languages, we see that the range of grammatical processes that correspond to any one function is much more narrowly circumscribed than the total set of grammatical processes in all languages. That is, something which is, e.g., a perfectly good way of forming passives (a sort of topicalization operation) is not a possible rule of question formation, or of reflexivization, etc. Within each functional area, the range of possible grammatical processes is rather limited, and it is pos-

sible to characterize a language in terms of the choices made within each of these limited areas. To some extent, it is clearly possible to impose further limitations: one choice may determine another. Numerous observations have been made (most notably by Greenberg) about correlations that exist between one area of the grammar and another (verb final languages have postpositions, while verb initial languages have prepositions, etc.) and it is certainly a major task of syntactic research to provide explanations for such correlations. Before such explanations can be realistically undertaken, however, the more fundamental task of description often presents itself. We should know just what processes are possible, and what the alternatives are within a given area.

We conceive the task of universal grammar, then, as consisting of two related projects. On the one hand, it is necessary to develop formal universals of linguistic structure: descriptive devices that accomodate all of the syntactic processes found in the languages of the world, and impose limits as narrowly defined as possible on the operation of grammatical rules. In addition to the constraints mentioned above, an example of such a limitation is Ross' (1967) observation that rules moving constituents to the right can never move elements out of a clause (i.e. can never cross sentence boundaries), while rules moving constituents to the left can sometimes have this effect. This is an observation that cuts across all areas of grammar: whatever sort of process we have to deal with, we know that if it involves movement to the right, it will be subject to this restriction, while another process

serving the same function but not involving rightward movement will not be inhibited by sentence boundaries (unless some other constraint intervenes, of course). Many differences that appear between languages, then, will turn out to be consequences of the fact that functionally similar operations in the two languages are formally distinct, and hence subject to different sets of constraints.

The second aspect of universal grammar is our principle concern in this work. This is the development of a set of substantive universals of syntactic structure. We wish, that is, to develop a characterization of the class of possible processes that can appear in the formation of information questions, a class of possible relativization rules, of case-marking rules, etc. We believe that each one of a number of such classes can be interestingly delimited, and that constraints may be found to apply to the set of rules of a given class that are not directly related to the formal operations performed by such rules, and that do not apply to other classes of rules.

This is not, of course, a completely new idea. The best example of such a class of rules that has been studied in the literature is the class of rules indicating anaphora. Every language has some rules by which elements of a sentence with the same reference (where 'reference' has to be construed to allow verb phrases and/or sentences to have a reference, as well as noun phrases) are indicated by replacing one of them with a special proform or simply deleting it. Such rules include ordinary pronominalization, deletion of one of two identical verb phrases (as in "John

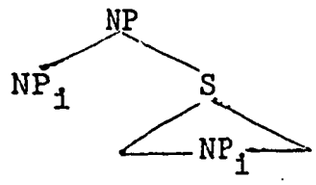
would like to eat the last lobster, but he can't"), substitution of do so for one of two similar active verb phrases ("John finished his oysters, but Bill way unable to do so"), ones-pronominalization ("John likes big houses, but his wife likes little ones") and a number of other such processes. All of these are processes which either delete or replace (with a member of a designated set of pro-forms) all or part of a constituent under conditions of identity with another constituent of the same type. Notice, for example, that a language does not indicate identity of reference between two NP's by preposing the first of them to sentence initial position, or by simply attaching a special mark to one of them, leaving it otherwise intact, or any of numerous other operations that could be imagined. Thus, the class of formal operations that can be rules of anaphora is a rather limited one. (In this work we will do the following: to indicate that two NP's have the same reference, we will give them identical subscripts - and different reference will be shown by different subscripts. Thus $NP_i = NP_i$, $NP_i \neq NP_j$)

Furthermore, the rules of this class are subject to a particular limitation (among others): If a rule of this class has the effect of modifying the second of the two identical constituents, there are no major limitations on the structural relationship between the two (this is not strictly true, but it is fairly accurate); but if the element affected is the first of the two, the rule can only apply if this first element is in a clause which is subordinate to the clause immediately containing the second. This limitation, which was discovered independently by Ross and Langacker,

seems to apply to all rules of anaphora in all of the languages of the world. A language may or may not have rules of leftward pronominalization, etc.; but if it does, they will be subject to this constraint.

The class of anaphora rules, then, is formally a very narrow one; and one which is furthermore subject to a special constraint. This fact has been somewhat obscured, perhaps, because rules of anaphora are not unified only by function, but are also to some extent formally distinct from most other rules. One might propose, that is, that the constraint on leftward anaphora is not a constraint on anaphora rules as such, but rather a constraint on the formal operation of deletion or replacement under identity. This cannot be so however, as we will see below. Other rules than anaphoric ones perform these operations, and they are not necessarily subject to the same constraints. For instance, there are rules of relativization which apply in structures of the form (1.1):

(1.1)



One of the operations which a language can employ in relative clauses is the deletion of the head NP in such a structure. As we will see in part II, there are cases in which this head is apparently to the left of the other NP with identical reference (i.e., the underlying structure of relative clause constructions in some languages which make use of head deletion is that given in (1.1)); the operation in question is clearly a deletion under identity; and the NP on the left which is deleted is clearly not

in a clause subordinate to that containing the other identical NP. Such a rule, therefore, is not subject to the constraint which obtains for anaphora rules, though the operation performed is of much the same formal character.

2. Information questions

As an example of the range of processes which we may find associated with a given function, let us consider the formation of information questions in various languages. We can define an information question by relation to a declarative sentence, which expresses a given proposition: an information question presupposes that this proposition is true for some set of circumstances, but asks for the identity of some participant or circumstance for which the proposition is true. Thus, "What did you find in your soup?" presupposes that you found something in your soup, and inquires as to the identity of that thing; "When did you stop beating your wife?" presupposes that you beat your wife up until some time, and asks what time that was, etc. Though obviously informal, this notion clearly corresponds to a reasonably well-delimited sentence type in all languages.

Now in fact the syntactic processes which identify information questions are by no means arbitrary, but rather are quite clearly limited. These processes, which differentiate information questions from simple declaratives, can be grouped in three sets:
1) some special proform occupies the place in sentences which would be occupied in the corresponding declarative by a constituent giving the identity of the participant or circumstance inquired about. This proform is an element of the same major category as

the corresponding constituent (i.e., a NP if the identity of a NP is sought, a time adverb if a time phrase is sought, etc.). 2) This proform may, in some languages, appear in the same place the corresponding element would occur in a declarative; or in other languages, it may appear in some special, designated position. 3) Other changes, such as the addition of special particles, word-order inversions, etc., may occur.

In each of these areas, we can discover narrow limitations on the range of possible options. First, as far as the set of designated pro-forms that can appear in information questions, Bach (1971) has argued that these are always indefinite, as opposed to definite. In some languages, such as Mandarin Chinese, indeed, the interrogative pronouns are identical with the proforms used for indefinites of the sort something, someone, somewhere, etc. In other languages, such as Breton, the interrogative proforms consist of the indefinites plus some additional mark: in Breton, pehini 'who', petra 'what', etc. are simply pe (interrogative) + hini '(some)one', tra '(some)thing' etc. But even in languages in which there is not an overt morphological connection with indefinites, the words in question always behave as indefinite if there is any way the language distinguishes definite from indefinite.

Secondly, the range of positions in which the interrogative forms may be found is very limited. Essentially two kinds of movement are possible: one sort, typified by English, is movement all the way to the left, to the beginning of the sentence. The other sort, typified by Basque, involves movement to some designated position within the same clause that also serves to identify

non-question word constituents as the informational focus of the sentence. Many languages, that is, identify one position in the sentence as the center of informational focus, and an element may be identified as such by being put in this position. In many languages, this position is simply sentence initial, and in that case it is difficult to distinguish this circumstance from simply moving the question word to the left. In other languages, however, the position immediately before the verb is the information center, and it is here that focussed constituents are found. This is the case, for instance, in Turkish and in Basque. Pre-verbal position is the only position other than sentence initial that seems to function in this way (and, further, it seems that only languages with basic verb-final order can designate pre-verbal position as that of the information focus), but if a language uses this position in this way, it may put question words in this position, as well.

It seems clear that this sort of movement should not be identified as a rule of question formation, however. First of all, the question word obviously constitutes the informational focus of a sentence, and if a language has a rule moving such a constituent to a designated position, such a rule will apply a fortiori to question words. Such movement is in fact only found for question words in languages in which it is also found for other items in non-interrogative sentences; further, its character as optional or obligatory generally corresponds to the optional or obligatory nature of focus movement for other items. The operation of focus processes is not at all well-understood, but it appears that move-

ment of question words to designated positions such as that immediately before the verb is simply a consequence of the semantics of questions, and as such not a peculiarity of question constructions. The only movement phenomenon which remains as specifically a rule of question formation, then, is a rule which moves the question word all the way to sentence initial position. A language can choose to have such a rule or not, but it cannot choose to have, say, a rule which moves the question word all the way to the right, or to second position in the sentence, or anything else.

The third class of processes occuring in information questions is similarly narrow. An example of such an additional process is seen in English: in the sentence "What do you think you're eating?" we see, first of all, replacement of the interrogated constituent (the object of eat) by an indefinite interrogative proform (what); second, movement of this proform to sentence initial position; and third, inversion of subject and auxiliary. But, of course, this rule of subject-auxiliary inversion is not simply an arbitrary process, confined to information question - it is also found in the formation of disjunctive questions, a sentence type which shows its own set of peculiarities. In other languages, such as Chinese, a special particle may be found in the sentence to mark information questions (usually either sentence final, attached to the verb or to the questioned constituent) - but again, the choice of this particle is not arbitrary. The same particle will also be found to mark disjunctive questions. The import of this is that the set of processes in addition to the appearance and possible movement

of a question word which are found in information questions is limited to the set of processes that can appear in disjunctive questions. A language may or may not choose to identify information questions with disjunctive questions, and consequently to apply syntactic processes in the one that also apply in the other, but there do not seem to be other possibilities.

The set of options available to a language as far as the formation of information questions is concerned, then, is very narrow. An indefinite pro-form (whose morphology, of course, remains to be specified) substitutes for the questioned constituent in a declarative structure; this pro-form may be subject to a rule moving it all the way to the beginning of the sentence; if there is no question movement rule, the question word may be subject to an (independent) rule of topicalization; and information questions may or may not undergo the same processes that disjunctive questions undergo. These are the independent parameters in terms of which languages can differ in their information question constructions. Each of these facts may interact with other facts, however, either language particular or universal, to result in other sorts of differences between languages.

As shown by Szamosi (1971), for example, Hungarian appears to differ from English in that questioned constituents cannot be embedded in lower clauses. That is, while a question of the form "What do you imagine that you saw?" is perfectly possible (where the questioned constituent is the object of saw, in the lower clause), the corresponding question in Hungarian is not acceptable, and some

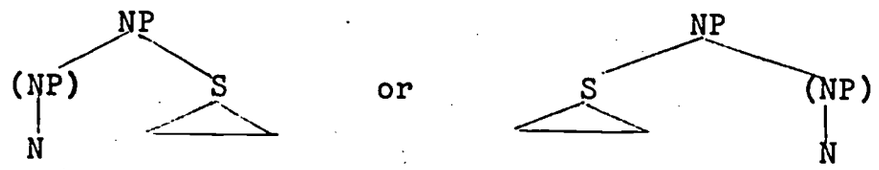
other locution must be resorted to in order to avoid the complement structure. This seems to be an independent fact about the question construction in Hungarian, not obviously identical with one of the parameters just enumerated. But Szamosi demonstrates that in fact this is a direct consequence of the requirement that question words are always indefinite. The verb in Hungarian is marked to indicate the definiteness of its object, if there is one. Complement clauses in Hungarian function as definite objects: therefore the verb "imagine" in such a sentence would show definite object agreement. But since the question word in the sentence is indefinite, the topmost clause in surface structure will also contain a word which looks like an indefinite object (the question word), and will therefore violate a surface structure constraint requiring the verb to agree in definiteness with any NP in its clause that looks like an object. The correctness of this explanation is shown by the fact that there are a very small number of forms in the Hungarian conjugation for which the definite and indefinite forms coincide (that is, phonologically identical forms can be used with either definite or indefinite objects); and precisely if the main verb is one of these forms, it <u>is</u> possible to question an element in a subordinate clause. This restriction on question formation, then, turns out not to be a fact about question formation at all, but rather a consequence of the interaction of an independent language particular fact about Hungarian (the existence of definiteness agreement between verbs and objects) with a universal property of question formation - the requirement that question words always function as indefinites.

Notice that if question words in Hungarian were either definite or simply unmarked for definiteness, the restriction would be avoided - but this is simply not an option which is open to a language.

In other cases, no language particular fact beyond the structure of question formation, in terms of the above parameters, need enter into the explanation of an apparently particular difference between two languages' constructions. As we have mentioned, a language may either choose to have a (leftward) question movement rule, or not to have such a rule. But once it chooses to have such a rule, it is subject to any restrictions that apply to the class of leftward movement rules universally. In this way, it will come to differ from a language without a movement rule for questions.

Among the constraints that have been proposed for rules moving or deleting constituents, the most important and best established are those known as "island constraints", discovered by Ross. Ross suggested (1967) that certain syntactic units have the property that a rule cannot move constituents out of them, or delete constituents in them under the influence of outside elements. Such configurations are known as <u>islands</u>, and include most importantly a) complex Noun Phrases, and b) coordinate structures. A complex NP is a NP containing a sentence, with a lexical item (not simply a pro-form) as head:

(1.2)



Among the structures which form complex NP's are NP's containing relative clauses (such as "the skunk that John gave to his daughter"), and complements of the type "the fact that John has six fingers". The complex NP constraint requires that no element may be extracted from the sentential part of such a NP, nor may any element be deleted from the sentencial part of such a NP under the influence of an element outside the NP. The coordinate structure constraint is rather similar - it requires that, whenever two or more constituents of the same type are arranged in a structure joined by a conjunction, with neither subordinate to the other, no element can be removed or deleted from one constituent alone. These two restrictions together operate to limit the applicability of all known movement rules, including the rule of question movement. As a result, there are certain elements that cannot be questioned in a language like English, which makes use of a rule of movement in questions. Questions like "*What did you see a man that was eating?" and "*What did John eat beans and Harry cook?" are perfectly understandable, but are not at all well-formed in English; in the first case, because the questioned element is inside a complex NP, and in the second case because the questioned item is inside one conjunct of a coordinate structure. Languages like Japanese, Mandarin Chinese, and many others, however, in which question formation consists simply of replacing the questioned constituent by a question word, without moving it, are not subject to this restriction, and accordingly the corresponding questions are well-formed.

When we examine information question constructions in a variety of languages, we see that a relatively small number of parameters are actually variable (outside of language particular details of morphology), and that many of the peculiarities which a construction may appear to present, which apparently call for idiosyncratic presentation, are not actually facts about the construction in question at all, but rather consequences of the interaction of its question formation process with other facts, both universal and language particular. To substantiate this conclusion, it would of course be necessary to present detailed discussions of this construction in a representative sample of languages, which we have not done here; but we may hope to have given enough of a discussion to suggest our main point: that the range of possible constructions and constraints involved in information questions is much narrower than the range of possible syntactic rules in natural languages.

3. Conclusions

We have suggested above that, in order to contrast two languages with respect to their syntactic structure, it is necessary to take into account much more than the facts of the two languages in question. In particular, since this task involves characterizing each of the languages with respect to all of the independently variable parameters of syntax, it is necessary to know just what those parameters are, and what sorts of difference, though real, are not independently variable. In order to begin this task reasonably in any particular case, many of the results of the

field of universal grammar are likely to be necessary.

The organization we have suggested for such an investigation, while not new, is likely to be somewhat controversial. First of all, the suggestion that the range of syntactic processes available in any particular area of grammar is narrower than the range of syntactic processes available as a whole is foreign to the way in which most syntactic research has been organized. A rather similar proposal is Bach's (1971) Universal Rule Hypothesis, according to which the class of possible syntactic rules is given, not by the possibilities of manipulating a restricted formalism, as in 'classical' transformational grammar, but rather in a single fixed list of possible major rules, where each rule in the list has an indicated range of possible language-particular idiosyncracy. Bach discusses rules of question formation, and arrives at much the same conclusions we do. In this case, the two notions coincide, because it seems to be the case that, as far as question formation is concerned, there is only one possible rule, and a language's choice is essentially that of having such a rule or not having it.

Our goal, however, is to impose more structure than this on the set of possible rules. In particular, while it is the case that question formation is a domain that can be profitably studied in terms of the operation of a single rule in a number of languages, this is not the case for all areas of grammar. We will see below that there are several possible rules which a language can employ in forming relative clause constructions. These are not, as far as we can see, reducible to a set of possible options or restrictions on the operation of some one rule; but still, they are just

as much variant forms of the same process as are question formation with movement and question formation without movement. They should, therefore be studied together, especially if, as may well turn out, there are restrictions which apply to all and only relative clause formation rules. Our conclusion, in this regard, will be highly tentative, but in other areas of grammar, such as the study of anaphora, it is clear that a number of related rules may be unified by being subject to common and unique restrictions.

In part II below, then, we present a study of relative clause constructions in a variety of languages, in order to determine the range of rules that may apply in these constructions and the range of constraints that may be imposed on a language particular basis. We concentrate, inevitably, on rather gross aspects of the ways in which languages differ from one another, In part, of course, this is due to limitations in the extent of our knowledge of the languages involved, and the difficulty of investigating many areas of structure. This is not altogether inappropriate, however, for a typological discussion. We must recall that the structure of the syntactic system of a language is acquired by children in a comparatively short time, on the basis of rather rudimentary data. Children are not in the best of positions to detect subtleties while learning their language, and there is a good chance that the subtle and complex facts which contemporary grammarians revel in should follow from universal principles on the basis of the grosser and more obvious facts discernibly by children and typologists. Therefore, a typological survey which

characterizes the obvious ways in which languages differ from one another may serve to suggest something about the organization of language learning, as well as providing a basis for organizing the more detailed investigation of particular languages. It is this latter function which we expect to serve as far as contrastive studies are concerned: by helping to identify the areas of structure which correspond to fundamental parameters of variation, and suggesting the range of variation which is possible in particular areas, studies such as this one can help the contrastive analyst organize his research and show him something of what to look for.

In part III, we deal with a different sort of problem. Here we investigate the operation of rules which assign case markings to the NP's in a sentence on the basis of their syntactic function. In the course of this investigation, two related areas of language structure are dealt with. First, we consider the extent to which the categories distinguished by case marking rules correspond to basic features of the organization of a language's syntax. On the basis of our conclusion in this area, we arrive at a new, if somewhat more banal, conception of the sort of rules which natural languages have in this area. We hope by this study to refine the notion of the role played by grammatical relations in the operation of syntactic rules. Though somewhat different in organization and aims from part II, this section has the similar goal of characterizing the range of possible language particular variation within this area of syntactic structure.

We realize, obviously, that there are many more areas of grammar that must be covered before it would be possible to even

begin to organize a complete description of one language, or a comparison of two or more languages. Until studies of the sort presented here are available for many other areas, however, it will not be possible to be at all secure about the range of variation that is possible in natural languages. The typological survey, of which these studies are examples, is a somewhat neglected genre today, but without it, as we hope to show, it is impossible to know what features a contrastive analysis of languages should choose to compare and contrast.

Part II. The grammar of relative clauses

0. Introduction

In this study, we attempt to illustrate some of the points made in part I through a detailed study of the grammar of relative clause constructions in a variety of languages. We attempt to characterize the structural features of such constructions, and to delimit the range of possible variation in the languages of the world. We then attempt to characterize the class of processes that apply in such constructions, again with a view to determining the range of options available to particular languages, and to showing the interaction of these processes with other aspects of language structure. Some cases of apparent language-particular facts will be seen to result from interaction of universal constraints on syntactic processes with the particular form of relativization rules chosen by the language; other facts which appear to be peculiarities of relativization will turn out to be consequences of the interaction of general relativization rules with other language-particular processes.

Virtually every area of grammar impinges on the study of relative clauses. The following are so intimately intertwined with relative clauses that any uncertainty or inaccuracy in these areas is automatically reflected in our knowledge of relative clauses:

(0.1) a. Deep grammar of NP: referential and descriptive opacity, restrictive and nonrestrictive modification, presupposition.

b. Superficial grammar of NP: constituent structure relations of determiners, heads, modifiers, etc.

c. Subordinate clauses: relations between relative clauses and clauses of cause, purpose, condition, etc.; nominalization and other complementizer phenomena; subordinate clause reduction.

d. Grammar of variables: question, topic and focus preposing; swooping; islands and crossover phenomena.

e. Pronominalization

f. Clitic movement

Furthermore, essentially any area of grammar may be relevant to determining the structure of relative clauses in some language, as will emerge from the analyses to be presented below.

In recent years the study of relativization in English within the field of generative grammar has been dominated by such issues as the difference between restrictive and nonrestrictive modification, opacity phenomena, and constraints on rules using variables. All of these are too complicated for us to have investigated systematically in this work. We have been forced to restrict ourselves to determining such things as the presence or absence of deletion, movement and copying rules; finding out what is deleted or moved; where it goes, etc.

We have furthermore had to restrict our attention to the means whereby languages translate such structures as the boy who Zack gave a joint to. Many related structures such as headless relatives (who plagiarizes my papers steals garbage), whoever-clauses and reduced relatives have escaped serious consideration.

An important question which has been too much neglected is how one decides that a particular construction in a given language is a relative clause. There is some discussion of this in Klokeid (1970). We assume that if a subordinate clause modifies (a

crucially undefined term) an NP, and does so by virtue of the fact that it contains in deep structure an NP coreferential to the modified NP, then the clause is a relative clause. This criterion is obviously much too vague, but it is good enough to serve until we know a good deal more about the things we call relative clauses.

We call the modified NP $NP_{h(ea)d}$, the relative clause $S_{rel(ative)}$, the NP coreferential with NP_{hd} that is within the relative clause NP_{rel}, and the S which is the lowest S dominating both NP_{hd} and S_{rel} $S_{mat(rix)}$.

Our approach to the organization of this typology will be to set up types of constructions, and then to discuss instances of these constructions in particular languages. This is because there seems to be a comparatively restricted range of types of relative clause constructions, while languages choose the particular types they happen to have according to no obviously independent principle. Observations such as those of Greenberg about the correlation of construction types with word order are of course useful and interesting, but their status is unclear until they can be seen to follow from some independent principle. In addition, examination of published descriptions or limited informant work will yield the information that a language has a particular construction, but it will not allow one to give an exhaustive list of the constructions it has. Hence we do not define types of languages: only types of constructions.

In the treatment of individual languages we will try to present most of the background information about a language when

first discussing evidence from it. Hence a good deal of information will be presented about languages when it is not of great relevance to the theoretical issues being discussed at the moment.

In the first section we will discuss the deep and surface structure constituent structures in which NP_{hd} and S_{rel} appear. In the second we discuss a class of transformational rules which apply to relative clauses which appear to be related to other rules that delete anaphoric pronouns. We shall propose that there are strong limitations on what these rules can do. In the final section, we will discuss a number of processes, for the most part already seen in action, which also have a hand in shaping the surface forms of relative clauses.

1. Constituent Structure Relations of NPhd and Srel

There appear to be five surface structure configurations in which NP_{hd} and S_{rel} may appear. They may form a single NP, to yield what I shall call an embedded relative clause. If S_{rel} preceded NP_{hd} we get what we will follow Schwartz (1972)[1] in calling a prospective relative (pro-relative), and if it follows we get a retrospective relative (retro-relative). A third possibility is that NP_{hd} gets transformationally deleted, so we get a deleted-head relative clause (del-relative). These seem to happen to both prospective and retrospective underlying structures. In the other two constructions NP_{hd} and S_{rel} do not form a constituent; S_{rel} is in surface structure merely a clause subordinate to some S containing NP_{hd}. These constructions we call adjoined relatives. If the clause precedes the head we get a preposed relative, otherwise an extraposed relative.

In the following sections we discuss each type of clause individually, making some speculations concerning the relations between them and offering an occasional argument concerning their deep or superficial constituent structure.

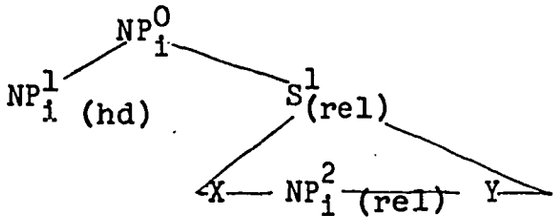
1.1 Embedded Relatives

Since embedded relatives are more familiar to most readers we discuss them first, and since the retro-relative is the construction occurring in English we start with it.

1.1.1 Retro-Relatives

We propose that the superficial structure of retro-relatives is (1.1):

(1.1)



The numerical superscripts and parenthesized subscripts are expository devices. The non-parenthesized subscripts are referential indices.

This is exactly the structure proposed by Ross (1967) for English. Discussion of its merits compared with other proposals may be found in Andrews (1971) and (Stockwell, Schachter and Partee 1968). What distinguishes (1.1) from alternative proposals is that NP^0, which dominates the whole construction, directly dominates a full NP which is NP_{hd}. In other analyses NP_{hd} is the NP dominating the whole construction, so that S_{rel} is contained within the NP it modifies. Therefore NP_{rel} is also contained within its antecedent NP_{hd}.

While we have no strong arguments against such analyses, there are sentences which suggest NP cannot occur within their antecedents. Consider (1.2):

(1.2) *The theory$_i$ that it$_i$ is the best theory (is not widely accepted).

If this is taken to have a structure parallel to that of the theory that light is made up of waves..., in which the that-clause is understood to be the complement of theory (and not just an ill-formed relative clause), then (1.2) is nonsensical. If, to explain the failure of pronominalization in (1.2), we adopt as a general principle the claim that NP cannot be contained within their antecedents, then (1.1) provides us with a structure that does not violate this principle. But (1.1) does force us to abandon the idea that all coreferential NP have the same underlying form, for NP^{O} clearly cannot have the same underlying form as NP_{hd} and NP_{rel} (at least if the underlying structure is to be finite), yet all three NP are coreferential.

A few genetically unrelated languages which appear to have (1.1) as one of their relative clause constructions include:

Languages having Retro-relative Clauses:

English	Turkish
Hungarian	Micmac
Hebrew	Eskimo
Georgian	Malay
Swahili	Shan
Nuer	Vietnamese
Crow	Samoan
Papago	Dyirbal
Tagalog	Dagbani
Maasai	Hottentot

The amount of discussion available about English makes extensive discussion of retro-relatives unnecessary, but we will present

examples from various languages which appear to show that S_{rel} and NP_{hd} do together make up a noun phrase, and also that the relative clause is a constituent similar to an adjective.

1.1.1.1 Motu

The proposition that NP_{hd} and S_{rel} together form a constituent can be illustrated in a language in which there is some morphological mark which is placed on NP under certain circumstances, and which, when the NP is modified by a relative clause, clearly includes the clause in its scope. Such a language is Motu, a Melanesian language of New Guinea.

As will also be noted in a later portion of this work, Motu has a set of particles which serve to indicate syntactic function. These particles (including na "intransitive subject" and ese "transitive subject") follow the NP whose function they mark. Most modifiers of nouns precede them, and hence the location of the particle in most cases is uninformative (since it simply follows the head, which is also the last word of the NP; under certain circumstances, however, a relative clause can follow the head, and in this case the particle occurs following the entire NP:

(1.3) a. mero na e gini-mu
boy S_iP 3 stand-imperf.
"the boy is standing"

b. mero ese aniani e heni-gu
boy S_tP food 3 give-me
"The boy gave me food"

c. hanua sisia-na na e gini-mu
village dog-its S_iP 3 stand-imperf.
"A dog of the village is standing"

d. habai e tauadae laulauna na vada e moru
wall-on 3 hang picture S_iP perf. 3 fall
"The picture he hung on the wall has fallen'

e. ruma e itaia na e maragi herea
house 3 see S_tP 3 small very
"The house that they saw was very small"

(S_iP = intransitive subject marker; S_tP = transitive subject marker;
3 = third person subject agreement particle)

In (1.3e), where the S_{rel} follows the NP_{hd}, we see the subject particle following the entire NP, which is most naturally explained on the assumption that NP_{hd} and S_{rel} form a constituent, which is itself an NP.

1.1.1.2 Eskimo

We first present a thumbnail sketch of Eskimo morphology to make the examples more intelligible. Eskimo nouns and verbs are built up from a base morph by adding first derivational suffixes and then inflectional endings. The bases are always word initial and never used as suffixes. The derivational affixes are many, and the derivational processes are astonishingly productive and recursive. When a suffix is added to a form, it may have the semantic effect of a modifying adjective or adverb, or of a higher verb or noun, or many other things.

For example, given a form X we may add the suffix liur 'to construct', to get a verb stem meaning 'to construct an X'. To this may be added another suffix vig to get a noun-stem X-liur-vig 'a place in which to construct an X'. After some more suffixes have been added, perhaps, we may add liur again in order to get a verb meaning 'to construct a place in which to construct an X'.

Nouns are inflected for number and case, and have in addition

an agreement suffix showing the person and number of the possessor, if there is one. The numbers are singular, dual and plural. The cases divide naturally into 'syntactic' and 'adverbial'. The syntactic cases are called relative and absolutive. The relative case is used on possessors and on subjects of transitive verbs and will be discussed elsewhere in this work. It is thus a genitive-ergative (a great deal of Eskimo scholarship has been devoted to trying to make this dual function of the relative follow from something). It is marked with a suffix which is underlyingly a labial, showing on the surface mostly as p or m. The absolute case is used on the subjects of intransitive verbs and the objects of transitives, and is marked by nothing. The adverbial cases are Instrumental, Locative, Allative, etc., and appear to be marked by suffixes which are attached to the relative case-form of the noun.

The basic order of elements in the NP is (Possessor) Head ($\left\{\begin{matrix}\text{Adj.}\\ \text{Rel. Clause}\end{matrix}\right\}$). Adjectives are morphologically indistinguishable from nouns. It is not clear that they are even a separate class of stems. They agree with the head in number and case (adjectives should be distinguished from the adjectival suffixes which are added directly to any noun stem).

Verbs have a mood suffix followed by subject and object agreement suffixes. Furthermore stems (which are structures of the form Base + one or more derivational affixes) are almost always inherently transitive or intransitive, with inherently transitive stems being understood as reflexive when they appear with intransitive inflection. The moods are various, including an indicative which

is used in declarative main clauses, having the mood suffix -va when transitive and -vu when intransitive. There are also transitive and intransitive participial moods which appear to be nominalization forms of verbs.

The syntax of relative clauses with transitive verbs is somewhat obscure, due to the paucity of examples in the literature and confusion as to their structure and interpretation. But relative clauses with intransitive verbs are comparatively investigable and mildly interesting. They are formed by putting the main verb of S_{rel} into the intransitive participial mood and deleting NP_{rel}.

The intransitive participial appears to be the form which nominalized intransitive verbs normally take. Hence we have (1.4):

(1.4) paasi-ssa-va-r-put ...kalaaliy-u-šu-gut
realize-FUT-TR.IND-it-we Greenlander-be-INT.PRT-we

"We shall realize that we are Greenlanders."
(Bergsland 29.4, pg. 46)

(the transcription is that of Bergsland (1955))

TR.IND is the heiratic symbol for the transitive indicative mood marker, and INT.PRT that for the intransitive participial. Here kalaaliyušugut 'we being Greenlanders' is the object of paasissavarput 'we shall realize it'. r in the main verb is the agreement suffix referencing the nominalized S.

In relative clauses, if NP_{rel} is the subject of S_{rel}, then it is deleted and the intransitive participial acts pretty much like an ordinary adjective. An example of this is (1.5):

(1.5) iglu-ni tammar-tu-q uyar-i-ni
$cousin_j$-his_i be lost-INT.PRT-he_j seek-TR.PRT-him_j-he_i
his_i $cousin_j$ who_j was lost he_i seeking him_j

unnir-lu-gu
say-CONT-him$_j$
saying of him$_j$

"Saying that he$_i$ was looking for his$_j$ cousin$_j$ who$_j$ was lost." (Bergsland 29.5.2, pg. 46)

CONT is the symbol for one of the subordinate verbal moods used mostly when the time of the subordinate clause is roughly the same as that of the matrix clause, and the subjects of both are identical. If the CONT verb is transitive, as it is here, its own subject is deleted and leaves no agreement marker on the verb.

ni in igluni 'his cousin' and uyarini 'he seeking him' is a so-called fourth person agreement suffix. The fourth person is used when the agreed-with NP is coreferential with the subject of some higher verb (hence almost always deleted due to anaphoric NP deletion processes). In uyarini the TR.PRT ending is phonologically reduced and the object agreement suffix is destroyed.

More interesting are the examples in which NP_{rel} is the possessor of the subject of S_{rel}. The verbal character of the intransitive participial verb of S_{rel} is shown by its taking a subject in the absolutive case, regardless of the case of NP_{hd}. Bergsland claims that the participial agrees in number with its subject and in case with NP_{hd}. Unfortunately in the examples he gives the head and the subject of S_{rel} are the same in number.

(1.6) a. natsir-niq miqquw-i
seal skin-PL.INSTR hair-PL their
with seal skins their hairs

qummu-kar-tu-nik
upwards-go-INT.PRT-PL.INSTR
they going upwards

"with seal skins whose hairs go upwards"
(Bergsland 29.3, pg. 45)

b. ukiyuliguni nanu-rsu-up kiina-a
bear-big-REL face-its
when winter comes big bear its face

miqqu-qa-ŋŋitsur-šu-up
hair-have-not-INTR.PRT-it REL
it having no hair (the face)

tikiraa-qqip-pa-si
come(visiting)-again-IRREAL-it you

"When winter comes, when the big polar bear whose face has no hair again comes to you"
(Bergsland 29.7.2. pg. 49)

IRREAL is the symbol for the Irrealis mood, used in various subordinate clauses referring to things which haven't happened yet. In each example there is a subject of S_{rel}, and this subject is absolutive in case. The verb of S_{rel}, which is an intransitive participial, bears the case ending of NP_{hd}, just as an adjective would. In these examples as well as the previous NP_{rel} disappears. It is clear that in the above examples it is not NP_{hd} which is disappearing, because if NP_{rel} were to survive it would be absolutive. This disappearance can be a consequence of the anaphoric NP deletion processes which are prevalent in Eskimo: there is no need to postulate a special rule for the purpose of deleting NP_{rel}.

There are two arguments afforded by Eskimo concerning the constituent structure of relative clauses. First, since the verb of S_{rel} is nominalized, S_{rel} must be dominated by NP, and second, since it agrees with NP_{hd} in case, it is in the same NP as NP_{hd} and is furthermore roughly the same kind of modifier as an adjective is. This paralellism is reinforced by the fact that relative clause and adjectives are similar in following what they modify whereas possessors are distinct from both in preceding.

1.1.1.3. Faroese

Faroese relative clauses are introduced by the particle sum, or sometimes ið, and NP_{rel} is deleted. When a Faroese NP with the (suffixed) definite article is modified by a relative clause or an adjective, the demonstrative pronoun tann 'that' is usually put at the front of the NP. Hence we have:

(1.7) a. tann svarti kettlingurinn
that black kitten-the
"the black kitten"

b. tað góða kornið
that good corn-the
"the good corn"

c. tey hægstu fjøllini
those highest mountains-the
"the highest mountains"

(1.8) a. tann maðurinn, sum gjørdi hettar
that man-the that did this
"the man who did this"

b. tað er tað ljótasta djór,
that is that most loathsome animal

eg nakrantíð havi sæð
I ever have seen

"That is the most loathsome animal that I ever have seen."

c. tær konurnar heima skuldu vera
those women-the at home should be

eru burtursaddar
are away

"The women who should be at home are away."

(these examples are given in the conventional orthography, which is a misleading guide to pronunciation)

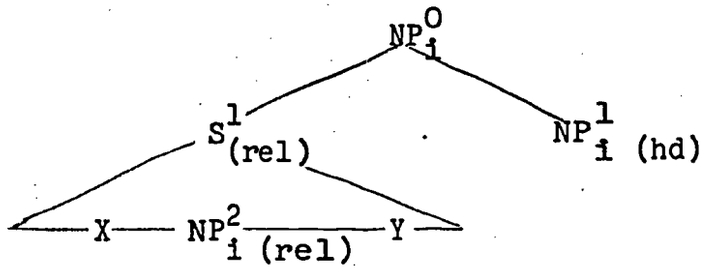
Sometimes, as in (1.8b), the suffixed article is omitted. Also sum may be omitted, as in (1.8b-c).

These examples show that in Faroese the relative clause and the adjective interact with the determiner in the same way, whatever that way is, and this argues that they are at some level of the derivation the same sort of constituent in their relations to the rest of the NP.

1.1.2. Pro-Relatives

The deep structure of pro-relatives, we assume, is the same as that of retro-relatives, except that the order of NP_{hd} and S_{rel} is reversed:

(1.9)



As in (1.1), the retro-relative structure, the superscripts and parenthesized subscripts are expository devices and the unparenthesized subscripts are referential indices.

Languages which have pro-relative clauses include:

Languages with pro-relative clauses:

Japanese	Korean
Hottentot	Mongolian
Turkish	Telugu
Ainu	Basque
Navajo	Chinese
Papago	Classical Tibetan

As a representative of these languages we shall discuss Turkish, about which interesting facts have recently been discovered by Underhill (1972).

Turkish has two kinds of relative clauses: pro-relatives, and retro-relatives. The retro-relatives were borrowed from Persian,

and are said to be frowned upon and to be disappearing from the language. It would be reasonable to say that in underlying structure Turkish has both a pro-relative and a retro-relative. In this section we shall discuss the pro-relative only, leaving the others for later.

Turkish is an SOV language with a good deal of scrambling of major constituents in main clauses. In the noun phrase, however, almost all modifiers (the exception being the retro-relative clauses borrowed from Persian) precede the head. Turkish has nominative, accusative, genitive, dative, locative and ablative, and it has postpositions. Verbs and nouns have agreement suffixes referring to their subjects and possessors, respectively. The suffixes manifest person and number. Subject and possessor pronouns are freely deletable.

There is considerable syntactic parallelism between the subject of an S and the possessor of an NP, since when an S is nominalized its subject becomes genitive, and possessor-agreement suffixes are attached to the nominalized verb. The subject and possessor suffixes are phonologically similar and were originally identical.

The relative clauses (both pro- and retro-) are closely related to nominalizations corresponding to the English <u>that</u>-clause used as objects of verbs meaning such things as 'say' and 'think'. The retro-relative is related to a kind of nominal clause which was borrowed from Persian along with the relative. The pro-relative clause is related to the native nominalization.

We describe first the native nominalization construction. This

is made with the aid of the 'personal participle' endings. These endings come in two forms: acak/ecek (varying with vowel harmony) for the future, and dig/dıg/dug/düg for the non-future (present and past). These endings replace endings marking a past-nonpast distinction in 'finite' clauses, and do not have the possibilities for aspectual elaboration that verbs in finite clauses have. To the personal participle endings are attached possessor agreement suffixes which show the person and number of the subject, which appears in the genitive case. If the nominalized sentence is being used as a direct object, as accusative case marker appears after the possessor suffix, in accordance with the normal rule.

Hence we have examples such as the following:

(1.10) a. Halil Orhan-ın Istambul-a git-tiğ-i-ni
Halil Orhan-GEN Istambul-DAT go-NOM-his-ACC

düşün-üyor
think-PROG

"Halil thinks that Orhan went (or is going) to Istambul."

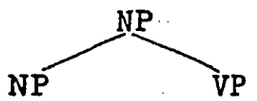
b. Hasan, Fatma-nın o-nu öl-dür-eceğ-i-ni
Hasan Fatma-GEN he-ACC die-cause-FUT-nis-ACC

düşünüyor
thinks

"Hasan$_i$ thinks that Fatma will kill him$_i$."

A likely explanation of the properties of these nominalizations is that they lack an S node to dominate them in the later stages of the derivation, either because it was pruned away or because it was never there in the first place. Thus, their structure might be represented as in (1.11):

(1.11)



The subject NP bears the same structural relation to the dominating NP as would a possessor NP; therefore it gets marked with the genitive case. Since the NP and VP are related in the same way as a possessor and the thing possessed, the possessor agreement suffixes get copied onto the latter. We assume that the VP really is a VP because it has the full internal syntax of a VP; the full range of complements, adverbs, etc.

There are two kinds of nonfinite relative clauses: one where NP_{rel} is within the subject, either as the subject itself or as its possessor, or even as the possessor of the possessor; and the other when NP_{rel} is elsewhere. This latter construction has the same internal syntax and morphology as do the nominalizations described above, except that NP_{rel} is always deleted. Below are examples:

(1.12) a. Halil-in (*o-nu) öldür-düg-ü adam
Halil-GEN him-ACC kill-NOM-his man
"the man whom Halil killed"

b. gel-dik-leri vapur
come-NOM-their steamer
"the steamer on which they came"

c. baba-sı-nın ev-i-ni al-dığ-ımız adam
father-his-GEN house-his-ACC buy-NOM-our man
"the man whose father's house we bought"

d. iç-in-den çık-tığ-ımız ev
interior-its-ABL emerge-NOM-our house
"the house from which we emerged"

That there is a deletion rule is demonstrated by (1.12a-b) where a pronoun for NP_{rel} results in unacceptability (constrast with (1.10b)). In (1.12c-d) it could be that NP_{rel} was being deleted by the rule that deletes unemphatic subject and possessor pronouns. One thing we note is that there is no case-marker on

the verb of the relative clause: this is because it is a pre-nominal modifier and such modifiers in Turkish do not take case-endings.

The other nonfinite construction is used when NP_{rel} is in the subject. For this form a participle ending en/an is used for nonfuture tense, and the future and an inferred past tense may be expressed with the periphrastic forms -ecek (olan) and -miş (olan) (varying with vowel harmony), respectively. olan in these forms is the en-participial form of the verb ol 'to be, become'. The subject of S_{rel} is nominative, and there are no agreement suffixes on the verb. Some examples are:

(1.13) a. dün gel-miş ol-an mektup
yesterday come-PAST be-PRT letter
"the letter which came yesterday"

b. baba-s simdi konuş-an adam
father-his now speak-PRT man
"the man whose father is now speaking"

c. ogl-u-nun kedi-si et-i yiy-en adam
son-his-GEN cat-his meat-ACC eat-PRT man
"the man whose son's cat ate the meat"

Even though a pronominal manifestation of NP_{rel} is impossible in these examples, we cannot really be sure that there is an NP_{rel} deletion rule at work here, because nonemphatic subject and possessor pronouns delete obligatorily, and NP_{rel} cannot be emphatic. Nonetheless there will be need either for a rule attaching en if NP_{rel} is in the subject, or for a constraint on the output of the cycle to the effect that -en must be on the verb if NP_{rel} is in the subject. That the rule or condition applies to derived structure is shown by the following example, where NP_{rel} is only in the subject after PASSIVE:

(1.14) dün Hasanın tarafından öldür-ül-en çocuk
yesterday Hasan-GEN by kill-PASS-PRT
"the child who was killed by Hasan yesterday"

Somehow -en blocks genitivization of subject and possessor-agreement.

It might be reasonable to analyse the Turkish clauses as being the output of three rules: a rule attaching -en to the verb and deleting NP_{rel}, which applies if NP_{rel} is in the subject. Then a rule deleting NP_{rel} anywhere applies, and finally a rule of nominalization whereby verbs to which -en has not been attached become nominalized (with consequent S-pruning, genitivization and agreement).

As in Eskimo, the nominalization of the verb argues that S_{rel} is dominated by an NP node. In the second section transformations of the sort which delete NP_{rel} will be considered, and various problems concerning this deletion which might occur to the reader will be investigated.

1.1.3. Languages with both Pro- and Retro-relative Clauses

Some languages with both of the kinds of relative clauses that have so far been considered are listed below:

Classical Tibetan
Hottentot
Quechua
Papago
Turkish

1.1.3.1. Classical Tibetan:

This obscure language, which has been suspected of being largely synthetic, has basically SOV word-order. It uses a wide variety of post-positions, and modifiers of nouns can occur on either side of the head. When modifiers precede the head, they are followed by

a particle whose underlying phonological form is kyi. Furthermore the verbs of relative clauses are nonfinite and take a suffix pa, which is of extremely common use in Tibetan, making agent-nominalization, among other things. Whether pa is a relativization marker or a more general nominalization marker we do not know. (1.15) are examples of adjectives, possessive modifiers and relative clauses preceding and following the head:

(1.15) a. bla-ma'i gos
lama:GEN vestments
"lama's vestments" ('i is a reduced form of kyi, and following the conventional usage, we call it a genitive. The hyphens in Tibetan transcriptions separate syllables, not morphs)

b. skam-pa'i sa
dry:GEN earth
"dry earth"

c. čhu ni bsil-ba-yis
water cold: with
"with cold water"

d. saṅs-rgyas-kyi čhos thams-čad yaṅ-dag-par
Buddha:GEN law all completely

thob-pa'i blo
obtain:REL:GEN intelligence

"intelligence which completely attains the entire law of the Buddah"

e. [[me-tog daṅ 'bras-bu'i çin-ljon-pa sna-chogs] NP_{hd}
flowers and fruits:GEN trees diverse

[dus tha-dad-par dbyuṅ-ba] S_{rel}] NP
times different:LOC bear fruit:REL

"Diverse flower and fruit trees which bear fruit at different seasons."

(1.15d) is a relative clause which precedes NP_{hd}, and (1.15e) is one which follows, and we thus find that kyi (reduced to 'i) does not follow the verb. Note in (1.15e) the NP dus tha-dad-par 'at different times', which has the syntactic pattern 'HEAD-ADJ-CASE',

arguing that the adjective following the head is an NP constituent.

These examples show that adjectives and relative clauses share much of the same syntax in Tibetan. There is still a question as to what is responsible for the two possible orders: either two base orders, as suggested for the two (quite distinct) constructions in Turkish, or one base order and a process of permutation. A somewhat similar situation will be analyzed below in Tagalog, where two orders are possible for simple adjectival modifiers, and a linking particle like the Tibetan kyi appears between them regardless of their order; it will be seen there that only one basic order is necessary.

1.1.3.2. Turkish

The other Turkish construction consists merely of a clause identical in internal syntax to a main clause which is introduced by a particle ki (derived from the Persian ke). Clauses introduced by ki also are used as subjects and objects of verbs, as are the ke-clauses in Persian. In both the Turkish and Persian relative clauses with ki/ke, the clause is a retro-relative and NP_{rel} is deleted. Persian relativization will be discussed later.

Below are some examples of ki- clauses in Turkish:

(1.16) a. düşünüyorun ki Hasan gelecek
I think that Hasan will come
"I think that Hasan will come."

b. şüphe-siz ki gelecek
doubt-without that he will come
"It is indubitable that he will come"

c. bir çocuk ki kap y kapamaz
a child that the door does not close
"a child who does not close the door"

An interesting question is how the grammar of Turkish actually changed when it borrowed the ki-clause from Persian. If we assume that embedded relatives originate as embedded relatives in underlying structure, then we must assume either that Turkish acquired a retro-relative deep structure or a transformation turning pro-relative deep structures into retro-relative ones (this transformation would preceed the an-attachement and nominalization rules discussed below). On the other hand if we side with some contemporary generative semanticists in asserting that relative clauses come from outside of the S dominating NP_{hd}, then we say that Turkish borrowed from Persian the rule which Chomsky-adjoins relative clauses to the right of their heads. This in Turkish becomes an alternative to the native rule which right-Chomsky-adjoins.

It is also interesting to note that once again we have a relative clause having the same form as a nominalization. This is, of course, fundamentally a fact about Persian, but the fact that the Turks borrowed both the relative and nominal uses of the ke-clauses suggests that there is some universal basis for the similarity.

1.1.3.3. Hottentot

In addition to being amusing in its own right, the evidence from Hottentot provides an additional argument that embedded relative clauses are constituents of an NP together with their head, and that they are a category related to adjectives and other nominal modifiers. We shall discuss the Nama dialect.

The basic Hottentot sentence structure is Subject-Verb Phrase. The syntax of the verb phrase with its rules for the placement of verb, objects and tense and aspect particles is somewhat obscure, and quite complex. There is a curious rule which extraposes the subject into the VP and provides it with an accusative case-marker if it is noninitial due to there being a topicalized object or introductory particle at the front of the S. Furthermore a clitic-copy of the subject is left behind attached to the initial element which displaced the subject. This rule will be seen in action in the relative clause examples.

Hottentot nouns take endings for grammatical gender (masculine, feminine, neuter/common) and number (singular, dual, plural), which are identical with the clitic forms of third person pronouns (the nonclitic forms consist of a stem //ẽi to which appropriate gender endings (i.e. clitic forms) are added). Modifiers, adjectives, possessives, demonstratives and relative clauses may either precede or follow the head. If they follow the gender-number endings are copied onto them, if they precede, they are not. There is also an accusative case marker a which is attached to the last member of the NP. The language is post-positional, forming possessive phrases with a post-position di. These points about the grammar of Hottentot are illustrated in the following examples:

(1.17) a. gei /g̃oa-n
big child-neut.pl
"big children"

b. //gũ-b di /on-s
father-masc.sg. GEN name-fem.sg.
"the father's name"

c. ao-gu gei-gu
man-m.pl. big-m.pl.
"the big men"

d. //goà-b /a-s di-b
wall-m.sg. city-f.sg. GEN-m.sg.
"the wall of the city"

e. mũ ta go ao-b gei-b-a
see I PAST man-m.sg. big-m.sg.-ACC
(clitic)
"I saw the big man"

(all these examples and the following are given in the transcription of Meinhof (1909))

Like other modifiers, relative clauses may precede or follow the head, and when they follow, the agreement marker of the head shows up on the last word of the clause, which in all examples found is a verb. When the clause follows the head it is introduced by a particle hia/ia (we can find no basis for the variation), and when it precedes there is no introductory particle. NP_{rel} is deleted. Note especially that when NP_{rel} is the underlying subject of S_{rel} there is no clitic form left behind.

(1.18) a. narí ta gye mũ khoi-b gye //gei te
today I PERF see man-m.s. PERF call me
"The man who I saw today called me."

b. khoi-b , ia go //ari ha-b gye mĩ
man-m.s. REL PAST yesterday come-m.s. PERF say
"The man who came yesterday said ..."

c. /goa-b hĩa-s tara-s-a gye
boy-m.s. REL-f.s. woman-f.s.-ACC PERF

si-b gye go //hawu
send-m.s. PAST get lost

"The boy whom the woman sent got lost." (gye in the main clause of this example is a sort of emphatic particle, not a tense/aspect marker)

d. tara-s , hia-ts gye sats-a //gei
woman-f.s. REL-you PERF you-ACC call

ha-s go neti ha
be-f.s. PAST now come
(aux. verb)

"The woman whom you called has now come."

Note the subject-extraposition, which has applied in (c-d). Unfortunately, available examples all involve relative clauses modifying the subject of sentences, so it is impossible to exhibit the accusative case-marker tacked onto a relative clause following the head. But the workings of the agreement rule can be clearly seen. Note that the form attached to the relative clause is determined by what the head is, and not by what the subject of the clause is, or any other such thing. These facts show that the Hottentot relative clause is a constituent of an NP containing its head, and has roughly the same external syntax as an adjective.

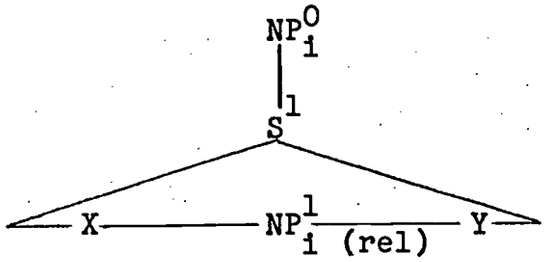
1.1.3.4. A Final Speculation

One thing that one notices about the Turkish pro-relative is that it is much more 'reduced' and 'nominalized' than the retro-relative. Not only is the verb-morphology affected, but also in the pro-relatives there is no scrambling, while in main clauses and in ki-clauses there is rampant scrambling. The fact that the ki-clause was borrowed does not permit one to conclude much from this, but it suggests that pro-relatives have a greater tendency to become subordinated than retro-relatives. This idea is supported by Papago, in which there is scrambling in pro-relatives but not in retro-relatives. Whether there is such a tendency generally we cannot say, but it is something that one can suspect.

1.1.4. Deleted Head Relative Clauses

There are a number of languages in which NP_{hd} is transformationally deleted, resulting in a surface structurally headless relative clause. Such a structure is diagrammed in (1.19):

(1.19)



These structures are to be distinguished from relative clauses with underlying pronominal heads, such as the subject of the sentence what Harry did was obnoxious. In several languages with del-relatives, there is a significant difference between clauses with underlying full-NP heads, and those with pronominal heads. All the languages we have encountered with del-relatives also have either pro-relatives or retro-relatives. Below are a list of languages with del-relative clauses with an indication of what kind of other embedded relative clause the language has:

(1.20) Languages with deleted head relative clauses:

English	(retro)
Dagbani	(retro)
Crow	(retro)
Navajo	(pro)
Tagalog	(retro)

In the next two sections we will describe the constructions in English and Navajo; Crow, Dagbani, and Tagalog will be discussed elsewhere.

1.1.4.1. English

The English del-relative is illustrated by examples such as (1.21):

(1.21) a. What evidence the police found was not conclusive.

b. The police turned over what evidence they found to the D. A.

c. What arguments there are do not convince me.

d. I couldn't understand what arguments Bill came up with.

We analyse these sentences as being produced by the rules of head-deletion and WH-REL-PREPOSING. The former rule deletes NP_{hd} and the latter attaches a WH to NP_{rel} and fronts it to the beginning of S_{rel}.

This construction is restricted to mass or plural head nouns: if the head is a singular count noun we get such ungrammatical results as *(1.22). There is also a restriction on the verb of S_{rel} to the effect that S_{rel} asserts the existence of a referent for NP_{rel} (and therefore, of course, for NP_{hd}). Such verbs are known to have other syntactic peculiarities (cf. Anderson, forthcoming).

(1.22) a. *What book Harry found was crummy

b. *What books Harry was reading had been lent him by his cousin.

These facts suggest that these constructions are interpreted in a rather special way, differently from ordinary relative clauses, so that they come out nonsensical with a singular count head.

Another structure which is probably related in some way to the above is the whatever-noun clause. There are two kinds of whatever-clauses in English, illustrated below:

(1.23) a. Whatever book Harry bought was crummy.

b. Whatever books Harry bought, they were crummy.

c. Whatever books Harry bought, I will shoot him.

(1.23a) is a whatever-noun clause; the other two are whatever-adjoined clauses. The fact that the whatever-noun clause can occur with a singular head shows that it is somehow different from the del-relatives discussed above. The fact that in (1.23c) we have a whatever-adjoined clause where the NP with whatever attached to it is not coreferential with any NP in the matrix clause shows that the whatever-adjoined clause is in some way distinct from relative clauses.

1.1.4.2. Navajo

Whereas in English the deleted head relative is an highly restricted, rather odd construction, in Navajo it is one of the standard ways of forming relative clauses.

There are three basic relative clause constructions; del-relative, pro-relative and extraposed relative. These constructions are illustrated by the following examples:

(1.24) a. łį́į́' shi-léechąą'í yiztał , adą́ą́dą́ą́'
horse my-dog kicked yesterday

shi-zhé'é (łį́į́') nayiisnii'ęę
my-father (horse) bought-REL

"The horse my father bought yesterday kicked my dog."

b. adą́ą́dą́ą́ shi-zhé'é łį́į́' nayiisnii'ęę
yesterday my-father horse bought-REL

shi-léechąą'í yiztał
my-dog kicked

"The horse my father bought yesterday kicked my dog."

c. adą́ą́dą́ą́ shizhé'é nayiisnii'ęę łíí'
yesterday my father bought-REL horse

shiléechąą'í yiztał
my dog kicked

"The horse my father bought yesterday kicked my dog."

d. *adą́ądą́ą shizhé'é ɬį́į' nayiisnii'ęę ɬį́į'

e. *ɬį́į' adą́ądą́ą shizhé'é ɬį́į' nayiisnii'ęę

(1.24a-c) illustrate the three acceptable constructions, while (1.24d-e) represent unacceptable ways of trying to say 'the horse which my father bought yesterday' with an embedded relative clause deleting neither NP_{rel} nor NP_{hd}. (1.24a) is the extraposed relative, (1.24b) the del-relative and (1.24c) the pro-relative.

An argument that these Navajo relative clauses represent noun phrases and not just subordinate clauses adjoined to the matrix S is that we may have several in the same S with no difficulty:

(1.25) adą́ądą́ą shizhé'é ɬį́į' nayiisnii'ęę
yesterday my father horse bought REL

ashkii ɬeechą́ą'í bishxashęę yiztaɬ
boy dog bit kicked

"The horse which my father bought yesterday kicked the dog which bit the boy."

(this sentence is in fact rather ambiguous: We have singled out one of its many readings)

We pause here in the discussion of Navajo. Later sections will take up various other questions.

1.1.5. In the preceding discussion of embedded relatives we have presented a variety of arguments that they are a component of NP and that they have roughly the same external syntax as adjectives. The kinds of arguments used to motivate deeper representations than the pro- and retro- relative structures of (1.1) and (1.9) are beyond the scope of this work and we assume henceforth that they represent deep structures.

1.2 Adjoined Relative Clauses

Adjoined relative clauses come in two varieties: preposed and extraposed. The extraposed relative clauses are familiar from English, and we have also seen them in Navajo. However they are lacking in Japanese, and the nonfinite relative clause in Turkish cannot occur extraposed. This might lead one to suspect that there is an extraposition rule which only applies to retro-relatives, but the evidence from Navajo seems to controvert this. We shall also see in English a very compelling argument against deriving extraposed relatives from any embedded source.

Preposed relatives are less familiar, although they occur in quite a number of languages. Some languages containing this structure are:

Languages with Preposed Relative Clauses:

Walbiri	Sanskrit
Mabuiag	Bengali
Kaititj	Hindi
Old Serbocroatian	Marathi
Papago	Telugu
Hittite	Crow

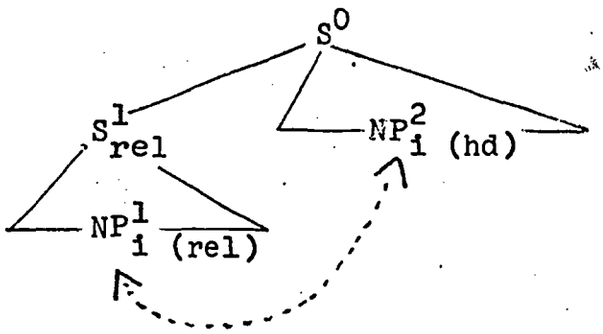
In some languages, such as Papago, the preposed relative clause is used only in a sense related to the conditional, translating such sentences as 'whoever comes, I'll kill him.' or 'whoever Bill saw, he liked her.'. Such sentences require that the speaker not know the identity of the referent of the Wh-word. In English, the Wh-ever word does not require a coreferent in the main clause: hence one can say 'whoever tries to fix it, the car will keep falling apart.'. But we are told by Hale that in Papago each Wh-word in the preposed relative requires a coreferent in the main clause.

This feature has been taken (somewhat arbitrarily) as an indication that the Papago construction is an adjoined relative clause and that the English is something different.

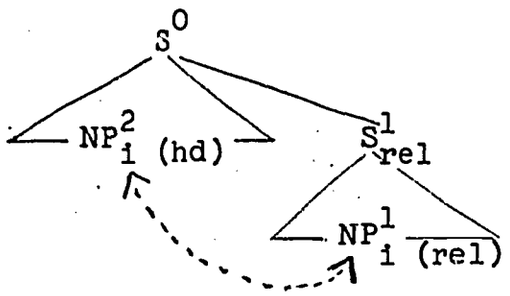
In other languages, such as Hindi and Crow, the preposed relative is used to translate such ordinary garden-variety relative clauses as 'the man who left was tall'. In later sections we describe a number of such languages.

We propose the following underlying structures for the preposed and extraposed relative clauses (preceding such rules as Wh-marking but following any rules which might be taken to move relative clauses around):

(1.26) a.



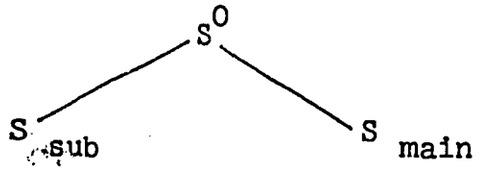
b.



(the arrows are merely expository devices)

It might be proposed that the relative clause is adjoined to the main clause in a structure like (1.27):

(1.27)



This structure has been discussed and argued for by Ross (1967) for some subordinate clauses other than relative clauses. Its crucial failure is that it fails to distinguish relative and other subordinate clauses adequately from conjoined structures, which is a mistake in any language. We therefore reject it out of hand. In particular, there are all sorts of phenomena which require one to distinguish main from subordinate clauses which the structures of (1.26) do naturally, but which that of (1.27) requires additional unmotivated devices in order to do.

A fundamental formal problem with the structures of (1.26) is the status of the expository arrows in these diagrams. These are intended to indicate the connection between NP_{hd} and NP_{rel}, and it is of course such a connection that results in the interpretation of the subordinate clause as a relative (rather than, say, a conditional) as in (1.28a), where the same structure, including coreference between an NP in the main clause and one in the subordinate clause obtains as in a preposed-like structure such as (1.28b).

(1.28) a. Because Harry likes the car_i, I'll give him a deal on it_i.

b. Whatever car_i Harry likes, I'll give him a deal on it_i.

In the immediately following sections we discuss a number of languages which have preposed relative clauses, and then some more general issues.

1.2.1 Walbiri

This is a somewhat oversimplified account of material presented by Kenneth Hale in lectures (1971). The exposition is more detailed

than is appropriate to an account of someone else's work because the material is not available in written form. We are of course responsible for our interpretation of Hale's material.

Walbiri is basically an SOV language with very free scrambling and a case system including Ergative, Absolutive, Dative, etc. A constituent with considerable importance in the surface structure is an Aux-node, the contents of which are realized as a single word and which contains tense/aspect and mood markers, as well as agreement morphemes expressing the case and number of various complements of the verb. Curiously, the case-system of the agreement morphemes is nominative-accusative while that of the NP is ergative-absolutive. This suggests that the underlying case system is nominative-accusative, and that after the agreement rule applies, an ergative-absolutive rule applies to the full NP and somewhat obscures the underlying structural categories. Further discussion of the Walbiri case system will be found elsewhere in this work.

Walbiri speakers do not like constituents of more than one word length to appear in surface structure, preferring to scramble apart even such constituents as NP consisting of head and adjective or demonstrative. Especially Walbiri speakers do not like embedded clauses (i.e., intact dependent clauses surrounded on both sides by material from some higher clause), and sentences with embedded clauses are definitely ungrammatical in Walbiri. Thus there are both preposed and extraposed relative clauses, but no embedded ones. In a relative clause there is a morph kutja at the beginning of the AUX, to which various tense-aspect and agreement morphs are added

(which may add up to Ø, since many of them are null). In the simplest constructions, whichever clause comes second, relative or main, NP_{rel} or NP_{hd} may either be left untouched or deleted. The deletion process is probably just pronominalization.

Below are some examples:

(1.29) a. ṭimana-lu Ø kuḍu kutju-ṇu
horse-ERG AUX child throw-PAST
"The horse threw the child."

b. natju ka-ṇa-ḷa kuḍu-ku maritjari-mi
I PRES-I-him(DAT) child-DAT feel sorry for-NON-
"I feel sorry for the child" PAST

c. ṭimana-lu kutja kuḍu kutju-ṇu natju kaṇaḷa
horse-ERG REL child throw-PAST I PRES-I-him(DAT)

(kuḍu-ku) maritjari-mi
(child-DAT) feel sorry for-NONPAST

d. natju kaṇaḷa kuḍu-ku maritjari-mi, ṭimana-lu

kutja kutju-ṇu (kuḍu)

(same as (c), but with order of main and relative clause reversed)

The surface independence of the relative clause from its head is shown by the fact that there is no necessary constituent structure relation holding between NP_{hd} and S_{rel}, and also by the fact that the case-marking of NP_{hd} and NP_{rel} is entirely determined by the role each NP plays in its own clause, as may be seen in (1.29c-d).

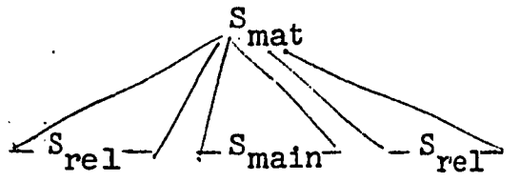
Sometimes when under great stress the Walbiris violate the rule against embedded relative clauses, and then a relative clause is found inside an NP between the head and the case-marker. In this construction they look like adjectives, when these form a surface constituent with their head. The reason we say that these

are ungrammatical is that Hale reports that a Walbiri will not admit that he pronounced such a sentence, even if confronted with tape-recorded evidence, much less admit that they are acceptable Walbiri. Since it is difficult to imagine what sort of school-grammar indoctrination might lead the Walbiris not to admit to having embedded relative clauses, we conclude that they are simply ungrammatical, although understandable.

From this ungrammatical embedded structure one can actually get an argument against deriving relative clauses from an embedded source: for when an ordinary adjective is taken out of an NP it takes a copy of the case-marker of the NP along with it, even though before it moved out it was nestled between the head and the only case-marker, which was at the end of the NP. However, if a relative clause were to move out of an NP, one would need an ad-hoc rider on the rule that copies the case-marker onto the adjectives in order to prevent it from being copied onto the relative clause.

A construction like that of Walbiri obviously puts strong limitations on the number of relative clauses that can occur modifying NP in a single S. In Walbiri the number is either one or two, but it is difficult to tell. Only one relative clause can occur at either end of the S, but the occurrence of S's with relative clauses at both ends as in (1.30) is doubtful.

(1.30)



While such structures do occur, it is not clear whether the follow-

ing S_{rel} is really a clause subordinate to the main clause or just an afterthought. A construction which suggests that the following S_{rel} is an after-thought in such cases is an extremely common construction in which an extraposed relative clause is a copy of a preposed one, giving such a sentence as the man came yesterday, I hit the man, the man came yesterday for 'I hit the man who came yesterday'. Perhaps the second relative clause is tacked on because the speaker has forgotten about the first.

If we accept the idea that S can have only one relative clause, then there are various ways we may go about explaining this. The relative clause could be generated by a base-rule capable of forming one subordinate clause at the beginning or end of a sentence (the former seems more likely), with scrambling capable of hopping the subordinate clause around the main clause. Or else it could be generated as an embedded clause within NP_{hd} and have movement rules obligatorily move it out and adjoin it to S_{mat}. There would then be an output condition throwing out derivations in which more than one S_{rel} got attached to an S_{mat}.

The trouble with deriving S_{rel} from within the head NP in Walbiri is that there just doesn't seem to be any reason to do so, other than the supposition that one needs such a structure in order to get the correct interpretation for relative clauses. But this supposition is itself unsupported, and we shall later show it to be unsupportable, because there exist in some languages relative clauses that could not possibly originate from within the NP they modify.

We have already noted that of NP_{rel} and NP_{hd} whichever comes

second is optionally deletable, and have stated that this is probably merely pronominalization. There are other more complicated anaphoric processes which may be used to relate NP_{rel} and NP_{hd} which involve demonstrative pronouns, but we have not been able to determine to what extent they are general pronominalization processes and to what extent they are peculiar to relative clauses. We shall therefore simply not discuss them at all here.

Walbiri may be taken to support, although not overwhelmingly, the schemata of (1.26) as being deep structures. Furthermore we see ordinary pronominalization processes (and perhaps some special ones) applying between NP_{hd} and NP_{rel}. There is nothing like WH-REL-MARKING, as exists in English and shall be seen to operate in Mabuiag and the Indic languages, where NP_{rel} is or can be manifested with a special pronoun or determiner regardless of the relative order of NP_{rel} and NP_{hd}.

1.3.2. Mabuiag

We sketch briefly here some of the results arrived at by T. Klokeid (1970) in his research on Mabuiag, another Australian language. Klokeid identifies three types of relative clauses: Participials, which are embedded and appear to be some sort of reduced relative and are hence beyond the scope of this survey. Then there are full relatives, which are restricted to adjoined position, and may appear with or without a Wh-word.

We discuss first the clauses without WH-REL-word. These clauses always precede the main S, and NP_{rel} remains a full NP within them, exactly as it would in an unembedded S. NP_{hd}, which always follows the relative clause, may either be deleted or pro-

nominalized. Deletion is a regular alternative to pronominalization. One suspects that NP_{hd} could also be left intact, but Klokeid does not give us information on this point. Some examples are:

(1.31) a. moegekazi$_i$ uzarai-dhin Panai-ka, Zon Ø nubika
child go-PAST Panai-DAT John him-DAT

mulai-dhin
talk-PAST

"John talked to the child who went to Panai."

b. moegekazi-n$_i$ gulaig$_j$ gasamdhin, Ø$_{i \text{ or } j}$ nui$_{i \text{ or } j}$
child-ERG captain touched he

uzaraidhin Panaika
went to Panai

"The child who touched the captain went to Panai."
"The captain who the child touched went to Panai."

Essentially the same considerations apply here as do in Walbiri: there is simply no compelling reason for deriving these clauses from anywhere but where they appear in surface-structure.

These relative clauses are identical in form to a sort of because-clause. In the because-clause there needn't be any NP co-referential with something in the main S, but if there is, one gets pronominalization or deletion of the second NP just as with the relative clause. Hence the examples of (1.31) also have because-clause readings: "John talked to the child because he went to Panai" and "the captain went to Panai because the child touched him" or "the child went to Panai because he touched the captain." Therefore if the base-rules which generated the because-clauses also generated relative clauses, no great syntactic implausibilities would result.

The other form of relative clause uses a WH-REL-word ngadh (occurring of course, in many case-forms) as a relative pronoun or as a determiner of NP (the two uses seem to be the same, with the relative pronoun use occurring when pronominalization has stripped away the rest of the NP). ngadh is an indefinite word used also as the interrogative pronoun-determiner, as well as like English one in 'a red one'. Clauses with ngadh can never be interpreted as because-clauses, and they may either precede or follow the S. They also may occur as retro-relatives, but these constructions are strained and are said to have peculiar intonation patterns. Some examples with ngadh are (1.32):

(1.32) a. ngadh mabaig-an os guudthapam-dhin,
WH-ERG man-ERG horse kiss-PAST

uzaraidhin Bessaika
went to Bessai

"The man who kissed a horse went to Bessai."

b. mabaig uzaraidhin Bessaika , ngadh mabaig-an
man went to Bessai WH-ERG man-ERG

os guudthapamdhin
horse kissed

"The man who kissed a horse went to Bessai"

c. Zon mabaig, ngadh os guudthapamdhin,
John man WH-ERG horse kissed

mathamdhin
hit

"John hit the man who kissed the horse."

The fact that the ngadh-relative cannot be interpreted as because-clauses leads to the conclusion that there is a significant difference between the underlying structures of relative clauses and

that of because clauses which keeps WH-REL-marking from applying to the latter. Whether this difference has to do with constituent structure relations, however, is undetermined.

The greater positional freedom of the WH-REL clause is probably a consequence of its containing a marker ngadh which indicates the subordinate status of the clause: if the relative clause without ngadh were permitted to occur both at beginning and the end of the main clause, it would be impossible to tell which was which. How such a constraint is to be attached to the grammar is not clear.

The relative clause in Mabuiag may be thought to be generated at the front of the main clause, and to have an optional rule of WH-REL-MARKING marking NP_{rel}. S_{rel} which have had a WH-word inserted may then move to the end, or even onto NP_{hd} with strain. Pronominalization (which is said to operate only forward in this language) then may affect whichever of NP_{hd} and NP_{rel} comes second.

1.2.3. Hindi

In this section we will summarize briefly the main points of Relativization in Hindi as described by Donaldson (1971). Relative clauses may be preposed, extraposed, or embedded in the retro-relative construction. NP_{rel} has a relative determiner jo (occurring in many inflectional forms) and NP_{hd} has the demonstrative determiner vəh (also with inflectional forms) which normally means that. Whichever of NP_{rel} or NP_{hd} comes first has everything but its determiner optionally deleted. This deletion is presumably due to pronominalization. Hence Hindi is quite similar to Mabuiag, except that the WH-REL-MARKING is obligatory and there is a special

determiner for NP_{hd}. Hindi appears to be in most respects similar to Sanskrit, Bengali, Marathi and other indic languages. Hence when we discuss later examples from Marathi and Sanskrit, we do so without going into any detail about their grammars, relying on the discussion of Hindi for background.

Below are a series of examples from Hindi, first with preposed relatives, then extraposed, and finally retro-relative.

(1.33) a. jo lərka mere pas rəhta hai, vəh mera
WH boy me near lives that my

choṭa bhaii hai
little brother is

"The boy who lives near me is my little brother."

b. mere pas jo lərka rəhta hai, vəh mera
me near WH boy lives that my

choṭa bhaii hai
little brother is

"The boy who lives next to me is my little brother."

c. jo per nadii ke kinare pər tha, pəkshii
WH tree river of bank on was bird

us pər baiṭha tha
that on sitting was

"The bird was sitting on the tree that was on the bank of the river."

(1.33b) reveals that the WH-word needn't appear at the front, while (1.33c) shows S_{rel} and NP_{hd} not being a constituent, being separated by the subject of the matrix S.

(1.34) a. vəh lərka mera choṭa bhaii hai ,
that boy my little brother is

jo mere pas rəhta hai
WH me near lives

"The boy who lives near me is my little brother."

b. gay sərək cəlii ja rəhii thii, log jis pər
cow street on going was people WH on

baiṭhe hue the
sitting were

"The cow was walking on the street on which people were sitting." (It is unclear why there is no vəh with sərək)

(1.35) a. Ram ne, jo əmiir hai, ek məkan khəriida
Ram rich is a house bought

"Ram, who is rich, bought a house."

b. us admii ne jo əmiir hai ek məkan khəriida
that man WH rich is a house bought
"The man who is rich bought a house."

There are various special points which should be gone into. First of all, when the head noun is definite, as we have seen, it usually acquires the determiner vəh, meaning that (ordinarily definite NP have no explicit determiner at all). But if the head noun has a determiner such as yəh, it keeps this determiner as shown in (1.36) below:

(1.36) yəh kal shant nəhĩ hai jisme həm rəhte hai
this age peaceful not is WH-in we live
"This age in which we live is not peaceful."

Secondly, there is a restriction that if the head NP is indefinite, with the determiner ek 'a, one', then the relative clause must follow the head:

(1.37) a. us ne ek jhiil dekhi jo bəhut bəṛii thii
he a lake saw WH very big was
"He saw a lake which was very big."

b. *jo jhiil bəhut bəṛii thii, us ne ek dekhi.

Finally, there is a restriction that nonrestrictive clauses such as in (1.35a) can occur only in retrorelative position. Hence one has the following:

(1.38) a. *ram ne ek məkan khəriida jo əmiir hai
Ram a house bought WH rich is

b. us admii ne ek məkan khəriida jo əmiir hai
that man a house bought WH rich is

c. *jo ram əmiir hai us ne ek məkan khəriida
WH Ram rich is he a house bought

d. jo admii əmiir hai us ne ek məkan khəriida
WH man rich is he a house bought

The constraint that nonrestrictive relatives must always be embedded, and the constraint that preposed relatives cannot have indefinite heads may be language universal. Hale has the impression that it holds in the Australian languages discussed earlier, and we suspect that it holds in Crow, to be discussed in the next section. We have no explanation for them, but they are surely worth investigating.

In the analysis of Hindi there will thus be rules of some sort to get the clauses into the appropriate positions, and a rule to attach vəh to NP_{hd} and jo to NP_{rel}. NP_{rel} is not necessarily fronted. Then pronominalization reduces whichever of NP_{rel} and NP_{hd} comes second. There is, of course, considerably more to it than that. Interested readers can consult Donaldson (1971) for ideas about the deep structure, and for further constraints on the relative clauses.

1.2.4. Crow

Our information on Crow is from informant work with Dale Oldhorn and Sonny Joe. These researches are very much in the beginning phases and the following results are tentative.

There are at least three sorts of relative clauses in Crow: preposed, retro-relative and head-deleted. In this section we

discuss only the preposed relative construction.

In the Crow preposed relative the relative clause itself has a verb ending in a morpheme s whose general use is unclear. The relative noun has the "indefinite" suffix -m (this does not really correspond to the English indefinite article as it is frequently used to translate definite NP in English). Then in the main clause NP_{hd} has the anaphoric determiner kó: before it. kó: is generally used on NP referring to things which have already been mentioned, so its use here is not in any way peculiar. Then the head of NP_{hd} is optionally deleted. It may be possible that NP_{hd} is entirely deletable, but if this were to happen the resulting construction would be very difficult to tell apart from the deleted-head construction. Hence we have (1.39) as examples:

(1.39) a. šigâ:gə-m búpci-m bí:əga:də-m kušî:je-š
boy -a ball-a girl-a threw to-(?)

kó: (búpcæ)i:za:-k
that ball big-DECL (-k ends most declarative sentences)

"the ball that a boy threw at a girl was big"
(if NP_{hd} is left out then the sentence becomes three ways ambiguous)

b. šigâ:gəm búpcim bí:əga:dəm kušî:jes bi:ə́lápxəe
boy-a ball-a girl-a threw my-father

kó: (bí:əga:dæ) dijík
that girl hit

"My father hit the girl who the boy threw the ball at."

What is especially interesting about this construction is that there can be more than one NP in -m in the s-clause associated with a kó: NP in the matrix clause. Thus one gets such sentences as:

(1.40) šigâ:gəm búpcim bí:əga:dəm kusî:jes, kó: sigâ:ges
boy-a ball-a girl-a to-threw that boy-the

kó: bí:əga:des kó: búpcæ ak-dijík
that girl-the that ball with it-hit

"You know when a boy threw a ball at a girl, well, he hit her with it."

Such sentences as (1.40) don't translate very easily, but the Crow do not seem to mind them. (1.40) appears to be a relative clause with many heads. One might balk at this analysis, because there isn't much in the way of marking to indicate that the s clause here really has three NP_{rel} in it coreferential with three NP_{hd} outside of it. Nonetheless in the following sections we will exhibit sentences from Indic languages, where precisely this phenomenon occurs, but the NP_{rel} are WH-marked.

1.2.5. Multiple-headed Relative Clauses

In this section we will present examples of multiple headed preposed relative clauses from Sanskrit and Marathi, and of a multiple headed extraposed relative construction from English, discovered by Ross and Perlmutter.

First, we give some examples from Sanskrit:

(1.41) a. yasya$_i$ yat$_j$ paitṛkam ritkam ,
who-GEN what-NOM paternal-NOM inheritance-NOM

sa$_i$ tad$_j$ gṛhnīta , netarah
he-NOM that-ACC should-get not-another

"Of whom what is the paternal inheritance, he should get it and not somebody else."

b. yena yāvān yathā
who-INSTR to-what-extent in-what-manner

'dharma dharma veha samīhitia, sa eva
injustice justice or is-done he exactly

tatphalam bhūnkte tathā
the-fruits-thereof will-enjoy in-that-way

tāvad amutra vai
to-that-extent in-the-other-world indeed

"By whom good or evil is done to what extent in what way, he will enjoy the fruits of it in the other world to that extent in that way."

In (1.41a) we have the WH-REL-words (the simple ya-series is used only as a relative pronoun, although more complex forms built on ya have other uses) yasya and yat, which are NP_{rel} correlating with demonstratives sa and tad, NP_{hd} in the main clause. In (1.41b) the WH-REL-words are yena, yāvān and yathā, correlating with sa, tāvad, and tathā.

If the reader, upon looking at these sentences, feels at a loss as to how to interpret them, there is a simple algorithm for constructing a paraphrase. Replace the WH-REL-words with some-indefinites, and turn the relative clause into a conditional. One thus obtains: "If someone has something as a paternal inheritance, he should get it and not someone else."; "IF someone does good or evil to some extent in some way, he shall enjoy the fruits thereof in the next world to that extent and in that way."

The availability of a conditional paraphrase suggests that these clauses are in fact derived from conditional clauses via WH-REL-marking. Whether such double headed relative clauses occur with other than a conditional interpretation in Sanskrit we do not know. In Papago, where all preposed relative clauses have this conditional reading, multiple headedness is possible. Hale's informant, Mr. Alvarez, reports that he cannot figure out how to

translate such sentences naturally into English, although they are perfectly good Papago. While their derivation from conditionals is an interesting possibility, it is clearly out of the question to derive these clauses from within one of the NP they modify.

In Marathi examples exist in which a relative clause is double-headed but lacks the conditional interpretation:

(1.42) jya mulane jya mulilā madat kelī
WH-REL boy-INSTR WH-REL girl-ACC helped

to tilā avaḍla
he her liked

"What boy helped what girl, he liked her"

What this sentence means is roughly that 'a boy helped a girl' is identifying two people by naming a situation the hearer is familiar with, then the main clause is an assertion asserting that the boy liked the girl. Professor Joshi, who supplied this example, informs us that while double headed constructions are somewhat unnatural in Sanskrit, they are perfectly acceptable in Marathis, his own native language. Shwartz (1971) reports that there are exactly similar constructions in Telugu.

Finally, there is the extraposed double-headed relative clause in English, discovered by Ross and Perlmutter (1970):

(1.43) A man came in and a woman went out who were similar

There is one WH-REL-word in the relative clause, but it has a split antecedent. Since the verb of the clause is one which always takes a plural or conjoined subject, there is no way to have the double headed clause come from a collapsing of two single-headed ones: hence, it must be double-headed in deep structure. Since there is

no indication that 1.43 is different from other extraposed relatives in English, this suggests rather strongly that even in English extraposed relative clauses are not derived from embedded ones. Hence either embedded and adjoined relatives come from different sources, or they all come from adjoined relatives.

1.2.6. Summary

In the preceding we have seen a number of languages which have preposed relative clauses, a type lacking in English, and have seen reason for not deriving adjoined relative clauses from embedded ones.

1.3. Position and Interpretation of Relative Clauses

In this section we revisit some facts already noticed, and propose some general claims about the position and meaning of various sorts of relative clauses.

The positional classification that seems relevant is preposed, embedded and extraposed. The first thing to be noted is that nonrestrictive relatives seem restricted to embedded position. In such languages as Japanese and Turkish they appear as pro-relatives, while in English and Hindi they appear as retro-relatives. As Donaldson points out, the restriction that they cannot be extraposed holds in English as well as Hindi, as demonstrated by (1.44):

(1.44) a. A man came in who had a hat on.

b. Mr. Smith, who had a hat on, came in.

c. *Mr. Smith came in, who had a hat on.

If the idea that nonrestrictive relatives originate from coordinate

structures is correst, this suggests that relativization of coordinate structures cannot happen until the rule of SWOOPING has broken up the coordinate structure. SWOOPING applies to coordinate structures, where each conjunct has a coreferential NP. One conjunct is pulled into the other, being adjoined to the coreferential NP. Hence one has (1.45a), related to (1.45b) in which SWOOPING has applied. Subsequently the embedded conjunct relativizes, to yield (1.45c):

(1.45) a. Max believes in pterodactlys and he is no dope.

b. Max, and he is no dope, believes in pterodactyls.

c. Max, who is not dope, believes in pterodactyls.

If the universal formulation of WH-marking rules prevents them from applying from one conjunct of a coordinate structure into the other, and if the universal formulation of SWOOPING causes it to adjoin a conjunct to an NP (rather than, say, to a S containing the NP), then the only way a nonrestrictive relative will be able to arise is as a surfacely embedded clause.

But this of course necessitates that we find some source other than the coordinate structure for restrictive relatives. We think that this is correct, although we do not have any ideas to offer as to what this source should be, if it could be shown that it must be more abstract than the structures of (1.1, 1.9, and 1.26).

Secondly we return to the observation made about Hindi that preposed relative clauses cannot modify an indefinite NP_{hd}. This seems to be a consequence of the fact that what preposed relatives do is remind the speaker of some situation which identifies NP_{hd}, or else set up some condition that identifies NP_{hd}. If what these

clauses do is express presuppositions or conditions, then it is natural that they cannot modify indefinite NP. This suggests that it may be a mistake to identify the preposed relative clause with the various other sorts of relative clauses. It is not too clear what the fact that a WH-REL-MARKING rule can apply to both preposed and other types of relatives means.

Here we end our investigation of the constituent structure relations of NP_{hd} and S_{rel}. We examine next some of the transformations that apply to them.

2. Relativization

The number of rules that apply to relative clauses is enormous. In this section we discuss a class of such processes which are sufficiently similar to be given the generic name of 'Relativization'. In order to ferret out the general nature of Relativization transformations, it will be necessary to examine a fairly large number of them. After arriving at a definition of Relativization rules we propose some constraints on what they can do.

In (2.1) we discuss rules that do something to NP_{rel}, in (2.2) rules that do something to NP_{hd}, and in (2.3) rules that do something to the 'Complementizer' of S_{rel}. Then in (2.4) we will define and constraint the class of Relativization rules.

2.1. Rules that Affect NP_{rel}

NP_{rel} can be deleted, or marked with a marker called WH-REL (which, of course, has different phonetic shapes in various languages we describe as having it). If marked, it may be moved to the left

boundary of S_{rel}. In section (2.1.1) we discuss deletion; in section (2.1.2) marking.

2.1.1. Deletion of NP_{rel}

NP_{rel} may be deleted in two ways. We will also argue below that the deletion of NP_{rel} may be only partial. First of all, in many languages NP_{rel} always or sometimes becomes a pronoun. In some of these languages pronouns delete quite freely. Hence NP_{rel} may disappear via pronominalization and pronoun-deletion. On the other hand in some languages without a general pronoun-deletion rule, such as English, NP_{rel} also can disappear. In these languages one posits a rule which we call NP-REL-DELETION. Perlmutter (1972) (who called the rule SHADOW-DELETION) has investigated the operation of NP-REL-DELETION in French and has concluded that it is a rule whereby a pronoun is deleted. We assume that this is the case in general: that NP_{rel} is deleted by NP-REL-DELETION after being made into a pronoun. Hence both routes to oblivion start with pronominalization.

In order to show that a language has NP_{rel} deletion one must thus show that its NP_{rel} delete in contexts that ordinary pronouns would not delete. In the next two sections we will demonstrate this for Turkish and Modern Greek, two languages with embedded relatives and a rule of NP-REL-DELETION.

2.1.1.1. Turkish

We have already seen that in Turkish relative clauses NP_{rel} disappears, but we have not investigated the mechanism. In Turkish unstressed subject and possessor pronouns are regularly dropped.

Hence one gets such examples as (2.1):

(2.1) a. gel-di
come-past
"He came."

b. Hasan baba-sı-nı gördü
Hasan father-his-ACC saw
"Hasan saw his father." (Hasan's or someone else's)

c. Hasan Orhan-ın baba-sı-nı gördü
Hasan Orhan-GEN father-his-ACC saw
"Hasan saw Orhan's father."

In (2.1a) the subject pronoun has disappeared: in (2.1b) the genitive pronoun which the agreement suffix -sı is agreeing with has disappeared. (2.1c) shows a sentence with a full NP in the place of the missing pronoun.

Though subject and genitive pronouns disappear, object pronouns in Turkish do not. Hence we have the following:

(2.2) a. Hasan, Fatma-nın o-nu öl-dür-eceğ-i-ni
Hasan Fatma-GEN he-ACC die-CAUSE-FUT-her-ACC

düşünüyor
thinks

"Hasan$_i$ thinks that Fatma will kill him$_i$."

b. *Hasan, Fatmanın öldüreceğini düşünüyor

The pronoun of (2.2a) is not generally deletable. But when NP_{rel} is a direct object, it always disappears:

(2.3) a. Orhan-ın gör-düg-ü adam çıktı
Orhan-GEN see-NOM-his man left
"The man who Orhan saw left."

b. *Orhan-ın o-nu gör-düg-ü adam çıktı
Orhan-GEN he-ACC see-NOM-his man left

This deletion of the pronoun shows that there is in fact a rule of NP_{rel} deletion at work.

Perlmutter (1972) discusses a further reason for supposing that

Turkish has an NP_{rel} deletion rule. He contrasts languages such as Turkish and French, which use NP_{rel} deletion, with Arabic and Japanese which do not. Those pronouns which disappear in Arabic and Japanese go by processes of nonemphatic pronoun deletion, which do not obey island constraints, presumably because there is no variable in their formulation. Hence one gets in these languages relative clauses that would be ungrammatical in French and Turkish, where NP-REL-DELETION is doing the work.

One may thus propose that in Turkish there applies a rule of LEFT-NP-REL-DELETION, which deletes NP_{rel} in pro-relative clauses:

(2.4) $$\underbrace{[\ \underbrace{[\ S}_{NP}}_{1} \quad X \quad - \quad \underbrace{NP_i}_{2} \quad - \quad \underbrace{Y\ ]_S}_{3} \quad - \quad \underbrace{NP_i}_{4} \quad - \quad \underbrace{]}_{\underbrace{\ }_{NP}\ 5} \Rightarrow$$

$$1 \qquad 2 \qquad 3 \qquad 4 \qquad 5$$

$$1 \qquad \emptyset \qquad 3 \qquad 4 \qquad 5$$

Of course, there are numerous restrictions , including island conditions and worse, which apply to (2.4) in the various languages in which it occurs. There is a proposal made by Andrews (1972) and Wasow (1972), more or less independently, that when a grammatical rule stipulates 'identity' between two NP, what is actually being stipulated is not that they are identical but that an anaphoric relationship holds between them, where the direction of the relation may be relevant. Hence it is possible that (2.4) should be reformulated so as to stipulate an anaphoric relation as holding between terms 2 and 4. It would furthermore be reasonable to stipulate that only the 'dependent' member of an anaphoric relation can be deleted. Hence the condition on (2.4) would be that term 2

is anaphoric to term 4. If this idea is correct, then there will have to exist an additional constraint in Turkish that NP_{rel} must always be anaphoric to NP_{hd}. There are languages which will be discussed below in which NP_{hd} gets deleted in embedded relative clauses, so apparently we could not claim that only the dependent member of an anaphoric relation is deletable in general, though this would seem a reasonable hypothesis.

2.1.1.2. Modern Greek

Modern Greek has at least two relative clause constructions, one with a relative pronoun o opios, which is most used in the literary language, and another with an introductory particle pu which has NP-REL-DELETION. The pu construction is most used in colloquial speech. We investigate some of its properties here.

In Modern Greek the verb is inflected for the person and number of its subject, and therefore nonemphatic subject pronouns are deleted. Object pronouns when nonemphatic are rendered by clitics on the verb, which do not delete freely:

(2.5) a. o leonídha-s ídh-e to-n Yáni , ke
the Leonidas-NOM saw-he the-ACC John-ACC had

i María {*ø / ton} skótos-e
the Mary him killed-she

"Leonidas saw John and Mary killed him."

b. o Leonídhas nomíz-i oti i María tha
the Leonidas think-s that Mary FUT

{*ø / ton} skótos-i
him kill-she

But an NP_{rel} object of a verb must be deleted:

(2.6) o ándras pu {ø / *ton} idh-a íne o Leonídhas
the man REL him saw-I is Leonidhas
"The man who I saw is Leonidas."

Indirect object clitics and possessive clitics are obligatorily left behind as 'returning pronouns':

(2.7) a. i yinéka pu {*ø / tis} édhos-a to vivlío
the woman REL she-DAT gave-I the book
"the woman who I gave the book to"

b. i yinéka pu ékleps-a to vivlío *ø / tis
the woman REL stole-I the book her
"the woman whose book I stole"

There appears to be a process by which NP_{rel} must either be deleted or appear as a clitic pronoun. To exhibit this it is necessary to investigate the syntax of prepositional phrases.

There are two classes of things called 'prepositions' in Greek. There are about six 'simple prepositions', which are clitics to the accusative NP which directly follow them. The most important of these are se 'to, at, on'; me 'with' and apo 'from'. Then there are a great number of 'propositional adverbs', such as mazí 'with', kondá 'near', and káto 'under'. When the object is a full NP, the construction is to have the 'propositional adverb' followed by a prepositional phrase with one of the three clitic prepositions above. Hence one has phrases such as s-to trapézi 'on the table', me tin kopéla 'with the girl', apo to khorió 'from the village', mazí me to koritsi 'with the girl', kondá sto spíti 'near the house' and káto apo to trapézi 'under the table.' Nonclitic pronouns are treated like full NP, hence mazí me aftín 'with her', s'aftón 'to him'. However, if the object is a clitic, it cannot occur with a clitic preposition. This is probably because two clitics cannot fall together with nothing substantial to be clitics

to. Hence clitic objects occur only with the prepositional adverbs. In this construction the clitic preposition disappears, and the clitic pronoun becomes genitive. Hence one has mazí tis 'with her', kondá tu 'near him', káto tu 'under it'. This latter construction in particular suggests that the 'adverbial prepositions' are in underlying structure the head of some sort of NP dominating a prepositional phrase.

If in a relative clause NP_{rel} is the object of an adverbial prepositional, the object cliticizes and there is no problem. If NP_{rel} is the object of a clitic preposition, then the sentence cannot be said grammatically without using the relative pronoun ton opion (accusative case). The pu construction is impossible, because NP_{rel} can neither be cliticized nor deleted. Examples are:

(2.8) a. i kopéla pu káthis-a konda tis
the girl REL sat-I near her-GEN
"the girl I sat near"

b. *i kopéla pu milisa me {ø / tin / aftín}
the girl REL I spoke with her-ACC

c. i kopéla me tin opian milisa
the girl with whom I spoke

Thus far we have assumed that the formation of clitics in relative clauses like 2.7 and 2.8 (and in an intermediate stage in 2.6) takes place by means of the normal cliticization processes of Modern Greek. There is some reason to doubt this, however. First, there is the fact noted above in connection with 2.6 that object relative clitics, unlike other object clitics, must disappear. This suggests, at least for these cases, that an additional rule is at work, rather like NP_{rel} deletion in Turkish but applying in the

opposite direction. Further evidence for this comes from a closer examination of the other clitics, such as indirect objects and possessives, and from subjects. If the cliticization involved in these cases (and the subsequent deletion, in the case of subjects) were a consequence of normal pronominalization processes, one would not expect them to be subject to island constraints. Sentences 2.9, however, show that this is not the case:

(2.9) a. *i yinéka pu aghapó ton ándra pu éklepse to
the woman REL I-love the man REL he-stole the

mayó tis
bathing suit her

"The woman who I love the man who stole her bathing suit..."

b. *to aghóri pu dhem pistévo tin idhéa óti
the boy REL NEG I-believe the idea that

to koritsi tu édhose to vivlio
the girl him gave the book

"The boy who I don't believe the idea that the girl gave him the book..."

c. *to aghóri pu dhem pistévo tin idhéa óti filise
the boy REL NEG I-believe the idea that he-kiss

to koritsi
the girl

"The boy who I don't believe the idea that he kissed the girl..."

The ungrammaticality of these sentences is not easy to explain unless we assume the existence of a rule which is sensitive to island boundaries. The Turkish rule had the effect of completely deleting NP_{rel} in pro-relatives; various other languages discussed in this work have rules deleting NP_{rel} in retro-relatives (e.g. Tagalog, which will be discussed shortly below). For Greek, we

might suggest a corresponding rule which simply deletes the substance of NP_{rel}. In the case of noun phrases which are in a direct case relation (i.e., subject or direct object), this will result in complete deletion. In oblique NP, however, this might be taken to leave behind information about case, and since case is morphologically syncretized in Modern Greek with gender and number, the minimum to which an oblique NP can be reduced is a clitic pronoun. Once such a clitic is formed, it is subject (we assume) to the normal processes affecting other clitics; in particular, it will attract to the verb under certain circumstances, or whatever else is nearer and more convenient, and it can cause a violation of the derived structure constraint against clitic prepositions being attached to clitics. Other cases in which direct case NP are affected differently than oblique NP will arise below, especially in the next portion of this work which deals with case marking rules. It is not, therefore, implausible, that this difference would show up the operation of a rule of relativization.

We suggest, therefore, that it is possible for NP_{rel} deletion to apply in retro-relatives as well as in pro-relatives; and also for it to effect either complete deletion (in most cases) or only partial deletion (of the sort exemplified in Greek). It is not necessarily the case that all languages in which NP_{rel} is neither deleted nor turned into a special wh-form, but simply pronominalized, have such a rule; in fact, we presume that it is only present in cases where there is some evidence that pronominalization in relative clauses is systematically different from pronominalization elsewhere. This evidence is provided in Greek by the facts that

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a) object clitics delete obligatorily if they represent NP_{rel}, but not otherwise; and b) other clitics, including deleted subjects, are only possible if the relation between NP_{hd} and NP_{rel} does not cross island boundaries. In a language such as Arabic or Japanese, such evidence does not exist, and we have no reason to believe that any form of NP_{rel} deletion (or any other rule specifying the relation between NP_{rel} and NP_{hd}) applies in these languages. This predicts that relative clause constructions in these cases should be capable of violating Island constraints, and that pro-forms can appear in such structures exactly where they would be produced by rules of anaphora.

2.1.1.3. General Considerations

Various questions remain to be asked about the WH-REL-DELETION rules. One is whether they also apply to adjoined S_{rel}. We know of no language in which they apply to preposed relative clauses. On the other hand if we suppose that the English relative clauses introduced by that have NP-REL-DELETION, then examples such as (2.10) suggest that there must indeed be a version of NP-REL-DELETION which applies to extraposed relatives:

(2.10) A man came in and a woman went out that Harry thought were similar.

There then arises the question of whether the three versions of NP-REL-DELETION should be written as a single rule or not. It is difficult to imagine a way to write the rule so as to apply to pro- and retro-relative clauses and also extraposed relatives without applying to preposed relatives. On the other hand, there are languages like English, where the retro-relative version and the

extraposted relative version are necessary; and languages like Hottentot, where the pro-relative and retro-relative versions are necessary (assuming that there is no basis for deriving one of these constructions from the other in Hottentot). The question seems unsolvable at the moment.

The versions of the rule proposed to apply to extraposed relatives raises a serious question already mentioned above, which will become even more pressing when we look at WH-MARKING rules, which apply to preposed relative clauses. If the relative clause can start out as a subordinate clause adjoined to the sentence, how does the rule know which NP pairs are NP_{hd} - NP_{rel} pairs, and which are ordinary antecedent-anaphor pairs? We suggested before that in semantic structure there is something special in the relation of NP_{rel} and NP_{hd} which serves to guide the application of the rules involving them which was indicated by the arrows in (1.26). We make no speculation as to what this might be.

We will finally indicate some languages that have the constructions in question. The languages in the first group lack any rule of NP_{rel} deletion, and NP_{rel} are either left behind as pronouns or deleted by general pronoun-deletion rules that have nothing to do with relativization.

Languages with embedded relatives and NP-REL-DELETION:

Samoan (retro)
Arabic (retro)
Japanese (pro)

In all of these languages there is a constraint that NP_{hd} must be the antecedent of NP_{rel} (which distinguishes these languages from

Navajo, Crow, Tagalog, and Dagbani).

Languages with NP-REL-DELETION

English	Persian
French	Modern Greek
Turkish	Hottentot

These languages too all share the constraint that NP_{hd} is the antecedent of NP_{rel}.

2.1.2. WH-REL-MARKING, FRONTING AND COPYING

The rules considered here apply to preposed, extraposed and embedded relative clauses with head-antecedent. We have no cases of WH-MARKING with a head-deleted relative clause though a related phenomenon will be seen in Tagalog. In section 2.1.2.1. we discuss rules which merely mark NP_{rel} with a special marker which we call WH-REL. In section 2.1.2.2. we discuss rules which mark and move or copy NP_{rel}.

2.1.2.1. WH-REL-MARKING

We have found WH-REL-MARKING in both embedded and adjoined relative clauses. We first discuss WH-REL-MARKING in the retro-relative clauses of Crow and Swahili, and then discuss it in the adjoined relative clauses of Indic languages and Mabuiag.

2.1.2.1.1. Crow

Crow has two types of structures in which WH-REL-MARKING is visible. One is a retro-relative clause, the other is a structure with deleted pronominal head translating such NP as 'where he went' in 'where he went was ugly'. In the first construction the head precedes the whole construction, and NP_{rel} is represented in S_{rel}

by a morpheme ak which can appear in any number of places within S_{rel}. Hence ak appears to be merely a scramblable word. However ak must be the syntactic subject of S_{rel}: this construction thus cannot be used with NP_{rel} objects, etc. Some examples are as follows:

(2.11) a. sigâ:gem ak ci:cú:je:-s dé:s sé:k
boy-a WH-REL Hardin-to went died
"The boy who went to Hardin died."

b. sigâ:gem ci:cú:je:-s ak dé:s sé:k
boy Hardin-to WH-REL went died
"The boy who went to Hardin died." (Note that the indefinite -m frequently translates an English the.)

The scramblability of ak and the fact that it appears inside clauses with real syntactic structure refutes the idea that one might get from reading the literature that ak is an agentive nominalization prefix.

The other WH-REL-MARKING construction that occurs uses a marker which is spelt ala, al or an depending on phonetic environment. It is used for nonsubject NP_{rel}: adverbs, and objects. But it is subject to the restriction that there can be no NP_{hd}. Hence one has facts such as the following:

(2.12) a. sigâ:gem bi:ga:dém al í:ge:s iza:k
boy girl WH-REL saw is big
"(the place) where the boy saw the girl was big"

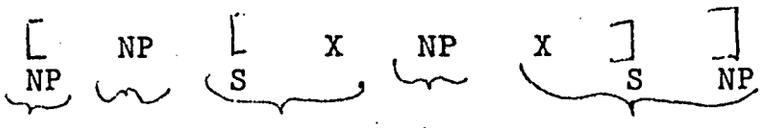
b. sigâ:gem ala bi:ga:dém í:ge:s iza:k
boy WH-REL girl saw was big
"the place where the boy saw the girl was big"

c. *asé:rem siga:gem bi:ga:dém al í:ge:s iza:k
town boy girl WH-REL saw was big
"the town where the boy saw the girl was big"

d. an dí: lít-ba-hje-wia-w-á
WH-REL you hit-I-CAUSE-Want-I-NOM
"the one I want you to hit"

It appears that in these examples Crow is using a rule which attaches a WH-REL-marker to a pronoun which represents NP_{rel}. We assume that the deleted pronominal-head structures have a pronominal head in underlying structure and are retro-relatives. This allows us to formulate the following rule:

(2.13) WH-REL-MARKING (retro-relative version)



Condition: term 4 as anaphoric to term 2

Various examples indicate that this rule is fairly restricted in the range of structures it can work into: if NP_{rel} is buried under a real clause, it cannot be effected by this rule.

2.1.2.1.2. Swahili

The Swahili construction is essentially a rationalized version of the Crow one. The WH-REL-marking rule applies uniformly to NP in a wide range of constituent structure positions. But then NP_{rel} is copied onto the verb by one of the many clitic-copy rules of Swahili. There are no funny constraints on when real heads are permitted.

We depart from our usual practice by giving a good deal of background information in Swahili, since some initially confusing aspects of Swahili relativization submit to a rather elegant solution when enough data is compiled.

2.1.2.1.2.1. NP

Swahili has an intricate noun-class system. For each class

there are two characteristic prefixes (one or both of them sometimes Ø), a singular and a plural, which are attached to all occurrences of the noun itself. Hence we have m-tu, wa-tu 'man, men'; ki-tabu, vi-tabu 'book, books'; yai, ma-yai 'egg, eggs'. Furthermore corresponding to each number/class prefix there is a 'concord' which is added to words bearing various syntactic relations to the NP, and thus causes them to agree with it. Verbs take a concord which indicates the class/number of their subject: m-tu a-tatosha, wa-tu wa-tatosha 'the man will be sufficient, the men will be sufficient', ki-tabu ki-tatosha, vi-tabu vi-tatosha 'the book will be sufficient, the books will be sufficient'; yai li-tatosha, ma-yai ya-tatosha 'the egg will be sufficient, the eggs will be sufficient'. Concords are also added to adjectives modifying nouns, both predicate and attributive.

For animate beings there is a set of personal pronouns, 1st, 2nd and 3rd persons, singular and plural. The first and second persons function like special noun-classes, having their own concord affixes, while the 3rd person uses the concord for animates (the m-tu - wa-tu class). One has hence mimi nitakufa 'I will die"; yeye a-takufa 'He will die'. Since most pronouns have some concord prefix referencing them, the pronouns are freely deletable when nonemphatic. For inanimates there are no surface pronouns at all: concord prefixes, demonstratives and NP such as kitu 'thing' bear the burden of expression.

There are some demonstratives which can be used either as determiners or as independent pronouns. The demonstratives are built from a stem -le or h- with a concord which is usually similar

to that used on verbs to agree with the subject. For the -le demonstrative, which means 'that, yonder', one merely prefixes the appropriate concord: m-tu yu-le 'that man', ma-yai ya-le 'those eggs'. The h- demonstrative is built by first suffixing to h- the vowel of the concord, and then the whole concord itself: m-tu h-u-yu 'this man', wa-tu h-a-wa 'these men', ki-tabu h-i-ki 'this book', yai h-i-li 'this egg', ma-yai h-a-ya 'these eggs'. Another demonstrative, supposedly used only to refer to things which have already been mentioned, is used by suffixing an o to the end of the h- demonstrative. The o causes phonological changes leading to such things as mtu huyo, watu hao, kitabu hicho, etc.

One of the most interesting grammatical categories in Swahili is the locative. Swahili locatives are characteristically used to express adverbial thematic relations such as place and time, but they can also be used as surface and even underlying subjects. One locative is the noun mahali 'place'. This takes its own special concord pa, and one hence gets such sentences as mahali pa-le pa-meharibika 'that place has been spoiled'.

More interesting locatives are made from nouns by suffixing -ni. One hence has mji-ni 'in the town', nymba-ni 'in the house', mlango-ni 'at the door'. The locatives behave syntactically like NP. Although the locatives themselves lack any class-prefix other than that of the NP are built from, their concords show that they fall into three classes, depending on the kind of locative relation they express. The concords are m(u) 'within', pa 'at' and ku 'around; along' (meanings grossly oversimplified). Demonstratives are built

from the locative concords, and one has thus such expressions as m-le (sanduku-ni)'in there (in the box)', h-a-pa mlango-ni 'there at the door', and so forth.

In locative expressions with definite subjects ('the animals are in the forest') the verb to be (usually phonologically null) is used with the subject concord of the subject preceding the verb, and the locative subject of the locative following the verb, followed by the o which was mentioned above. One has hence ki-su ki-ko (< ku-o) nymbani 'the knife is in the house', kisu ki-po (< pa-o) mezani 'the knife is on the table', and kisu ki-mo (< mu-o) sandukuni 'the knife is in the box'.

There are two prepositions, kwa and na, which frequently have their objects copied onto them in the form of the concord and o-combination we have seen several times before. For brevity we will refer to this combination of concord and o as a kihusiano (pl. vihusiano), a term invented by a native grammarian. For each noun-class and number (including the locatives) there is a class-prefix (frequently null), concord affixes and a kihusiano. For one class, the m-tu class (singular animate), the kihusiano is irregular, being ye, which, interestingly enough, turns out to be the stem from which the third person singular personal pronoun yeye is formed. Hence we frequently copy vihusiano and kwa and na, getting such forms as naye 'with him'. For 1st and 2nd person pronouns, the base from which the pronoun is formed by reduplication is copied onto na. Hence one has mimi, nami 'I, with me'. In the third person plural the pronoun is wao, and the kihusiano is o, a contraction of wao.

The preposition na is primarily comitative and instrumental; hence nacho 'with it (say, a book)', nayo 'with them (eggs)'. kwa is generally agentive and instrumental; kwao 'by them (people)'.

There is thus a rule copying underlying pronouns onto these propositions in the form of a kihusiano. When the object of the preposition is a full NP, the copying generally does not occur: hence na fimbo 'with a stick'. The copying rule assures that na and kwa are never left stranded without any expression of their object, since precisely the things that get deleted freely, non-emphatic pronouns, get copied.

2.1.2.1.2.2. Non-Relative Verbs

The Swahili verb is composed by adding prefixes and suffixes to the stem. The suffixes express for the most part categories of voice which are not our concern in this work. The prefixes may be regarded as clitics which have become one word with the stem. They fit into the following five slots:

(2.14) Pre-Verbal Clitic Slots:

I	II	III	IV	V
ha	subject concord	tense/ aspect si (neg)	relative kihusiano	object concord
(negation)				

In this subsection we discuss slots I, II, III and V, leaving IV for the discussion of relativization. Slots II and V are well behaved, their contents varying independently of each other (except for perturbations caused by reflexivization). I, II and IV have mutual interdependencies. The prefix ha- (in certain forms supplemented with the suffix -i) is used to make negatives. It is used only with certain tense-aspects, and never when there

is a relative kihusiano present. ha followed by the subject concord ni 'I' does not occur; instead this sequence is suppletively replaced by si (distinct from the negative si of slot III).

The occupants of slot III are various. The negation si is used only with relative verbs (those where slot IV is filled): hence si and ha are mutually exclusive. Many of the tense-aspects either do not occur or are expressed by different morphs when slots I or IV are occupied.

We have already seen the subject concords in operation. They are obligatory, except with the infinitive (taking a ku in slot III) and a 'general' tense with a III-prefix hu. The absence of subject concords with ku is presumably a consequence of the subjects having been deleted, but the absence with hu is unexplained. In Swahili, as in many languages (see Kuno 1971), the locative in a sentence with an indefinite underlying subject becomes the subject. This fact manifests itself in Swahili with unusual clarity because in such sentences the subject slot takes the locative concord appropriate to locative, and the locative generally comes before the verb, in characteristic subject position. This is true even when the locative is a prepositional phrase using such a preposition as katika 'in'.

There are thus examples such as the following:

(2.15) a. mwitu-ni m-me-lala wa-nyama
forest-LOC SB-PERF-sleep PL-animal
"In the forest sleep animals."

b. wanyama wamelala mwituni
animals SB-PERF-sleep in the forest
"The animals sleep in the forest."

c. ki-banda-ni m-me-lala wa-dudu
SG-shed-LOC SB-PERF-sleep PL-insect
"In the shed sleep insects."

d. kule mji-ni ku-me-kufa wa-tu
there town-LOC SB-PERF-die PL-person
"In the town over there people have died."

e. hapa pa-me-kufa simba
here SB-PERF-die lion
"Here has died a lion."

f. katika sanduku m-me-lala m-dudu
in box SB-PERF-sleep SG-insect
"In the box is sleeping an insect."

(with stative verbs such as lala 'sleep' the perfect aspect marker me is used to express the present). This gives us evidence that these locatives are all surface NP. In particular, PP such as those with katika where there is evidence that the whole phrase is an NP may be contrasted with PP using kwa and na where there is no such evidence.

Unlike the subject prefix, the object prefix is optional. There appears to be a relation between humanness and copyability; human direct objects are most likely to be copied, while inanimate objects are least. Nonetheless they all can be copied. Below are examples:

(2.16) a. ni-li-mw-ona (mtoto)
I-PAST-him-saw child
"I saw him (the child)."

b. ni-li-ki-ona ki-tabu
I-PAST-OB-saw SG-book
"I saw the book."

Swahili has an almost always obligatory Dative-Movement rule which takes indirect objects (which occasionally appear unmoved as prepositional phrases with the preposition kwa) and places them directly in front of the direct object and after the main verb.

Hence the moved indirect object acquires the syntactic position of a direct object. At the same time the verb gets its object concord from the moved indirect object rather than from the direct object:

(2.17) a. ni-li-m-pe m-toto ki-tabu
I-PAST-him-give SG-child SG-book
"I gave the child the book."

b. *nilikipe kitabu mtoto

(O.K. with nonsensical reading 'I gave the child to the book.')

c. *nilikipe mtoto kitabu

This shows that the verb is agreeing with the first NP in the VP.

We have seen that there are rules copying subject and object clitic forms onto the verb. Perlmutter has observed that when clitics are formed and moved (as opposed to simply being attached to an adjacent non-clitic), there are only two places they can go: to the verb, as they do in Swahili, or to the second position in the sentence, as they do in Walbiri. This suggests that a grammatical description of clitics in a language will consist of two components: one which says where, when formed, they will go. The other component describes the conditions under which they are formed in the first place. In Swahili the grammar will contain a statement to the effect that clitics go to the verb, and it will furthermore contain the two statements that subject clitics are generated obligatorily and that object clitics are optional. The movement statement will then cause them to be swept to the verb. Once they get there, they will be ordered by Surface Structure Constraints in the manner of Perlmutter (1971)

2.1.2.1.2.3. Relative Verbs

Swahili relative clauses fall into two classes: those with a relative kihusiano in slot IV of the verb of S_{rel}, and those with the kihusiano attached to a particle amba appearing at the front of the clause. Since the restrictions on the former construction reveal the nature of the latter and the reason for its existence, we shall discuss it first.

When a relative kihusiano appears in slot IV, the number of possible tense-aspect distinctions becomes greatly reduced. If the verb is negative, negation must be expressed by a prefix si appearing in slot III, the tense-aspect slot, and all tense-aspect distinctions become neutralized. There is also a generic relative, in which slot III is empty and slot IV hops around to the end of the verb, slots II and V remaining in their old position, and there are in addition progressive (na), past (li) and future (taka) tenses. That is all.

The question now arises: What fills slot IV and how does it get there? Slot IV is filled by the kihusiano of NP_{rel}. However in order for the kihusiano to get there and hence for a relative verb to be possible, NP_{rel} must bear an appropriate syntactic relation to S_{rel}.

We will now examine what happens when NP_{rel} bears various syntactic relations to S_{rel}. When NP_{rel} is the subject, both the relative kihusiano and the subject concord appear on the verb. We have therefore examples such as the following:

(2.18) a. m-tu a-li-ye-ki-soma ki-tabu hiki
SG-man SB-PAST-REL-OB-read SG-book this
"a man who read this book"

b. m-tu a-si-ye-soma
SG-man SG-NEG-REL-read
"a man who does not read"

c. mimi n-a-sema ni-taka-ye-kuwa Sultani wenu
I SB-PRES-say SB-FUT-REL-be Sultan your
"I say it, I who will be your Sultan."

From these examples we can conclude various things about the rule generating relative vihusiano. First of all, it is a rule distinct from the one generating subject concords. In these examples, both rules apply. Secondly, all the rule has to do is specify that a relative kihusiano is created. We propose that this creation itself proceeds in two steps. First WH-REL-MARKING marks NP_{rel} with WH-REL, and then another rule applies which says that WH-REL words are clitics. If these rules follow subject-concord generation, the processes will interact so as to produce the correct outputs. The vihusiano, as well as all other clitics, actually get to the verb by a rule which merely moves clitics to the verb. It looks like this rule applies in various stages of the derivation: for example after subject clitic formation and also after kihusiano formation. Note from (2.20c) that even when NP_{rel} is first person one gets the 3rd person kihusiano. We don't know why this should be the case.

If NP_{rel} is object, its kihusiano appears on the verb, and the object concord may or may not appear:

(2.19) a. mtu u-na-ye-m-saidia
man you-PROG-REL-him-assist
"the person who you are assisting"

b. ki-tabu a-ki-taka-cho Hamisi
SG-book he-OB-want-REL Hamisi
"the book which Hamisi wants"

c. kitabu atakacho Hamisi
"the book which Hamisi wants"

These sentences illustrate another rule which has the effect of moving the relative verb to the front of the relative clause, instead of leaving it behind the subject as it normally would be in a main clause.

If NP_{rel} is the direct object of a verb that has an indirect object in the construction where the indirect object is a naked NP preceding the direct object, then its kihusiano still appears on the verb, even though an object-concord for NP_{rel} is in this case quite impossible:

(2.20) barua ni-taka-yo-mw-andikia
letter I-FUT-REL-him-write
"the letter which I shall write to him"

This last example illustrates quite clearly the independence of relative kihusiano creation from subject and object concord creation.

Relative vihusiano are found attached to the verb with two further types of NP_{rel}: NP_{rel} which are objects of the prepositions kwa and na (kwa rather rarely), and NP_{rel} which are adverbial modifiers of place, time and manner. Examples of these phenomena are given below:

(2.21) a. ma-embe ni-li-yo-kuwa na-yo
PL-mango I-PAST-REL-be with-them
"the mangoes which I was with", meaning "the mangoes which I had"

b. fimbo u-li-yo-pig-wa na-yo
stick you-PAST-REL-hit-PASSIVE with-it
"the stick that you were hit with"

c. rafiki ni-li-o-sema na-o
friends I-PAST-REL-talk with-them
"my friends who I was talking with"

d. a-ta-weza ku-salimika na ile aibu
he-FUT-be able INF-escape from the stigma

wa-li-yo-m-tia chapa kwa-yo wa-zee wake
they-PAST-REL-him-put brand with-it PL-elder his

"Will he be able to escape the stigma with which his parents have branded him?"

While NP_{rel} is a locative in S_{rel}, NP_{hd} may function either as a subject or object or an adverbial in the main clause:

(2.22) a. tu-me-pa-ona pale a-li-po-pigana
we-PERF-OB-see there he-PAST-REL-fight
(loc)

na simba
with lion

"We have seen the spot where he fought with the lion."

b. Hamna kitanda chumba-ni a-na-mo-lala
there is not bed room-LOC he-PROB-REL-sleep
"There is not a bed in the room in which he is sleeping."

When NP_{rel} is temporal, locative vihusiano (notably po) are used. When it is a manner adverbial, the special kihusiano vyo is used:

(2.23) a. a-li-po-sema , watu wakakimbia
he-PAST-REL-say people fled
"When he spoke, the people all fled."

b. i-li-tukia jinsi u-li-vyo-eleza
SB-PAST-happen manner you-PAST-REL-explain
(manner)
"It happened in the manner that you have explained."

We can observe that all of the usages of the relative verb have this in common: NP_{rel} is dominated by S_{rel} without there being an NP dominating NP_{rel} and dominated by S_{rel}. In fact, if NP_{rel} is the object of the complement of a verb, the possessor of something, or the object of a substantial preposition such as

katika 'in' (remember that katika-phrases were analysed as NP), the relative verb cannot be used. WH-REL-MARKING in Swahili thus appears to obey the original A-over-A-constraint proposed by Chomsky (1964) and attacked by Ross (1967).

In order to express a relative clause in which NP_{rel} is buried inside another NP it is necessary to use the amba-construction, which we discuss in the next section. Note that this account of the constraint depends crucially on kwa and na phrases not being NP at the time WH-REL-MARKING applies.

2.1.2.1.2.4. Amba

Relative clauses in which NP_{rel} is buried under NP can be expressed by the amba construction, as well as relative clauses in which NP_{rel} is not. Hence the amba construction can always be used in place of a relative verb. In this construction the kihusiano of NP_{rel} appears attached to the word amba, which begins the clause, and the verb is a normal verb with all the tense, mood, and negation possibilities of a main clause verb. Some examples of the amba construction are as follows:

(2.24) a. vi-tu amba-vyo h-u-ta-vi-taka kesho
PL-thing amba-REL NEG-you-FUT-them-want tomorrow

vi-weke sandukuni
them-put into the box

"Put the things which you will not want tomorrow into the box."

b. yale ma-neno amba-yo kwa-yo a-li-wa-dangaya
those PL-word amba-REL by-them he-PAST-them-deceived

wenziwe ha-ya-sahaulik-i
companions-his MEG-they-be forgotten-NEG

"Those statements by which he deceived his companions will not be forgotten."

c. wa-na-weza ku-chukua ma-sanduku ma-kubwa
they-PROG-able to-carry PL-box PL-big

ma-kubwa, amba-yo sisi watu wawili au
PL-big amba-REL us people two or

watatu ha-tu-wez-i ku-ya-inua
three NEG-we-able-NEG INF-them-lift
(not REL)

"They are able to carry huge boxes which two or even three of us could not lift."

d. walifika katika bustani amba-yo ndani
they arrived in garden amba-REL interior

yake mna ma-ua ya kila rangi
its were-in PL-flower of every color

"They came to a garden in which were flowers of every color."

e. ile nyumba amba-yo paa lake li-me-ungua
the house amba-REL roof its SB-PERF-scorched

"the house, the roof of which was scorched"

f. yule jumbe amba-yo tu-li-zungumza
the messenger amba-REL we-PAST-converse

habiari zake
news his

"the messenger about whom we were conversing"

It is clear from the above examples that NP_{rel} in the clause following amba is emerging unscathed as a ordinary pronoun. But what is this amba construction, and why should the rule which copies vihusiano into it be so less constrained than the rule copying them onto verbs.

The amba construction is rather new: until around the turn of the century structures that one may now use amba to relativize were unrelativizable in Swahili. Furthermore amba is the stem of a verb meaning 'to speak'. Although amba alone has dropped out of

usage, one of its voice-derivatives, ambia 'to speak to' is still widely used. Now Perlmutter notes that in languages where there are strong restrictions on what may be relativized, a very common way of evading these restrictions is to say such things as 'the book of which I say that Mary believes John wrote it'. Note that in this sentence NP_{rel} is in the topmost clause, and it has a coreferent embedded inside a believe-clause, which in a language like Swahili would be an impossible context to relativize out of directly. We therefore propose that amba is in fact a highly defective, semantically empty verb which takes two arguments: NP_{rel}, and the S which expresses the content of the relative clause. This would allow us to keep a simple restriction on WH-REL-MARKING in Swahili, with the amba construction being a frozen stylization of a way of avoiding that constraint. We think that this hypothesis is attractive, and its further verification should prove an interesting task.

There are two further sets of facts which the hypothesis must come to grips with, although we are not sure of their significance. First there are sentences in which a relative kihusiano appears both on amba and the verb:

(2.25) a. mimi amba-ye ni-taka-ye watoto si-wa-pata
I amba-REL I-want-REL children not I-them-receive
"I who want children do not get them."

b. mahali amba-po i-li-po-fungiliwa
place amba-REL SB-PAST-REL-be unfurled

bandera ya Kiingereza
flag of England

"a place where the British flag had been unfurled"

We suspect that this may have something to do with the 'double' relativization in English exhibited by such sentences as 'The man who they tortured by burning holes in with cigarettes was not pleased." For some reason both NP_{rel} in the amba clause and its coreferent in the complement of amba would get WH-REL-MARKED, and then each would proceed to the verb of its clause as usual.

Secondly, there are certain dialects in which not only does amba get the kihusiano of NP_{rel} suffixed to it, but it also gets the subject concord of NP_{rel} prefixed to it, just as if NP_{rel} were its near-surface subject. Hence in the KiVumba dialect of the southern Kenya coast we have sentences such as the following:

(2.26) a. jambo l-amba-lo l-a-ni-dhuru ndi-lo hili
thing SB-amba-REL SB-PRES-me-hurts is-it this
"The thing that hurts me is this."

b. wewe w-amba-e ku-na-n-amba ni mwivi
you SB-amba-REL you-PERF-me-say I thief

mbona k'-u-vi-ono vy-ambe-vyo
why you-NEG-them-see SB-amba-REL

si-kw-achii
I-you-left

"You who accuse me of being a thief, why did you not notice the things I left for you?"

A final fact is that in this dialect as well the standard language the amba may be furthermore followed by kwamba which is frequently used to introduce indirect discourse.

* (2.28) a. ni-me-sikia kwamba mwitu u-ki-washwa
I-PERF-heard that forest SB-if-is put to

moto u-ta-ungua wote
fire SB-FUT-burn all

"I have heard that if fire is put to the forest it will burn away completely."

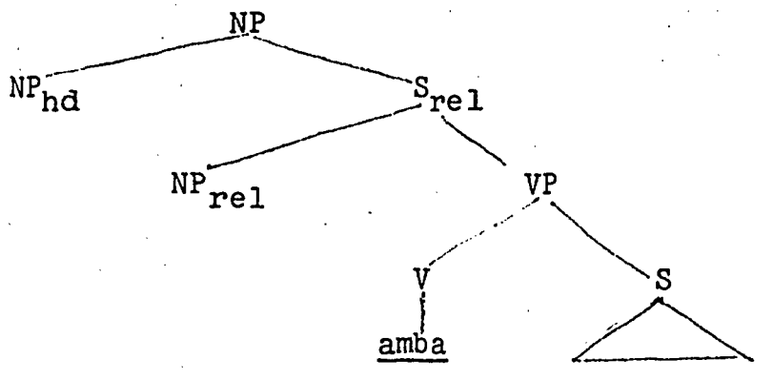
* There is no example (2-27)

b. watu ambao kwamba wa tayari
people amba-REL that SB ready

"people who are ready"

These examples seem to suggest that the surface structure of the amba relative is something like (2.29):

(2.29)



The apparent peculiarities of the amba-relative clauses may thus have a reasonable explanation, with apparent complexities in the WH-REL-MARKING rule being consequences of its interaction with other constructions. This concludes our discussion of Swahili.

2.1.2.1.2. Hindi

The facts which are relevant have already been presented from Hindi. One remembers that the relative noun gets a determiner yo, whether it precedes or follows NP_{hd}. This WH-REL-MARKING is independent of which of NP_{rel} and NP_{hd} is the antecedent of the other, since whichever comes first is the antecedent. Hindi shows that WH-REL-MARKING applies independently of the direction of pronominalization. The reader will remember examples in which NP_{rel} appears embedded within S_{rel}: such examples show that we are not dealing with an obligatory fronting rule.

2.1.2.1.3. Remarks on NP-REL-MARKING

We have thus seen evidence that NP-REL-MARKING must exist in retro-relatives, extraposed relatives and preposed relatives. We have not found any language in which one would want to say that WH-REL-MARKING was applying to pro-relative clauses. We do not believe that this is an accident, though we cannot think of anything it might follow from. Below is a list of languages with NP-REL-MARKING:

Languages with NP-REL-MARKING:

Crow	Sanskrit
Swahili	Mabuiag
Hindi	

2.1.2.2. WH-REL-FRONTING and COPYING

The workings of WH-REL-FRONTING we take to be familiar to readers, for this is the process we find in English. Comparatively few non-indoeuropean languages have it. These include Finnish, Hungarian and Georgian. In WH-REL-FRONTING the relative noun is moved to the front of the clause as well as being WH-MARKED. A variant of this rule which occurs in certain dialects of English regularly and in informal speech frequently is WH-REL-COPYING. This rule leaves behind a pronoun in the original place of NP_{rel}. An example is (2.29):

(2.29) The people who I believe that they eat babies are the Carthaginians.

The existence of a WH-REL-COPYING rule raises a question about the formulation of WH-REL-FRONTING: does this rule apply in one fell swoop, or is it a consequence of the sequential operation of WH-REL-COPYING (to generate the relative pronoun in clause-initial position) and NP-REL-DELETION (to erase the pronoun left by the

first rule).. Recent work by Perlmutter (1972) in French suggests that the latter is correct, so we will assume that WH-REL-FRONT as a single process does not exist as a rule.

We are now in a position to observe an interesting difference between English and French, on one hand, and Arabic on the other. In the latter language, if NP_{rel} is stuck in some position which NP-REL-DELETION cannot apply into, one gets a pronoun in place of NP_{rel}. In English or French one gets an ungrammatical sentence. Hence one has:

(2.30) a. *the man that I saw his dog

b. *l'homme que j'ai vu son chien

In order to say such things in English or French one must use Pied-Piping to WH-REL-COPY the entire possessivized NP to the front of the sentence, and then NP-REL-DELETE the copy-pronoun left behind:

(2.31) a. the man whose dog I saw

b. l'homme le chien de qui j'ai vu

Another question is whether the WH-REL is deposited by WH-REL-MARKING with WH-REL-COPY doing the preposing later, or whether the preposing rule deposits the mark and moves all at once. We have no facts that suggest an answer to this problem.

Note that the sentences of (2.31) raise a problem in the formulation of the NP-REL-DELETION rule: for it is not NP_{rel} itself that is being deleted but the copy pronoun left behind by the fronting rule. What this means for the formulation of NP-REL-DELETION we do not know. We shall also eschew formulating the

various varieties of movement, marking and copying rules that have been proposed, since the various problems that remain leave these too uncertain in detail to be reliably formalized.

2.1.3. Final Remarks

We list here the names of the various things that happen to NP_{rel}, along with a list of the sorts of clauses that they have been found to happen in:

NP-REL-DELETION	embedded, extraposed
NP-REL-MARKING	adjoined, retrorelative
NP-REL-FRONT/ COPY	retrorelative, extraposed

To what extent these distribution facts reflect significant facts about languages we can not say, but we think there is something systematic about the absence of NP-REL-DELETION in preposed relatives and the absence of NP-REL-MARKING or COPYING in prorelatives.

2.2. Rules that affect NP_{hd}

In some languages relativization appears to affect NP_{hd}. In the first section we will discuss languages in which some feature of NP_{rel}, such as case or obviation, appears on NP_{hd}. In the second section we will discuss languages in which NP_{hd} is deleted while NP_{rel} is left intact.

2.2.1. Inheritance by NP_{hd} or Properties of NP_{rel}

NP_{hd} in some languages acquires case or obviation features appropriate to the role played by NP_{rel} in S_{rel} but not to the role played by NP_{hd} in S_{mat}.

2.2.1.1. Hopi

In Hopi NP_{hd} inherits the case of NP_{rel}, at least under some circumstances. Hale (1970) cites the following examples:

(2.32) a. nɨ?· tá·qa-t tɨ́wa
I man-ACC saw
"I saw the man."

b. tá·qa ní·ma
man went home
"The man went home."

c. ta·qa-t nɨ? tɨwa-q ní·ma
man-ACC I see-OBVREL went home
"The man I saw went home."

On the basis of these examples one might say either that NP_{hd} is being deleted and NP_{rel} is preposing, or that NP_{rel} is being deleted and NP_{hd} is acquiring its case marker. Because of the prevalence of the NP_{rel} deletion process, we assume that is what is happening.

2.2.1.2. Persian

Relativization in Persian is for the most part like that in Modern Greek. There is a particle ke which introduces relative clauses, as well as certain kinds of object clauses. The relative clause is a retrorelative. NP_{rel} is deleted if it is a subject or an object, otherwise it is left behind as a third person pronoun. There are some differences, however, The pronouns are not clitics, and NP_{hd} takes a suffix i which normally is an indefinite marker. We have no idea what this is doing in relative clauses. There is a rule that if a nonsentential word follows the head, the latter must have an e suffixed: perhaps the i is a contextual variant of e. Possession is expressed by attaching the possessor to the end of the NP and suffixing e to the word preceeding the possessor.

There is finally a definite-accusative marker ra which is attached to the last nonsentential element of the NP. Thus we have NP such as the following:

(2.33) a. ketab-e bozorg (ra)
book-MOD big DF.ACC
"(the) big book"

b. ketab-e bozorg-e mæn (ra)
book-MOD big-MOD I DF.ACC
"my big book"

c. ketab-i (ra) ke didæm
book-I DF.ACC REL I saw
"the book I saw"

d. mard-i ke be u ketab didæm
man-i REL to him book I gave
"the man who I gave a book to"

But there emerges a strange phenomenon in the use of ra. Normally ra is obligatory when the direct object is definite (Wayles Browne asserts that this is a matter of specificity, but we have no other documentation for this). But if NP_{hd} is direct object in the main clause and NP_{rel} is the subject in the relative clause, then ra is optional on NP_{hd}. Furthermore if NP_{rel} is object in S_{rel}, NP_{hd} can have ra even if it is a subject in the main clause. Hence it appears that when an NP is modified by a relative clause one may look either at the role of NP_{hd} in the main clause or of NP_{rel} in S_{rel} to decide whether or not to use ra.

Some examples of this from Lambton (1953) are:

(2.34) a. an zæni (ra) ke diruz amæd didæm
that woman-i (DF.ACC) REL yesterday came I saw
"I saw the woman who came yesterday."

b. zæni (ra) ke dидid injast
woman-i (DF.ACC) REL you saw is here
"The woman who you saw is here"

c. ketab-i (ra) ke be mæn dadid
book-i (DF.ACC) REL to me you gave

gom šode æst
is lost

"The book you gave me is lost."

One would expect ra to be obligatory in (2.34a), but it is optional. One would expect it to be impossible in (2.34c-d), but it is possible. The idea that preposing of NPrel is responsible for these examples is unlikely in light of the fact that the NP preceding the clause appears to be the head, since it precedes the introductory conjunction and is capable of taking main clause case-marking.

2.2.1.3. Micmac

This example is Hale's (1970). It involves the category of obviation. When there are two third person NP in an S, the second becomes obviative. This is illustrated in the following:

(2.35) a. tjĩmn elogoet
man work
"The man is working."

b. ẽpit nemiat-l tjĩmno-l
woman see-OBV.OB man-OBV
"The woman sees the man."

But if the subject of a sentence (the first NP in it) is NP_{hd} of a relative clause in which NP_{rel} is the object (second NP in S_{rel}), then NP_{hd} becomes obviative in accordance with the situation prevailing in S_{rel}, not in accordance with the structure of the main clause:

(2.36) c. tjĩmno-l tan ẽpit nemiat-l na elogoe-litl
man-OBV REL woman see-OBV,OB prt work-OBV.SUBJ
"The man who the woman sees is working."

In this construction it appears that NP_{hd} is being assigned to a syntactic category on the basis of the status of NP_{rel}, as in the previous examples.

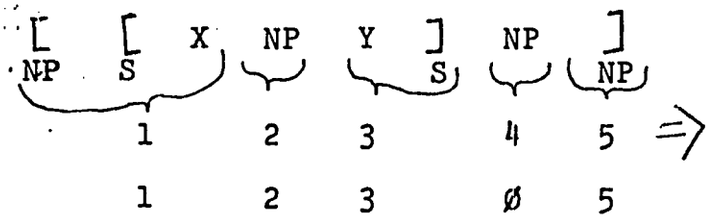
2.2.2. Rules that Delete NP_{hd}

We have already seen examples from Navajo which indicate that NP_{hd} is being deleted. In this section we will discuss this process in a number of languages.

2.2.2.1. Navajo

We have already seen that when the head of a Navajo relative clause is not deleted and the clause is not extraposed, the clause is in a pro-relative structure. This causes one to suppose that the underlying structure of the head-deleted relative clause is pro-relative. Hence we propose a rule like the following for Navajo:

(2.37)

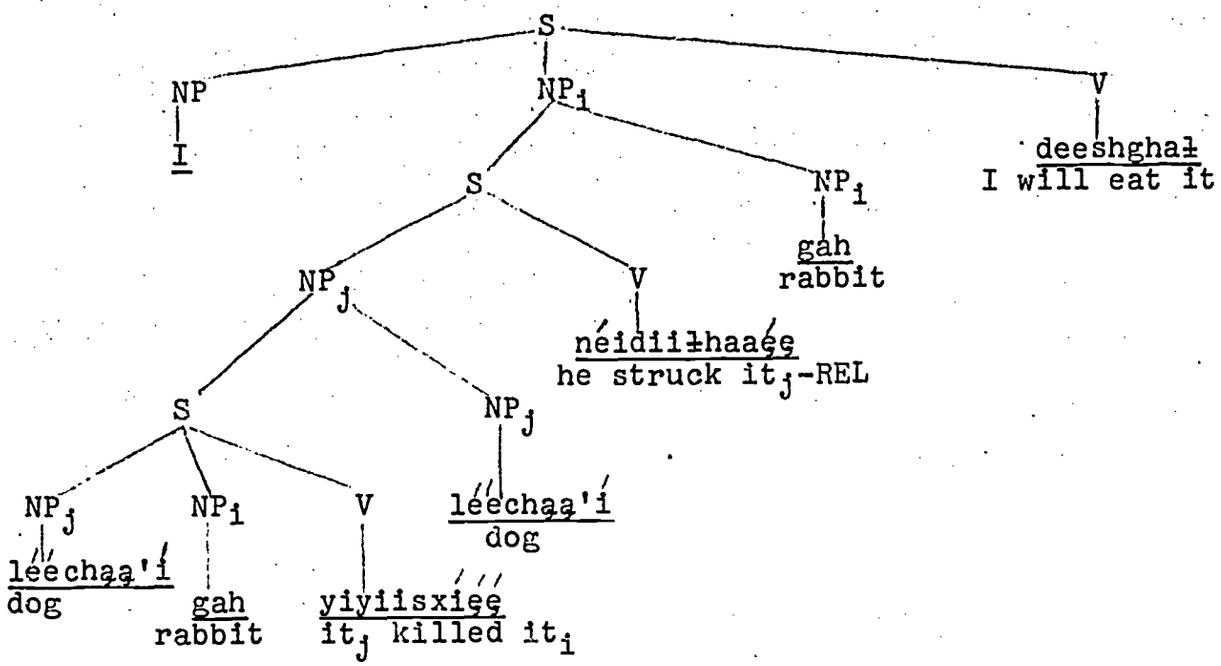


Condition: 4 is anaphoric to 2

Since Navajo is a language in which pronouns characteristically delete, the question arises of whether there really is a rule with a variable applying here, or whether NP_{hd} is disappearing because it is a pronoun. The following examples indicate that the complex noun phrase constraint and the coordinate structure constraint are being obeyed by the head-deletion rule, which suggests strongly that it is a rule using a variable. In the immediately following example we see that an NP_{rel} of a relative clause cannot be within

a relative clause that is contained by the NP_{rel}'s relative clause. For this reason the deep structure indicated by (2.38) cannot be said:

(2.38)



*ashkii ɬéechąą'í gah yiyiisxíęę néidiiɬhaaęę deeshghaɬ

*"I will eat the rabbit which the boy struck the dog that killed (it)"

The coordinate structure constraint is revealed by the following examples:

(2.39) a. *ashkii doó at'eed kingóo naazh'áazhęę
boy and girl store-to went-dual-REL

ákoo naadoodaaɬ
there-to will-return-sg.

"the boy who him and the girl went to the store will go back there"

or "the girl who her and the boy went to the store will go back there"

b. ashkii dóó at'éed kingóó naazh'áázhée
boy and girl store-to went-dual-REL

ákóó náádoot'ash
there-to will-return-dual

We see that when NP_{rel} is a conjunct of a coordinate structure as in (2.39) it cannot delete NP_{hd}. On the other hand when NP_{rel} is a whole coordinate structure as in (2.39) it can delete NP_{hd}.

The difficulties of Navajo syntax make it difficult to be sure that it is necessarily for island violations that these sentences are bad: Navajo sentences have a habit of being ungrammatical for reasons one is not aware of and does not even suspect. But I think the above can be taken as tentative evidence that NP-HEAD- DELETION is a rule which does obey island constraints.

2.2.2.2. Crow

We have already seen that there are retro-relative clauses in Crow. We therefore assume that the deleted-head relative clauses in Crow originate from retrorelative underlying structures. The Crow structure is illustrated by the following structure:

(2.40) a. Billš Sallis šigâ:gem diješ igak
Bill Sally boy hit saw
"Bill saw the boy that Sally hit."

b. šigâ:gem búpcim bíaga:dem kusî:ješ i:za:k
"The boy who threw the ball at the girl
"The girl who the boy threw the ball at was big."
"The ball which the boy threw at the girl

c. šigâ:gem Sallis dijik baliajes alíénne:da: huk
boy Sally hit I-think down the road
came
"The boy who I thought hit Sally is coming down the road."

Preliminary evidence suggests that this process is also obeying

island constraints. Observe the following:

(2.41) a. šigâ:geš sâ:bí: ditdək éwahjek
boy why he-hit I-know
"I know why he hit the boy."

b. *šigâ:gem sâ:bí: ditdək é:wahješ alíénne:da: huk
boy why he-hit I-know down the road came
"*The boy who I know why he hit came down the road"

Indirect question nominalizations are islands in English, and (2.41) seems to suggest that they are also islands with respect to NP-HEAD-DELETION in Crow.

2.2.2.3. Tagalog

Tagalog displays two relative clause constructions, which are apparently completely optional variants: retro-relatives, in which NP_{rel} is deleted, and headless relatives, in which the determiner of NP_{rel} is altered in a peculair way. Before supporting this analysis, we will first provide a certain amount of basic information about Tagalog sentence structure to make the discussion of relativization more comprehensible.

Tagalog is basically a VSO language; like other VSO languages such as Welsh and Breton, however (to be considered below), it is subject to an extremely common topicalization process which has the effect of preposing various sorts of NP. These are then found in position before the verb; separated from it by the particle ay. This preposing process can apply in equational sentences, as well as various others, and the particle ay has therefore occasionally been referred to in the literature as a copula, but this seems unjustified.

The grammatical relations which various NP bear in the sentence are indicated by two things: a set of case marking particles, and

a system of verb affixes. Every sentence contains one NP marked with the particle ang (suppletively si with proper names). This is usually referred to as a topic particle, but (as will be suggested below) it seems reasonable to regard it as a marker of subject instead. In addition, a sentence may contain a NP marked with the object particle (this is ni with personal names, and phonetically [naŋ] elsewhere). The latter shape is represented simply as ng in the Tagalog orthography, which is a mildly unfortunate choice for our purposes since there is another particle which is also written ng, but which is phonetically simply [ŋ]. Fortunately this latter is always a clitic, and so can be distinguished from ng = [naŋ] by the presence or absence of a space. There can also be NP's marked with a generalized 'oblique' marker (kay with names and sa elsewhere), which expresses various dative and locative notions. The semantic role played by the surface subject (the ang-phrase) is indicated by the verbal affix. In some cases, this will be an agent or other likely underlying subject; in other cases this will be something that looks like an underlying object, with the underlying subject appearing as a ng phrase; in still other cases, the ang phrase will be an indirect object, instrument, benefactive, etc. Each of these cases is marked by a different infix (or sometimes suffix or prefix), with different sets of verbs showing somewhat different sets of possibilities and different morphology. Some of these possibilities are illustrated below for the verb stem bigay 'give':

(2.42) a. nagbigay ang bata ng kanin sa babae
SF-give SM boy OM rice DM girl
"The boy gave some rice to the girl."

b. binigay ng bata ang kanin sa babae
OF-give OM boy SM rice DM girl
"The rice was given to the girl by the boy"

c. binigayan ng bata ng kanin ang babae
BF-give OM boy OM rice SM girl
"The girl was given some rice by the boy"

(SF=subject focus; OF=object focus; BF=benefactive focus; SM=subject marker; OM=object marker; DM=dative/locative marker.)

The glosses above suggest that (2.42b-c) are some sort of passives derived from (2.42a). This suggestion is extremely controversial in Tagalog studies, where it is often asserted that all of (2.42a-c) (and the numerous variations that appear when other verb classes are considered) are equally basic, and that none is derived from any other. The relations marked by ang, ng, sa and other such particles, furthermore, are sometimes asserted not to be grammatical relations, but purely semantic categories: the ang phrase is not the subject, so this argument goes, but the focus. There seem, however, to be excellent arguments for considering the ang phrase to be exactly parallel to the relation of derived subject in other languages, and the ng phrase to be either a direct object or an instrumental (including displaced agents, such as the by phrase of passives). Further; the priority of the a-type structure (with 'subject focus') over the others is shown by the fact that at least two rules operate in terms of it, even in sentences which in superficial structure have some other focus. First, there is a process of conjunction reduction which eliminates the NP which is the ang phrase in the subject focus version of the second of

two conjoined sentences if it is identical to the ang phrase in the subject focus version of the first conjunct (or, not to be too coy about it, eliminates the underlying subject of the second conjunct under identity with the underlying subject of the first. Secondly, the possibilities of reflexivization are defined by the subject focus structure, even when some NP other than the underlying subject is the surface ang-phrase. In this language, then, one says "Himself was built a house by John", not "John was built a house by himself" or something similar. In fact, "Himself was built a house by John" seems to be the only way to say this with benefactive focus. If we assume that a) the reflexivization rule in Tagalog applies from the subject to some other NP (in fact, it can also apply from the object to a dative/locative NP parallel to English "John talked to Mary about herself", but not from the object to the subject); b) that there are rules which can put some NP other than the underlying subject into subject position, while making the underlying subject an instrumental and marking the verb in one of several ways depending on the source of the derived subject; and c) that reflexivization and the form of conjunction reduction referred to above (there is another conjunction reduction process in the language, which operates from right to left in terms of derived-structure relations) precede these 'passivization' processes, we arrive at a natural account of these phenomena. The fact that Tagalog 'passives', in these terms, do not always translate 'passives' in English or any other language seems irrelevant. If passive characterizes a sort of derivational relation between structures, the Tagalog passive seems simply a generalized version of more familiar passive rules (generalized in the sense

that it can apply to NP's other than the direct object).

Adjectival modifiers of nouns can appear either preceding or following the noun in question. A particle called a 'ligature' appears between the two: this has the form na when the first word of the two ends in a consonant other than n, and the form -ng after a vowel or replacing a final n. Thus, "the broken bottle" can be either ang basag na bote (SM - broken - ligature - bottle) or ang boteng basag (SM - bottle+ligature - broken). If relative clauses are analogous to adjectives, then, we would expect to find both retro-relatives and pro-relatives in Tagalog. We do in fact find retro-relative structures, in which the head is separated from S_{rel} by the same ligature particle that appears in Noun-adjective combinations, and NP_{rel} is simply deleted.

(2.43) bumili si Juan ng kalabaw na nagpatay ni Ernesto
SF-buy SM John OM carabao lig. SF-kill OM Ernest
"John bought the carabao that killed Ernest"

The NP (ng) kalabaw na nagpatay ni Ernesto is exactly parallel to (ng) kalabaw na maganda "the beautiful carabao", with the sentence nagpatay ang kalabaw ni Ernesto as modifier, and the ligature particle na between the head and (either sort of) modifier.

The pro-relative structure we would expect corresponding to the NP ang magandang kalabaw, with adjective preceding noun, would be ang nagpatay ni Ernestong kalabaw, with the 'determiner' particle ang in NP-initial position, followed by the relative clause (nagpatay ang kalabaw ni Ernesto, reduced by deletion of NP_{rel} to nagpatay ni Ernesto) followed by the ligature (here -ng, because the reduced relative ends in a vowel) followed by NP_{hd}. This is in fact perfectly grammatical in Tagalog, but further investigation

leads us to question the interpretation of it as a pro-relative.

Within the sentence, the order of noun phrases is essentially free (though different orderings lead, as usual, to differences of 'emphasis'). Thus, nagpatay ni Ernesto ang kalabaw is a perfectly natural alternative to nagpatay ang kalabaw ni Ernesto. One cannot, however, scramble NP's out of their sentence: thus, *mi Ernestong nagpatay ang kalabaw (where scrambling has moved ni Ernesto out of S_{rel} and ang kalabaw down into S_{rel}) is not a possible alternative to ang kalabaw na nagpatay ni Ernesto. But in the putative pro-relative structure, such scrambling appears to be possible: ang nagpatay na kalabaw ni Ernesto is a perfectly good alternative to ang nagpatay ni Ernestong kalabaw. It appears, in fact, as if the head NP in a pro-relative construction is freely scramblable (taking along its preceding ligature) with the other NP's in the S_{rel}. If true, this would be a very peculair sort of scrambling: first, it violates the very general constraint against scrambling over sentence boundaries, and secondly it is restricted to one optional variant of one construction.

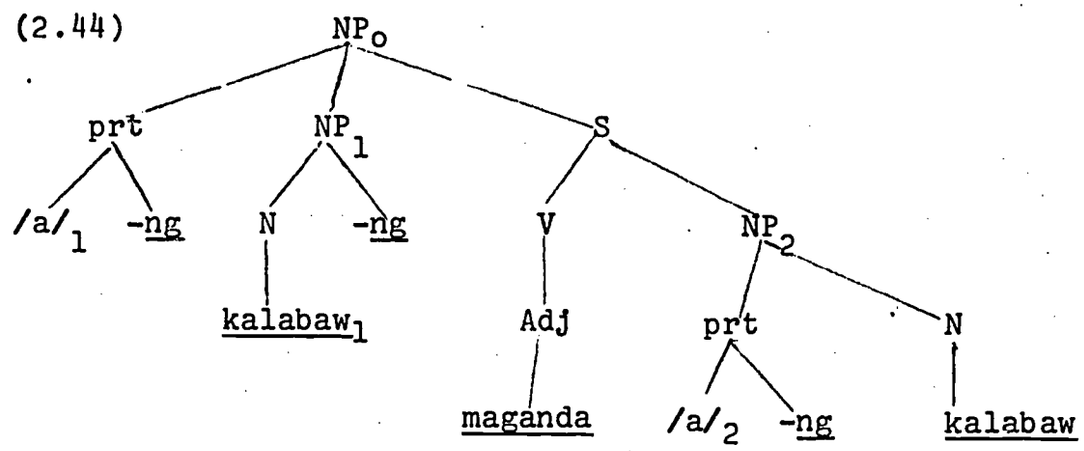
Since the NP (na/-ng) kalabaw in a construction like ang nagpatay ni Ernestong kalabaw is completely permutable with the other NP's in the S_{rel}, the natural alternative to the unnatural scrambling process suggested above would be to have this NP be a constituent of S_{rel}. This would of course be the case if, instead of being a pro-relative with left NP-rel deletion, this construction were simply a retro-relative with NP-head deletion. In that case, however, it will be necessary to allow NP-head deletion to have other effects as well, for we can note that the 'determiner'

of NP_{rel}, on this analysis, has been changed from ang to the ligature na/-ng. One way to accomplish this would simply be to have NP-head deletion convert ang to na/-ng directly. A slightly more interesting possibility, if it could be supported with other evidence, would be based on an analysis of ang (and also the object marker ng = [naŋ]) into /a/ (or, for ng, /na/) plus the ligature. We could then take the subject marker /a/ and the object marker /na/ to be ordinary nominal modifiers; as such, insertion of ligature would be automatic, and we could assume that NP-head deletion applies after ligature insertion to delete the marker /a/ as well as NP_{hd}. There is some slight support for this suggestion in the facts concerning relative clauses on personal names. These are in general rejected by informants; but it seems to be the case that a retro-relative construction is better in such a case than one of the headless variety. Thus, for "the John who killed the carabao," it is better say ?si Juang nagpatay ng kalabaw than ???ang/si nagpatay na Juan ni kalabaw. In Tagalog it is in general only possible to relativize (by means of either construction) a NP which is in derived subject position (i.e., a surface ang phrase); this fact suggests that, for the headless construction, in which the determiner of NP_{rel} is changed, the rule mentions the specific determiner ang, and not just the structural position of the NP_{rel}. The fact that it is precisely the determiner which could be analyzed as containing an instance of ligature (note that si could not naturally be so analyzed) that the rule can convert into ligature alone suggests the plausibility of the analysis. This could also, of course, be due simply to restrictions of a semantic nature on the relativization of proper names, pronouns, and other NP's with

special referential properties.

Regardless of the correctness of the proposed analysis of ang, however, it seems correct to suggest that Tagalog has only retrorelatives (or at least that there is no motivation for positing any pro-relative structures), which can undergo either NP-rel deletion or NP-head deletion (which latter rule in Tagalog entails a modification of the determiner of NP_{rel}). This would suggest, then, that the syntax of relative clauses in the language is not parallel to that of adjectives, since the latter can appear either before or after the head. But let us re-examine the derivation of adjectives. Thus far, we have accepted as self evident the notion that adjectives are either generated in both positions, or that they appear basically in only one and are then subject to an optional permutation rule. But suppose we assume that in Tagalog, as has often been suggested for English, adjectives derive from relative clause structures. These are all, we have suggested, of the retro-relative form. Thus, the structure underlying "the beautiful carabao" is that of (2.44), once the ligatures have been inserted:

(2.44)



Now either of the two relativization processes can apply: NP-rel

deletion or NP-head deletion. If we apply the first of these, it simply deletes NP_2, yielding (after the morphophonemic conversion of -ng to na after a consonant) ang kalabaw na maganda. If we apply NP-head deletion, on the other hand, this will delete NP_1, together with the determiner $/a/_2$, thus giving ang magandang kalabaw. The two orders of adjectives thus follow automatically from the two relativization processes, and we do not need to assume either a permutation rule or the generation of adjectives in both positions. A further consequence of this, of course, is the fact that the syntax of relative clauses is once more assimilated to that of adjectives, lending plausibility of a sort to the claim that S_{rel} is part of the constituent containing NP_{hd}.

2.2.2.4 Dagbani

Our information on Dagbani comes from a short article by Wilson (1963). The language exhibits an interesting variety of constructions.

Dagbani, like English, has different constructions when NP_{rel} is in the subject, either as the subject itself or as the subject's possessor, then the relative clause follows the head, and NP_{rel} appears in the form of a pronoun ŋun, which appears to merely mean 'he'. Thus for the subject-relativization there is no reason to believe that there is a Relativization rule applying as far as Wilson's data show. In all relative clauses, the clause may be followed by a demonstrative taking forms so, seli, etc. and meaning 'a certain'. One hence has (2.45a) illustrating the pronominal use of ŋun, and the relative clauses of (2.45b-d):

(2.45) a. sana , ŋun sa ka na ntə puhi ma
stranger he came yesterday to greet me
"The stranger, he came yesterday to greet me."

b. {sana / saan-so} ŋun sa ka na la tšaŋya
stranger he came yesterday went
"The stranger who came yesterday went."

c. m puhi {sana / saan-so} ŋun sa ka na la
I greeted stranger he came yesterday
"I greeted the stranger who came yesterday."

d. m puhi {sana / saan-so} ŋun bii sa ka na
I greeted stranger he son came yesterday
"I greeted the stranger whose son came yesterday"

When NP_{rel} is not in the subject, considerably more interesting things happen. If we examine sentences where NP_{rel} is the direct or indirect object, it appears that either NP_{rel} or NP_{hd} is deleted, and the survivor must appear with the so-seli determiner. Furthermore the particle n is attached to the verb.

(2.46) a. saan-so n nə puhi la tšanya
stranger-DET I greeted went
"The stranger I greeted has gone."

b. n nə puhi saan-so la tšanya
I greeted stranger-DET went
"The stranger I greeted has gone."

c. a mi saan-so n nə puhi la
you know stranger-DET I greeted
"You know the stranger whom I greeted."

1 d. a mi n nə puhi saan-so la
you know I greeted stranger-DET
"You know the stranger whom I greeted."

(2.47) a. o ti sana ləgri
he gave stranger money
"He gave the stranger the money."

b. a mi saan-so o nə ti ləgri la
you know stranger he gave money
"You know the stranger he gave the money to."

c. a mi o nə ti saan-so ləgri la
you know he gave stranger-DET money
"You know the stranger he gave the money to."

Especially note (2.47c), where NP_{rel} is in the regular position of the indirect object, which is what it is. Also interesting is the fact that Wilson says that there is no way to relativize when NP_{rel} is the possessor of something in the VP. There appear to be two rules, one deleting NP_{hd} and the other deleting NP_{rel}, and if NP_{rel} is in the VP one or the other of them must apply. The relativization rules thus display a very unusual restriction: they cannot apply to subjects. As will be noted below, a restriction of such rules to subjects only is not uncommon, but the alternative found in Dagbani is apparently unprecedented, and would contradict the generalizations made by Ross (1971) about the possible scopes of restrictions on rules. It is thus important that further research be done on Dagbani relativization to clarify and extend the analysis given by Wilson.

Though this constraint, if correct, would be highly unusual, the remaining features of relativization are familiar ones. We have already noted that the rule is subject to an 'A-over-A' constraint which prohibits relativization of a NP directly dominated by another NP (i.e., prohibits relativization of possessors), as was e.g. Swahili. Furthermore, we are told, the relativization rules obey the constraint that NP_{rel} cannot be embedded in a subordinate clause. This is also a restriction known from other languages. The rules in question are a NP-Rel-deletion rule and a NP-head-deletion rule; both have the effect of attaching nə to the verb as a 'side effect'. We assume that the fact that the

determined so/seli is obligatory with clauses undergoing relativization, but optional with relative-like structures where the identical NP in the embedding is subject is an independent fact, having something to do with the semantics of demonstratives and of the subject-relative clauses. NP-head-deletion, then, must have the effect of altering the determiner of NP_{rel}, as was the case in Tagalog. The sort of alteration performed here suggests that the Tagalog situation might be better analyzed by taking the ligature -ng as a sort of determiner, and saying that what happens is that the determiner ligature which would be associated with NP_{hd} (by virtue of its being modified) is transferred down into S_{rel} replacing the case marking determiner that would otherwise appear there. In any event, what the rule seems to show is a sort of inverse effect to that of NP_{hd} inheriting a feature of a deleted NP_{rel}, shown above in various languages: both in Dagbani and in Tagalog, NP_{rel} inherits a feature of deleted NP_{hd}. Again as in Tagalog, the relation between the two rules is that either NP_{rel} deletion or NP-head-deletion must apply, the choice being optional. There are various ways in which this complementarity within an obligatory process might be formalized, but we see no interesting conclusions that follow from the choice of any one of them.

One more phenomenon which Dagbani manifests is the inheritance by NP_{hd} of features of NP_{rel}. Observe the following:

(2.48) a. n nəŋ ləgri adaka ni
I put money box in

b. təm ma adaka-seli n nɔ nəŋ ləgri la
give me box-DET I put money
"Give me the box I put money in."

c. tɔm ma n nɔ nɔŋ
give me I put

lɔgri adaka-šeli ni la
money box-DET in

"Give me the box I put money in."

These sentences are well-behaved: when NP_{hd} is deleted in (c), NP_{rel} appears with the appropriate postposition, and when NP_{rel} is deleted the postposition disappears. But when NP_{hd} is subject of the main clause and NP_{rel} is deleted, then the postposition of NP_{rel} appears on NP_{hd}:

(2.49) a. adaka pora
box small

b. adaka-šeli ni n nɔ nɔŋ lɔgri la pora
box-DET in I put money small
"The box which I put money in is small."

c. n nɔ nɔŋ lɔgri adaka-šeli la pora
I put money box-DET small
"The box which I put money in is small."

Although Dagbani Relativization is especially bizarre and complex, it does not seem to involve devices which are foreign to Relativization in general.

2.2.2.5 General Remarks on NP-HEAD-DELETION

We have seen that versions of the head-deletion rule must exist to delete heads of pro-relative and retro-relative constructions, and it very well may be that this deletion rule obeys island constraints. The rule can involve as a side effect the inheritance of certain determiners of NP_{hd} by NP_{rel}. We have no evidence for the rule applying to any adjoined relative clause structure. In Navajo, when the relative clause is extraposed, the head cannot disappear. These deleted head relative clauses, when they have been discussed in the literature, are supposed to come from structures in which the head is anaphoric to NP_{rel}. One trouble with this claim, for which no direct evidence is known, is that such structures with pronominal head and nonpronominal NP_{rel} in an embedded relative clause structure seem extraordinarily strange:

(2.50) *I gave it which book Bill bought to my sister

We doubt that sentences like (2.50) exist in human languages. If this analysis were correct, then we would be faced with the problem of why anaphoric heads are always deleted. On the other hand, if we accept another possible analysis of such constructions, whereby the heads of relative clauses come from within them via an application of a movement rule, and that the deleted head relative clauses are really instances of this rule failing to apply, we shall be stuck with the problem of why non-movement should obey island constraints. We conclude that del-relatives are structurally like embedded relatives of other sorts, and that NP-Head-deletion is a possible relativization rule in natural languages.

It can be hoped that deeper study of languages with deleted-head

relative clauses will reveal more about what they are.

2.2.3 Summary of Remarks on Rules Affecting NPhd

The effect which Relativization rules have on NP_{hd} is either to delete it or to cause it to acquire some feature of NP_{rel}. If NP_{hd} is deleted, some of its features may be acquired by NP_{rel}. In all constructions where relativization rules do such things, the relative clause is in an embedded structure with its head. It is worth noting that no language known to us displays only del-relatives: it may well be that NP-Head-Deletion is universally an optional process.

2.3 Relativization Rules Which Mark the Clause or its Verb

In many of the languages discussed above, the rules of relativization affected NP_{rel} and/or NP_{hd} in some way, and this was their only effect. In some languages, indeed, no relativization rule at all applies, and the relation between NP_{rel} and NP_{hd} is indicated by ordinary devices of anaphora only. Another possible process of very frequent occurrence, however, is the introduction of some additional material into the clause which indicates its relative status, where this material is not directly associated with the NP's involved.

The simplest case of this sort is typified by that relatives in English, where (in addition to the operation of NP-rel-deletion) a general subordinating marker is attached to the clause: in this case, the complementizer that. Such a marker does not specifically indicate the relative nature of the clause, but simply marks it as subordinate, and is presumably inserted by some process not specific to relativization. More interesting for our purposes is the case

where the marker inserted is one peculiar to relative clauses. Several examples of this device have already been seen above: in Walbiri, for instance, the auxiliary stem in relative clauses is the morph kutja, differing from the auxiliary stem in main clauses and in other kinds of embeddings. In Navajo, an element ɬɬ is attached to the verb in relative clauses, and serves only this function. In Dagbani, the element la appeared at the ends of relative clauses, both those that undergo the (non-subject) relativization rules and those in which NP_{rel} is subject, where we have no reason to believe any relativization rules apply. Apparently such markers can be of two sorts: either a complementizer, which delimits the entire clause, or a mark on the verb. Further, the mark or particle which appears with the verb will appear on the auxiliary instead if the language is one in which this forms a separate constituent.

These markers are applied to all relative clauses in the languages in question, regardless of the status of NP_{rel} within S_{rel}. Just as relativization rules can be sensitive to the role of NP_{rel}, however (some applying only to subjects and some only to non-subjects, for example), the particles which appear in relative clauses may also be sensitive to such distinctions. We have already seen two languages, Turkish and Dagbani, in which some marker appears on the verb to indicate the syntactic role of NP_{rel}. In both of these languages it is a subject-nonsubject distinction that is relevant. In Turkish an -en participle is used if NP_{rel} is in the subject, and not otherwise, and in Dagbani a nə particle is prefixed to the verb if NP_{rel} is not in the subject, and not otherwise. We assume that these markers are produced by insertion

rules, and that the markers are attached to the verb (or the complementizer or the auxiliary, depending on the language). A somewhat feeble attempt at a formulation of the en-placement rule for Turkish is below:

(2.51) en-PLACEMENT:

$NP[_S$	[X	NP	X	V $]_S$	NP $]_{NP}$
1		2	3	4	5 6
1		2	3	4+en	5 6

Conditions: 2 is anaphoric to 5

2 is in the subject of 4

It is important to note that the syntactic relations that are marked by these rules are not of the sort marked by ordinary case-markers, and neither can they be construed as some sort of voice marker attached to the verb.

In the next sections we will examine further rules of this sort.

2.3.1 Welsh

In Welsh it appears that when NP_{rel} is subject or object, it is deleted and a particle a introduces the clause. Otherwise NP_{rel} is left behind as a pronoun and the particle yn introduces the clause. We thus get examples such as the following:

(2.52) a. Dyma 'r llythyr a ysgrifennais i ddoe
this is the letter REL I wrote I yesterday
"This is the letter that I wrote yesterday."

b. Y mae 'r llyfr a brynais i ddoe ar
is the book REL bought I I yesterday on

y bwrdd
the table

"Is the book that I bought yesterday on the table?"

c. y bachgen a oedd yn darllen
the boy REL was at reading
"The boy who was reading."

d. y bachgen a fydd yn codi
the boy REL will be at getting up
"The boy who will be getting up."

(2.53) a. Dyma 'r dyn y canodd ei fab yn y cor
this is the man REL sang his son in the choir
"This is the man whose son sang in the choir."

b. Dyma 'r llyfr y darllenais y stori ynddo
this is the book REL I read the story in it
"This is the book that I read the story in."

c. Dacw 'r afon y syrthisasom ni iddi
that is the river REL we fell we in it
"That is the river we fell in."

We understand from the handbooks that when NP_{rel} is possessor of a subject or an object one can use either a or yn, in either case leaving NP_{rel} behind as a pronoun. This might suggest that a is not being inserted by a deletion rule, but rather by an independent rule that ascertains the position of NP_{rel} within the relative clause. It might also be the case that the pronominalization of possessors in such clauses is a 'weakening', or 'partial deletion' effect, similar to that suggested above for Modern Greek. In that case, the two conditions for a-insertion would be part of the same rule, though one part would be optional, and the a could be inserted by the relativization rule itself.

2.3.2 French

As Perlmutter (1972) has shown, standard French involves a relativization process consisting of copying the NP_{rel} as a wh-word in clause initial position, cliticizing the original NP_{rel}, and later deleting it. This is the prototype of wh-marking and fronting languages, and irrelevant to our concerns here. Other styles

(mentioned in Guiraud, 1970) involve somewhat different processes, however. One dialect replaces the standard form of relativization by a simple process of marking the clause with the general subordinating complementizer que, and pronominalizing NP_{rel} or deleting it if it is the object of a preposition: in place of the standard French forms of 2.54-2.56a, these speakers have the forms of 2.54-2.56b:

(2.54) a. L'homme qui est venu etait intelligent.
b. L'homme qu'il est venu etait intelligent.
"The man who came was intelligent."

(2.55) a. L'homme que j'ai vu est mort.
b. L'homme que je l'ai vu est mort.
"The man whom I saw died."

(2.56) a. L'homme avec qui j'ai parlé n'en savait rien.
b. L'homme que j'ai parlé avec n'en savait rien.
"The man with whom I spoke knew nothing about it."

Certain of these speakers have effected a similar alternation of the pronominal forms auquel 'to whom' and duquel 'from whom' (with their variants for other genders and numbers). The form duquel also has a form dont (invariant for gender and number), which is historically prior. Thus, either of (2.57) is possible:

(2.57) a. L'homme duquel j'ai parlé est venu.
b. L'homme dont j'ai parlé est venu.
"The man about whom I spoke came."

For the speakers we are concerned with, this element dont has come to be used as a complementizer, parallel to the que of (2.54-2.56b), used in those cases where NP_{rel} is part of an à phrase or de phrase, and thus pronominalized to auquel or duquel:

(2.58) a. L'homme dont duquel j'ai parlé est devenu fou.
"The man of whom I spoke went mad."

b. L'homme dont auquel j'ai parlé est devenu fou.
"The man to whom I spoke went mad."

While the exact status of que as relative pronoun or complementizer

in relative clauses in standard French is perhaps moot, the rôle of que and dont in a dialect with (2.54-2.56b) and (2.58) is clear: both are complementizers, and the difference between them serves to mark a difference in the status of NP_{rel} within S_{rel}. The mechanism by which they should be produced is unclear, but it appears to be an aspect of a relativization process which is sensitive to such differences.

2.3.3 General Remarks

There appear to be a class of processes by which relative clauses can acquire distinctive markers independently of the fates of NP_{hd} and NP_{rel}. Such markers can be complementizers, auxiliaries, or verbal suffixes. In at least some cases, different markers may appear with different types of relative, depending on the rôle of NP_{rel} within S_{rel}, but it is noteworthy that the differences involved are not the same as those usually differentiated by case marking and other processes. Such processes require further study before secure generalizations can be made about the range of relations that can condition these rules.

2.4 Restrictions on Relativization Rules

We have already noted several cases in which the relation between NP_{hd} and NP_{rel} must be constrained in some way. Some such constraints are not, of course, peculiar to relative clauses. Thus, all languages involving any version of NP-head-deletion, NP-rel-deletion, wh-fronting and copying, etc., are subject to the constraint that NP_{rel} cannot be inside a complex NP, a coordinate structure, or other island. This is not a fact about these rules in these languages, but rather a general fact about rules which move

or delete elements. Such rules cannot apply across island boundaries. Languages whose relative clause constructions do not involve such processes will frequently allow relative clauses which violate one or another of Ross' constraints. Craig (1972), for example, discusses Tunisian Arabic. In this language there are two relative clause constructions, one of which involves a version of wh-fronting, and one of which involves no rule of relativization at all, but simply pronominalization and the attachment of a subordination marker to the entire clause. Though the two constructions in general differ only stylistically, there are some sentences in which only one is possible: if the clause is of the type 'the man who I don't like the woman who went to town with (him)', only the relativization process involving no movement is possible.

While the possibility of relativizing a NP within a complex NP seems to correlate well with the kind of rule in a language (i.e., movement-or-deletion, versus no movement or deletion), this does not seem to be true for the effect of a rule on coordinate structures. In Japanese, for example, relativization does not involve any special process, NP_{rel} usually disappearing by ordinary pronominalization. In Japanese, therefore, constructions of the sort 'the man who I know a boy who admires (him)' are perfectly possible. We might expect, therefore, that other island constraints could be violated as well. It seems to be the case, however, that the coordinate structure constraint is valid in this language. No NP_{rel} can be embedded in one element of a conjoined structure, unless the same NP appears in each of the other conjuncts; thus (2.59,2.60a) differ in acceptability from (2.59,2.60b) on this

basis (these sentences were pointed out by Shosuke Haraguchi):

(2.59) a. Watashi ga sakujitu ai, kyoo mo, mata au koto ni natte iru otoko
"the man whom I saw yesterday and whom I am to see today"

b. *Watakushi ga sakujitu John ni ai, kyoo mo mata au koto ni natte iru otoko
"the man who I saw John yesterday and I am to see (him) today"

(2.60) a. musuko to musume ga orokana kyooju
"the professor whose son and (whose) daughter are foolish"

b. *musuko to John ga orokana kyooju
"the professor whose son and John are foolish"

The import of this observation is not immediately clear, but it indicates that the coordinate structure constraint has a fundamentally different status from the complex NP constraint.

2.4.1 Restrictions on the Role of NP_{rel} within S_{rel}

More interesting than these constraints which apply to all movement or deletion rules, however, are language particular constraints which apply specifically to relativization rules. A fairly common constraint of this sort is the restriction of some relativization process(es) to the case in which NP_{rel} is subject of S_{rel}. This constraint obtains in Tagalog, in Malagasy, in Tamil, in Dyirbal (Australian), and in numerous other languages. A related constraint has been seen in the operation of relativization in Turkish. It may possibly be the case that Dagbani relativization, as suggested above, displays the opposite restriction, to non-subject position. Thus, the difference between subjects and non-subjects can be the basis of a restriction on relativization rules.

A related constraint that may exist in some languages is the

restriction of relativization to NP's in a position of informational focus, or topic. Most descriptions of Tagalog would claim that this is true of that language, for only an ang phrase can be relativized, and ang is generally thought to be a topic marker. We have argued above, however, that ang is rather a derived subject marker, and therefore claim that Tagalog simply shows a restriction to subjects. A language in which topic-NP's may be the only ones relativizable, however, is Breton.

2.4.1.1 Breton

Breton is basically a VSO language, in which something is nearly always preposed to the position before the verb. The verb is generally preceded by a particle (which may delete in certain environments, such as after many conjunctions, initially except before certain verbs, always before certain other verbs such as 'to be', etc.). The most general form of this particle is e (ez before vowels), and this is the form it takes when an adjective, participle, adverb, or other element other than the subject or object precedes it. When either the subject or the object precedes, however, the particle is a; the same is true if the preposed NP is the possessor of the subject or the object, or a comitative phrase associated with the subject or object. These points are illustrated in (2.61):

(2.61) a. braz e vezo ar c'holl
great prt will-be the loss
"The loss will be great."

b. bemdez ez oan azezet en ho touez
daily prt I-was seated in your midst
"Every day I was seated in your midst"

(2.61) c. pa ez oe klevet ez ae ann den
when prt it-was heard prt was-going the man

yaouank da Baris
young to Paris

"When it was heard that the young man was going to Paris,..."

d. Ann den a zo glahared
the man prt is sad
"The man is sad."

e. eul lizer a skrivan
a letter prt I-write
"I am writing a letter."

f. ann den a varvas eur vuoc'h dezan
the man prt died a cow of-him
"A cow of the man's died."

g. ar plac'h-se a zansas ho mab ganti
the girl-there prt dances your son with-her
"That girl, your son is dancing with"

Questions are formed in a way exactly analogous to declaratives: the questioned constituent is replaced by a wh-word (a pronoun beginning with pe, in most cases), and preposed. The particle employed is the one that would be expected on the basis of the grammatical role of the questioned constituent.

Several other elements can replace (or, in some cases, result in the deletion of) the particle, such as the optative ra, negatives such as ne, and various conjunctions. One of these latter is the element ma, used to form clauses indicating time, place, reason, etc., as objects of various prepositions.

When we turn to relativization, we find two constructions in Breton. One is of little concern to us: in this construction, NP_{rel} is replaced by a wh-word (usually the same pe-forms as appear in questions, but in some dialects simply the article plus an indefinite pronoun stem), and this is preposed. The particle which

appears is the one we expect on the basis of the above analysis, and the relative clause (a retro-relative) looks exactly like a wh-question. This construction obviously involves an unrestricted rule of wh-fronting, of familiar sort. Though commonly used, the construction is of recent origin, and such prescriptive grammarians as there are in Brittany tend to condemn it.

The construction which is of interest to us is the "classical" one, in which NP_{rel} is simply deleted or left behind as the pronominal element of an 'inflected preposition'. In this case, the verb is generally preceded by a particle which would be appropriate for a sentence in which NP_{rel} was preposed. When NP_{rel} is subject or object of S_{rel} (or a possessive or comitative NP contained within the subject or object) it is generally impossible to distinguish an NP containing S_{rel} as a relative clause from the corresponding sentence consisting of S_{rel} alone, with NP_{rel} preposed:

(2.62) a. eur c'hi a beg a dlefe bezan staget
a dog prt bites prt must be tied
"A dog that bites must be tied."

b. ar stered a weler a-zioc'h Kerspern eo
the stars prt one-sees above Kerspern are

ar Rastell
the Rastell

"The stars one sees above Kerspern are the Rastell."

c. an den a varvas eur vuoc'h dezan a zo glahared
the man prt died a cow of-him prt is sad
"The man whose cow died is sad."

d. piou eo ar plac'h-se a zansas ho mab ganti
who is the girl-there prt dances your son with-her
"Who is that girl that your son is dancing with?"

The generalization here is the following: when NP_{rel} is subject or object (or in the subject or object) S_{rel} has the particle a. The particle a normally appears only when such a NP has been preposed.

Further, no other NP can be preposed, not identical to NP_{rel}. Thus, if S_{rel}=(2.63a), we can embed this as (2.63b), but not as (2.63c). It is, of course, possible to embed a sentence like (2.63a) as a relative with NP_{rel}=an den, but only if eur ti is not topicalized, as in (2.63d):

(2.63) a. eur ti a savas an den
a house prt built the man
"the man built a house"

b. an ti a savas an den a zo bihan
the house prt built the man prt is little
"the house that the man built is little"

c. *an den eur ti a savas a zo bras
the man a house prt built prt is big
"the man who built a house is big"

d. an den a savas eur ti a zo bras
the man prt built a house prt is big
"the man who built a house is big"

It seems reasonable, then, to say that topicalization of NP_{rel} is part of the process of relativization in these examples. The topicalization that is involved, however, is not a special relativization rule, but the language's normal preposing process, which is indicated by the preverbal particle a. This effect could be achieved by saying that Breton has a relativization rule of the NP-rel-deletion sort, together with the restriction that the rule only applies to topic NP's.

There are a number of other facts which must be dealt with before this analysis can be completely accepted. The most important domain to be considered is that of NP_{rel} which are not subject or object. As was mentioned, such phrases can also be preposed, but in that case, the preverbal particle involved is e, not a, and so we might expect this e to show up in relative clauses. This does not happen, however (in the dialects described by Hardie,

1948 and Hemon, 1970, as well as those we have investigated). Instead, the usual construction involves the particle a, and instead of being deleted, NP_{rel} remains behind as a pro-form (in the form of an 'inflected preposition'):

(2.64) a. eviti e laboure
for-her prt he-worked
"He worked for her"

b. ar plac'h a laboure eviti
the girl prt he-worked for-her
"the girl that he worked for"

c. d'an den e gomzan
to-the man prt I-spoke
"I spoke to the man"

d. an den a gomzan dezan
the man prt I-spoke to-him
"the man that I spoke to"

e. en ar vro-se e savas e di
in the land-that prt he-built his house
"He built his house in that country"

f. ar vro a savas e di enni
the land prt he-built his house in-it
"the country where he built his house"

In order to reconcile these facts with the proposed analysis of relativization, we must make the following assumptions about the process of topicalization: this rule can prepose a NP, a PP, an adverb, a participle, an adjective, etc.; it can also prepose the NP object of a preposition. When it has this last effect, a pronoun-copy of the NP is left behind (or possibly the rule is always simply a copying rule; a later process would then delete the second instance of the copied constituent if the entire constituent was copied, but simply pronominalize a partially copied PP). The particle a could then be taken simply as an indication that an NP has been preposed; when any other sort of constituent is preposed, the preverbal particle remains e. Relativization is still a rule of

NP-rel-deletion restricted to topic NP's; the fact that non-subject or object NP's always undergo partial topicalization would then be similar to the fact that relatives in English formed by NP-rel-deletion (i.e., that relatives) similarly do not show pied-piping.

This analysis is entirely satisfactory, but the topicalization process it posits is difficult to attest. Informants will accept sentences like those of (2.65), but do not consider them natural:

(2.65) a. ar plac'h-se a laboure eviti
the girl-there prt he-worked for-her
"He worked for that girl"

b. an aotrou Goff a gomzen dezan
the Mister Goff prt I-talked to-him
"I was talking to Mr. LeGoff"

c. Bro-Spagn a savas e di enni
land-of-Spain prt he-built his house in it
"He built his house in Spain"

Sentences (2.61f,g) can be considered further instances of this construction, but further investigation of topicalization in Breton is obviously necessary. It should be noted, by the way, that the impossibility of topicalizing some NP other than NP_{rel} in (2.64b, d,f) provides some slight evidence for the claim that topicalization is involved in the derivation of these sentences (and hence, indirectly, for the necessary topicalization process), but this evidence does not count for much, since there are other subordinate clause types in which no topicalization is possible.

Another fact which should be noted in connection with these sentences is the existence of a construction like that of (2.64b, d,f) with the particle ma in place of a. Otherwise, ma appears with other conjunctions (usually fossilized preposition-noun combinations), in the sort of headless adverbial clauses found in English in such constructions as "when he came in, I was reading",

and others. Further investigation of this construction is difficult because informants vary considerably in the range of sentences with ma-relatives that they will accept. We assume, however, that a different process is involved than that of ordinary relativization, applying only to NP_{rel} (perhaps also in headless relative constructions) in prepositional phrases or adverbs.

We conclude that relativization in Breton is basically a rule of NP-rel-deletion, which is subject to a restriction that only topic NP's can be relativized.

2.4.2 Restrictions on the embedding of NP_{rel}

We have already mentioned that Swahili is subject to two restrictions on the embedding of NP_{rel}: one is a form of A-over-A constraint, by which NP_{rel} cannot be embedded in another NP. This is somewhat similar to the constraint just mentioned in Breton (and perhaps in English that-relatives) that NP_{rel} not be embedded in any other constituent (either NP or PP). The second is the restriction that NP_{rel} appear in the topmost clause of S_{rel}: that is, that it not be embedded in a complement within S_{rel}. This restriction is also not unprecedented in the languages of the world.

2.4.2.1 Slovenian

In Slovenian, there are Relative clauses in which there is no Relativization, NP_{rel} merely appearing as a clitic pronoun. However there is a constraint that NP_{rel} must appear in the top S of the relative clause in surface structure: hence we have the following:

(2.66) a. *človek, ki želiš, da ga požalimo
man that you want that him insult
"The man who you want that we insult him."

b. človek, ki ga zelis požaliti
to insult
"The man who you want to insult"

Sentence (2.66b) is good because a rule has applied which raises clitics which are objects of infinitives into the verb dominating the infinitive, thus causing NP_{rel} to be in the top S of S_{rel}.

2.4.2.2 English Infinitival Relatives

Though we have not discussed non-finite clause types such as English "a book to read" and "a ditch running alongside of the road", they are clearly allied to relative clauses, and form a major area of ignorance in present study of relativization. The participial relatives display a restriction to subject only (thus, "a man reading a book", but not *"a book a man('s) reading"), while the infinitival construction is possible with subjects as well as non-subjects ("a book (for John) to read" and "a man to read your book" are both possible). Restriction to subjects (or topics) only seems to entail restriction to the topmost clause in S_{rel}, but it has been pointed out to us by Arlene Berman that the same restriction seems to hold for infinitival relatives as well as participial ones:

(2.67) a. Here is a book for you to read.

b. *Here is a book for you to want to read.

Unlike the Slovenian case, however, rules which have the effect of raising NP_{rel} within S_{rel} into its topmost clause are unable to have an effect here: the following are all impossible, despite NP_{rel}'s having been moved into the topmost clause in derived

structure.

(2.68) a. *Here is a man for you to expect to read your book.

b. *Here is a book to be tough for you to finish.

Our understanding of this construction is minimal, but it appears to show a restriction to topmost clauses which is applicable to underlying structure.

2.4.3 Summary

There seem to be a class of constraints which it is possible for a language to impose on the position of NP_{rel} within S_{rel}. These include a restriction to certain roles within S_{rel} (only subjects, or only topics; Dagbani may provide an instance of a restriction to non-subjects), and restrictions on embeddability (NP_{rel} may not be contained in another NP, or it may not be contained in another constituent, or it may not be contained in a lower clause). While hardly unexpected, it is noteworthy that these restrictions are not paralleled in any language we know of by restrictions on the possible role or position of NP_{hd} within S_{mat}.

2.5 Final Remarks on Relativization Rules

Now that we have seen a reasonable number of relativization rules, it is time to propose a definition for them and to delimit what they can do. All the rules in this section have involved crucial mention of a pair of coreferential NP: NP_{hd} and NP_{rel}. Furthermore these NP are separated by a crucial variable. We note first that when such a rule applies, one NP is in a clause subordinate to that containing the other NP. Then a restricted inventory of further things may happen: the subordinate clause or

its verb may be marked with an indicator that S_{rel} is a relative clause, and perhaps the syntactic role of the coreferent which is contained in it; this lower coreferent may be deleted, reduced to a Pro-form, or marked, and if marked, may be brought forward under certain circumstances; or else the coreferent in the main clause may be deleted. Pronominalization usually applies between the two NP, reducing one of them to a pronoun, if no relativization rule applies.

We suggest that the rules mentioning coreferent NP separated by a crucial variable form a class subject to the limitations given above. Note that the specifications include more rules than relativization rules: in fact EQUI-NP deletion (the process which deletes the subjects of infinitival and participial complements under identity with some higher NP, producing, e.g., "John wants to join the circus" from $_S$[John wants $_S$[John join the circus]]) and the rule which produces such sentences as 'the bag is too small to put ten bagels in' also meet the specifications, and such rules should be subject to the same general constraints. Recent research indicates that relativization and the rule applying in the latter sentence, which we follow David Perlmutter in calling BE-COMP-DELETION behave alike in certain ways at least. There is a problem with the application of these rules which may be called the 'pickout problem'. Suppose the subordinate clause contains several NP coreferential with an appropriate matrix NP. Which subordinate clause coreferent is picked out by the rule? Postal (1972), Wasow (1972) and Andrews (1972) all contain discussions of this problem from various points of view. Though intimately connected with relativization, we have omitted it from this chapter

because work on this problem in other languages has not reached a stage where conclusions can safely be drawn. But it seems that BE-COMP-DELETION obeys the same constraints as do relativization rules with respect to the pickout problem, while other rules, such as Topicalization, which don't mention pairs of coreferential NP, do not.

It is hence likely that the class of 'relativization rules' is itself not a significant class, but rather a subset of a formally characterizable more general class.

3. Some Closing Remarks about Relative Clauses

In this section we will briefly discuss a number of general issues, some of them relating relative clauses to other areas of grammar.

First of all we note that relative clauses are subordinate clauses, displaying the same general features which other such clauses have. In particular they sometimes have extensive neutralization in the tense-aspect system, as is the case in Turkish. Also embedded relative clauses, but not adjoined ones, frequently undergo the same processes as do nominalizations (this is not a new observation, being first made by Benveniste). The simplest example of this is the fact that relative clauses are frequently marked by a complementizer, such as English that, Mod. Greek pu, etc., that functions otherwise as the general marker of subordinate clauses with nominal functions. Hence in order to understand relative clauses fully it will be necessary to know about subordinate clauses in general. In particular, there arises the question of whether such clauses start out as structures equivalent to main

clauses and then get reduced, or whether their underlying structure is essentially the same as their surface form. Though early work in generative grammar assumed that subordinate clauses were essentially identical with main clauses in their underlying structure, recent work by Emonds, Chomsky, Jackendoff, Bowers, and others has questioned this, and the issues involved are highly complex.

A second problem is the nature of the connection between NP_{hd} and NP_{rel}. We have noted that NP_{rel} frequently has a special marker, which often, although by no means always, is the determiner on interrogative words. Then NP_{hd} frequently has a special demonstrative pronoun, or other peculiarities in the determiner system. While these might be merely taken as evidence that there are some odd rules applying to relative-clause structures, we suspect that they really indicate something about the semantic relation between NP_{hd} and NP_{rel}. We suspect that this relation is 'weird', and is not a simple antecedent-anaphor relation (although it certainly is some kind of antecedent anaphor relation). This suspicion is strengthened by the existence of languages like Slovenian, in which the relation between NP_{hd} and NP_{rel} is constrained despite the fact that no relativization rule applies.

If in semantic structure there is some kind of indication of a special relation between NP_{rel} and NP_{hd}, it would solve a problem which has been somewhat brushed over with adjoined relative clauses: namely, given the underlying structure of a sentence with an adjoined relative clause, how do we know what NP the clause modifies: how do we distinguish whether a pair of coreferential NP with one in the relative clause and one outside it are an NP_{rel}-NP_{hd} pair or just an ordinary antecedent-anaphoric pronoun pair?

But of course it will be necessary to know much more than we do about the grammar of reference before one can make a reasonable proposal about representing the relation between NP_{rel} and NP_{hd}. Since so many relativization rules delete, mark or move constituents making use of crucial variables, the theory of variables is crucial for an understanding of relative clauses. In particular the typology of island constraints needs to be seriously studied. We have skirted that issue in this chapter, for our knowledge of the languages involved and the non-availability of informants for many of them preclude serious research on the subject.

Hopefully this study can be of some use to students of the fields discussed above, and many others, by suggesting languages whose structural peculiarities render the testing of various hypotheses feasible.

Part III. Grammatical relations and case marking

1. Introduction: Types of Structural Relations

Our intention in this part is to examine the processes by which languages provide overt indications of the roles played by the participants in an event described by a sentence. When a sentence contains two or more NP's (and hence, by extension, even when it contains only one), there are at least three major ways by which languages indicate the relation of each to the action or state described. First, there is the device of word order. In an English sentence like "John ate the lion", we refer to an eater and to an eaten. In English, at least part of the information relevant to determining the relative positions of John and the lion in this universe is the fact that the agent subject, unless overtly marked as in the passive, always precedes the verb (hence, the eater precedes eat) while the affected object follows. Thus, the language assigns distinctive structural positions to different roles.

Another device for indicating role relations is that of marking the verb in such a way as to cross reference the NP which fills some particular role. In English, the verb agrees in this way (to some extent) with the category of the subject NP, and not with the object. This is not obvious in "John eats the lion", for both John and the lion would call for the same morphological mark here, but "I eat the lion" is distinguishable from "the lion eats me" on these grounds. Other languages, of course, make much more extensive use of this device than English, some marking subject

agreement in one way and object agreement in another.

By far the commonest way of marking roles, naturally, is simply to put an overt indication in the NP itself. These indications come in two main sorts: on the one hand, there is the preposition or postposition, an independent word which indicates by its substantial lexical content the role of the NP to which it is attached; and on the other hand, there is the phenomenon of case marking, or nominal inflection. The range of functions distinguished by this latter means is rather more limited, in virtually every language, than that of the former, though there are languages in which it is very difficult to determine whether one has to do with enclitic postpositions or with legitimate cases (e.g., most of the Uralic languages). In the study of case, most authorities (such as Jakobson, Hjelmslev, Benveniste, etc.) have found it necessary and convenient to distinguish two sets of cases. One, which we can call direct cases, includes those whose primary function is to differentiate grammatical functions, while the oblique cases are those with more directly semantic function, such as the indication of spatial or temporal location or direction, instrumentality, etc. The distinction is often difficult to draw, since direct cases often have some auxiliary oblique usage, and the oblique cases often mark the grammatical functions of NPs associated with certain verbs. Some authors, such as Hjelmslev and J. Anderson, have tried to establish a view of grammatical functions, and hence of the direct cases, which is fundamentally based on oppositions that are spatial in nature, and hence to assimilate the direct cases to the oblique. While it is possible that some such position can be defended for a rather abstract level of

semantic representation, our concern here is more superficial, and we will take the direct cases to be a definable class (including nominative, accusative, ergative, and absolutive, as will be defined below).

Our concern here will be primarily to examine the ways in which the distinctions within the set of direct cases are assigned to NP's; we assume that these markers are not present in underlying structure, but rather serve to provide surface indications of structural features that are derivable from the configuration of phrase markers at some level(s) of representation. In the course of this investigation, we will also have occasion to consider processes of agreement, since these have important affinities with case marking rules. We will pay rather less attention to instances in which word order is a mark of grammatical function, since most of the languages that will concern us have rather extensive scrambling processes, resulting in a greater or lesser degree of "free word order". Indeed, the classical view of the function of case marking, at least for the direct cases, is precisely to substitute for word order in cases where this is not fixed. We adopt more or less the same view here: when permutation processes exist (usually serving functions in the general sphere of topicalization) which can radically rearrange structures, additional morphological indicators are necessary in order to allow the grammatically relevant structure to be recovered.

Before we begin this investigation, it is necessary to clarify the nature of three types of difference that can exist between NP's: differences in semantic roles, in surface morphological category, and in (syntactically defined, semantically relevant) grammatical

relations.

1.1 Semantic Roles

We assume that every verb in a language has associated with it a semantic representation, in which the nature of the activity or state referred to by the verb is expressed. This representation indicates the function of each of the referents of the NP's associated with the verb, as well. Somehow, semantic theory must provide a way of associating particular NP's in the syntactic structure with these slots in semantic representation, but that is not our primary concern here. It seems that, while every verb imposes a somewhat idiosyncratic range of functions on its associated NP's, these functions are not arbitrary, but fall into major groups we can call semantic roles. The small set of roles that seem to be semantically relevant is a matter of some contention, especially in the absence of any extensive application of any proposed descriptive framework for semantics. Where necessary, we follow the usage of Gruber and/or Fillmore in choosing as semantic categories such notions as agent, experiencer, instrument, source, goal, etc., which are largely familiar from classical semantic descriptions. The definitions of these categories are not particularly relevant; what is relevant is the fact that they apply only to semantic representation, and do not necessarily have any unitary correlates at the level of syntax. We assume that the semantic representation of every verb includes a theme (rather like Fillmore's object), which is the NP describing the object which undergoes an action or whose state is described by the given verb; the representation may or may not include referents of NP's filling other semantic

categories. It may occur (and indeed often does) that the referent of one NP fills more than one semantic function: for instance, in "John rolled out of bed", John is the theme, and may or may not also be agent, depending on whether or not an agentive sense of the verb is intended. The primary reason for referring to these categories for the present is to make clear the fact that the syntactic categories to be discussed below are not to be identified with them.

1.2 Grammatical Relations

All known languages appear to have both transitive and intransitive verbs, regardless of how the distinction is marked. Additional classification is common, but these two categories seem to constitute an irreducible minimum of structural differentiation. The two classes serve to define, in addition, a set of syntactic functions or grammatical relations which are in some sense primary. In an intransitive sentence, we find only one NP (excluding from consideration any NP's which may be part of prepositional or oblique case phrases or other adverbial material), which we can safely call the subject of the verb. When we deal with the two NP's of a transitive sentence, however, we are on ground somewhat less firm. For most languages, we can safely say these are subject and object, but these notions have resisted satisfactory formulation (largely through a desire to have them correspond in a unitary fashion to the categories either of surface morphology or of semantics, as well as to a failure to distinguish underlying or 'logical' subjects from surface or 'grammatical' ones). Chomsky (1965) proposed a definition of grammatical relations in strictly formal terms, defined by position within a phrase-marker

configuration; much of this study can be construed as an attempt to determine the extent to which the categories yielded by Chomsky's definitions are syntactically basic.

For our purposes, it is essential not to foreclose essential details of syntactic structure, as would be done if we were to choose the terms 'subject' and 'object' in Chomsky's sense (where the 'subject-of' relation is defined as that holding between a verb and the NP dominated directly by the node S which most immediately dominates that verb, and the 'object-of' relation as that holding between a verb and a NP directly dominated by the same VP as that dominating the verb). For the present, then, we will employ a more oblique (and correspondingly less precise) notion of 'subject' for languages other than English. Given an English sentence with an active, transitive verb, we can identify as subject the NP with which the verb agrees, which, when pronominal, has the nominative form, which precedes the verb, etc. The other NP in such a sentence, which follows the verb, shows objective form when pronominal, etc., we identify as the object (excluding NP's within a prepositional phrase, as well as others transformationally related to them, such as indirect objects).

Now it is empirically the case that when we translate English transitive sentences into some other language, they will usually be translated as transitive sentences, and the two NP's in these sentences will be divisible into two classes on grounds of morphological and syntactic features such as those we used for English: verb agreement, case marking, word order, etc. These classes will generally be such that the translation equivalents of most English transitive objects will belong to the other class. This

correspondence is practically never perfect, but it is usually quite close. Now given a transitive sentence in another language, we can call the NP that belongs to the class containing the translation equivalents of most of the transitive subjects the S_t of the sentence (or of the verb), and the NP which belongs to the class containing most of the translation equivalents of English transitive objects the O_t of the sentence. We can also call the single NP which appears in intransitive sentences the S_i of the sentence. These notional categories, then, are not intended to be based on any aspect of the syntactic structure of phrase markers; in particular, no identity is presumed between the structural position of S_t in transitive sentences and the position of S_i in intransitives. The symbols chosen are purely mnemonic, and the classes in question not purely syntactic.

Having defined the relations of S_i, S_t, and O_t, what we are interested in of course is the extent to which these correspond to fundamental grammatical relations and to fundamental aspects of the structure of phrase markers. In particular, if we take Chomsky's definitions (or something quite like them) as the basis of the relations 'subject-of' and 'object-of' defined on phrase markers, we would like to know what the relation is between these categories and those of S_i, S_t, and O_t; and also how both sets of notions relate to the organization of syntactic processes.

1.3 Morphological Categories

We have now defined (or at least indicated) three sorts of structural relations: semantic roles, notional grammatical relations, and structurally defined grammatical relations. All of these

are categories that need, to some extent, to be inferred. We can now inquire into the way in which these categories can be formally reflected in a given language. On purely morphological grounds (that is, on the basis of verb agreement and case marking, etc.) it may well be the case that a language distinguishes none of the categories in question formally. This is the case, for example, in many South Asian languages, where word order alone functions to distinguish, e.g., S_t from O_t.

1.3.1 S_i, S_t, O_t Distinguished

On the other hand, it may also be the case that all three of the categories S_i, S_t, and O_t are distinguished. Sapir mentions Takelma as belonging to this class, and Burmese is also an instance. Examples of such a situation in the New Guinea Melanesian language Motu are given in (1.1).

(1.1) a. mero na e gini-mu
boy S_i 3sg stand-imperfective
"The boy is standing."

b. mero ese aniani e heni-gu
boy S_t food 3sg give-me
"The boy gave me food."

In Motu, the NP which is S_i is followed by the particle na; an NP which is S_t is followed by (e)se, while a NP which is O_t is unmarked. This distribution (with O_t unmarked) seems to be typical of languages which make a three-way division. The particle e precedes the verb when S_i or S_t (depending on the transitivity of the verb) is third person; other markers exist for other persons. The morphology of the NP, then, distinguishes the three functions S_i, S_t and O_t, while the morphology of verb agreement identifies S_i with S_t, assigning both the same marker.

1.3.2 Semantically Based Distinctions

It may also be the case that the categories of surface morphology are not alignable in terms of the oppositions of S_i, S_t, and O_t: that is, that the language distinguishes some categories of subjects and objects, but not along these lines. Such is the case in several American Indian languages, for instance (cf. Uhlenbeck, 1916), where the categories seem to be semantic in nature (at least in part). In the Siouxan language Dakota, (cf. Boas & Deloria, 1939, for details), a distinction appears in first and second person pronouns between (roughly) agents and other semantic roles. Thus, one category (the agent category) occurs for the subjects of some intransitive verbs, and for some transitive verbs; the other category appears for the subjects of other intransitives, the objects of all transitives, and the subjects of some 'stative' transitive verbs. The pronouns are given in (1.2), and examples in (1.3):

(1.2) Dakota pronouns:

	active	non-active
1 sg	wa	ma
2 sg	ya	ni

(1.3) a. Intransitive active verb t'i 'dwell'
wat'i 'I dwell'; yat'i 'thou dwellest'; t'i 'he dwells'

b. Intransitive stative verb šiča 'be bad'
mašiča 'I am bad'; nišiča 'thou art bad'; šiča 'he is bad'

c. Transitive active verb kte 'kill'
mayakte 'thou killest me'; wakte 'I kill him'

d. Transitive stative verb i-ta 'be proud of'
i-nimata 'I am proud of you'

We do not know what line should be taken to provide an account of systems which are apparently semantically based, such as that of Dakota. Such systems are not, as far as we know, attested outside

of American Indian languages, though Siouxan is not the only such family cited by Uhlenbeck in his discussion. It is interesting to note that the vaguely similar, and undoubtedly related, system in another Siouxan language, Hidatsa, is analyzed by Mathews (1964) as based straightforwardly on the grammatical relations subject and object, given the derivation of many apparently simple sentences from underlying complex sources for which Mathews argues. We will take no position on such systems here, however, and will assume that they are either outside the domain of consideration or somehow susceptible of another interpretation.

1.3.3 S_i Identified with Either S_t or O_t

Beyond the possibility that all three categories of notional grammatical relations are distinguished (as in Motu), or that none are, or that a distinction is made on some other basis, the most interesting possibility is that some pair out of the three categories are identified with one another. For this, of course, there are three possibilities: S_i with S_t; S_i with O_t; or S_t with O_t. This last possibility, which amounts to overtly marking an NP for (only) the feature of whether its verb is transitive or intransitive, is not known to be utilized in any language. Both of the others are well-known, however, and the distinction between them is one of the most widely known typological parameters in the syntactic literature. The difference between <u>accusative</u> languages (in which S_i and S_t are identified, and distinguished in some way from O_t) and <u>ergative</u> languages (in which S_i and O_t are identified, and distinguished from S_t) is often thought to be fundamental in differentiating syntactic systems. Most of the

well-known languages of Europe and Asia are accusative in structure, but since Schuchardt's (1896) work on the Caucasian languages, such languages as Georgian, Basque, Eskimo, Tibetan, Sumerian, and many others have been identified as ergative. Various investigators have uncovered ergative-like phenomena in many language families, and it has occasionally been suggested (by, e.g., Vaillant, 1936) that the parent Indo-European language had ergative features.

Section 2 of this part of this study will be devoted to the investigation of the question of whether ergative languages are really fundamentally different in structure from accusative languages. At this point, however, we are only concerned to define the terms. Both ergative languages and accusative languages distinguish two classes of direct case NP's, but in different ways. We will call a NP a <u>nominative</u> if it belongs to a morphological category containing S_i and S_t, but not O_t; <u>accusative</u> if it belongs to a category containing only O_t, as opposed to S_i or S_t; <u>absolutive</u> if it belongs to a category containing S_i and O_t, but not S_t; and <u>ergative</u> if it belongs to a category containing only S_t. The terminology is essentially the classical one; note, however, in particular, that nominative and absolutive are opposed to one another, on the basis of whether the opposing category is an accusative or an ergative. Examples of both ergative and accusative morphological types will be seen below.

At this point we have all of the categories we need for the ensuing discussion: semantic categories, such as the role relations agent, theme, etc.; syntactic categories, such as the notional grammatical relations S_i, S_t, and O_t, as well as the structurally

defined subject and object; and morphological categories, such as nominative, accusative, ergative, and absolutive. Our task below will be to examine the relations between these different categorizations of direct-case NP's, particularly that between the syntactic and morphological categories.

2. The Syntax of Ergative Languages

Ergativity, as classically conceived, is based essentially on morphological facts, though it is considered to have implications for syntactic organization. We will first, therefore, survey some of the forms ergativity takes in the organization of morphological systems. We will then discuss the interpretations that have been given by various authors to this phenomenon in syntactic terms, and suggest that the fundamental character of the accusative/ergative division is somewhat compromised by the fact that the morphological evidence from a given language may be fundamentally equivocal. We will then suggest what it would mean in terms of a syntax based on rules of grammar rather than on constructions for ergative languages to have a fundamentally different organization from accusative languages. A number of ergative languages will then be looked at from this point of view, and it will be found that most are organized in the same way as are accusative languages. Two languages, however (Dyirbal, in Australia, and Hurrian, from the ancient Near East) are known to have a syntax organized in the way one would predict for ergative languages. This suggests that, while there may be a fundamental typological distinction between syntactically accusative languages and syntactically ergative languages, it is not coincident with the same distinction in morphology.

2.1 Morphological Ergativity

As we have mentioned, the major ways in which languages can establish morphological categories such as ergative, accusative, etc., are by means of overt markers on the NP or verb agreement systems. We examine each of these means individually.

2.1.1 Noun Marking

The procedure by which a category 'ergative' is most commonly established is by giving some mark to a NP which is S_t, while leaving an absolutive NP (S_i or O_t) unmarked.

2.1.1.1 Classical Tibetan

In this language, absolutives are unmarked while ergatives are assigned a particle usually represented in morphophonemic terms as something like /kyis/. This shows up in a bewildering number of forms, including -s after vowels (usually).

(2.1) a. syar-phyogs-su hod snañ
east-ablative light comes
"Light comes from the east"

b. ba-las ho-ma hjo
cows-ablative milk (one) gets
"One gets milk from cows"

c. bdag ma-soñ
I not-go
"I do not go"

d. bdag-gis bstan
I-erg explain
"I explained it"

e. su-s chos mthon-ba de-s sañs-rgyas mthon-no
anyone-erg dharma sees he-erg Buddha sees
"He who sees the dharma sees the Buddha"

(It should be noted that the transcription of Classical Tibetan is divided on the basis of syllables, not morphemes.) Here, in (2.1a,c) we see S_i unmarked, while in (2.1b) it is O_t which is

unmarked. In (2.1d,e), on the other hand, S_t is followed by a form of /kyis/.

2.1.1.2 Sumerian

Similar facts can be attested from the substantial corpus of this ancient Near Eastern language:

(2.2) a. Urlumma badakar
(name) fled
"Urlumma fled"

b. e badu
temple (someone)-built
"The temple was built"

c. Ningirsu ursag - kalga - enlilàge ... ki nunanigara
(name) warrior-strong-Enlil-of-erg site granted
"Ningirsu, the great warrior of Enlil, granted the site."

In (2.2a,b) we have S_i and O_t unmarked; in (2.2c), however, the e on the end of enlilage is an ergative marker. In this instance, we see that the marker is associated with the entire NP, including the (appositive) relative clause, and not with the head noun alone.

2.1.1.3 Tongan

In this language, the absolutive case has an overt marker, as well as the ergative:

(2.3) a. Na'e lea 'a etalavou
past speak abs young man
"The young man spoke"

b. Na'e alu 'a Tevita ki Fisi
past go abs David to Fiji
"David went to Fiji"

c. Na'e tamate'i 'a Kolaiate 'e Tevita
past kill abs Goliath erg David
"David killed Goliath"

d. Na'e ma'u 'e Siale 'a me'a'ofa
past receive erg Charlie abs gift
"Charlie received a gift"

Here 'a marks the absolutive, while 'e marks the ergative. The order of the two NP's is not fixed, as shown by the difference between (2.3c,d).

2.1.2 Verb Agreement

It is also possible for ergativity to show up in the fact that, while the NP's in the sentence remain unmarked, the verb agrees in different ways with NP's in different grammatical relations.

2.1.2.1 Chinook

In this language NP's are not marked for function, but the verb carries pronominal elements which agree in person with them:

(2.4)

a. ga-č-i waba i-sk'ulia i-pisxas
past-he-him-chase art-coyote art-skunk
"Coyote chased out skunk"

b. gal-i-m-gl-uia i-sk'ulia
past-he-you-towards-go art-coyote
"Coyote went towards you"

The lines in these examples demonstrate the agreement pattern. Thus, the first agreement marker in the verb of (2.4a), č, agrees with i-sk'ulia 'coyote', which is S_t; the second, i, agrees with i-pisxas 'skunk', which is O_t. In the intransitive sentence (2.4b), the marker i refers to i-sk'ulia 'coyote' which is here S_i. Thus, i is used for absolutive NP's, while č is used for the ergative. Historically, as Sapir showed, the element č is to be analyzed as /i+k/, or the same pronominal element i which occurs agreeing with absolutive NP's of this person and gender (note that this pronoun is in general identical with the article on the corresponding noun), followed by a postpositional element k. This seems to be true synchronically in Chinook as well: the ergative agreement marker

is simply the absolutive marker plus the additional element /k/. While there is reason to believe that this /k/ can be dealt with as predictably inserted by an independently needed rule, the result is a pattern of surface verb morphology which is ergative in structure.

2.1.2.2 Basque

Basque shows a more extensive cleavage between agreement markers for absolutive NP and those for ergatives. In addition, Basque marks ergative NP with the element /-k/, showing that ergativity can appear simultaneously in the verbal and nominal systems, as of course we would expect:

(2.5) a. nabil
1sg-walk
"I walk"

b. aita dabil
father 3sg-walk
"Father walks"

c. aitak ogia jan du
father-erg bread eat 3sg-has-3sg
"Father has eaten the bread"

d. aitak nakar
father-erg 1sg-carry-3sg
"Father carries me"

e. aita dakart
father 3sg-carry-1sg
"I carry father"

Here we see that the language makes use of one set of markers, generally at the beginning of the inflected verbal element, to agree with absolutives, while another set, appearing at the end of the inflected verb, agrees with the ergative.

2.2 Interpretations of Ergativity in the Literature

Grammarians have long been fascinated by the languages that

show morphological patterns like those illustrated in section 2.1, and have concluded that their syntax must be organized in some fundamentally different way from that of a language which marks nouns as nominative or accusative, and treats verb agreement in the same way. In this section, we briefly survey some of the suggestions that have been made, and attempt, where possible, to give precise characterization of the structural claims made.

2.2.1 The Sentence as Noun Phrase

Perhaps the most radical view that has been suggested is that, in ergative languages, the verb is not to be treated as a distinct category from the noun, and hence the sentence is to be regarded as a form of complex noun phrase. Such a view is presented by Martinet (1958), in a discussion of Basque. Martinet first raises the question of what should be treated as the category of subject in a language like Basque. He contends that the category of subject should have some constant correlates (which, in his terms, can hardly be other than morphological), and further, that it is part of the notion of 'subject' that it should be an obligatory category: i.e., every sentence must have a subject. In Basque, however, the notion of subject based on correspondence with the subjects of sentences in other languages (that is, the class of translation-equivalents of the subjects of sentences in an accusative language) does not have such a constancy, for as we have seen the subject in this sense will be differently marked depending on whether the verb is transitive or intransitive, and verb agreement will also differ. Hence, the notion of subject = S_i or S_t fails, on morphological grounds. Further, the logical alternative

(namely, to take the absolutive NP as the subject of a Basque sentence) also fails, on grounds of non-obligatoriness. In a sentence such as (2.6b), there is no object, but the sentence is otherwise transitive in form, with ergative subject:

(2.6) a. gizonak ogiajaten du
man-erg bread eat 3sg-has-3sg
"The man eats the bread"

b. gizonak jaten du
man-erg eats 3sg-has-3sg
"The man eats"

c. dohatsu bizitzeak es du iranten
happily living-erg neg 3sg-have last
"Happy living doesn't last"

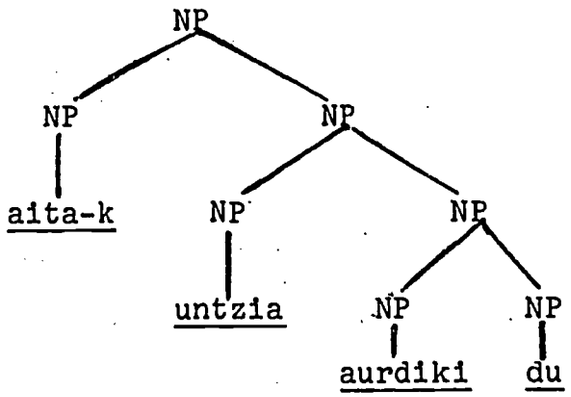
In (2.6b), there is no absolutive present; further, with certain verbs such as that of (2.6c), no absolutive is possible, and the single NP that appears is treated as an ergative. Accordingly, the absolutive is not an obligatory category, and hence not a possible subject.

On this basis, Martinet concludes that the Basque sentence does not have a subject. It is, therefore, necessary for him to provide an alternative to traditional views of sentence structure. He does this by proposing an analogy between the basic word order of sentences and that of compound NP's. Basque shows a substantial amount of scrambling, but most grammarians agree that the stylistically most neutral order is subject-object-verb (in nominative/accusative terms, of course). In the NP, on the other hand, the head is final, and possessives and modifiers precede. This includes the compound: in Basque, as in English, the phrase 'house-watcher' has its head (watcher) in final position, and the modifier (house, because it tells what kind of watcher) precedes. Martinet proposes, therefore, to regard the verb in Basque as a sort of

nominal, and to take the preceding NP's as modifying elements forming a compound. The sentence (2.7a), then, has the structure (2.7b):

(2.7) a. aitak untzia aurdiki du
father-erg vase throw(ing) 3sg-was
"Father threw the vase"

b.



This structure involves the claim that there are no grammatical relations which are relevant in the Basque sentence other than those of modifier and head, which are also needed in the NP. Other notions, such as subject, object, indirect object, etc., are simply progressively narrower modifiers of a basically nominal verb. Sentence (2.7), therefore, asserts basically 'action (was)'; further clarifies this as 'throwing-action (was)'; then further as 'vase-throwing-action (was)'; and finally as '(by)-father-vase-throwing-action (was)'.

Insofar as this view can be made sense of, it seems rather radical, and it is criticized by Lafon (1960), who manages to make it clear enough to provide several cogent syntactic arguments against it. Firstly, Lafon notes that there is a restriction in Basque on the formation of noun-noun compounds, of the sort Martinet wants to claim sentences are analogous to. In a compound of the type 'house-watcher', the first element cannot be a proper

noun: thus, 'John-watcher' is not a possible compound in Basque. But proper nouns can perfectly well serve as subject or object, which would be difficult to explain if the relations 'subject' and 'object' are simply instantiations of the relation 'modifier'. Further, and related to the first objection, Lafon notes that the first element of a noun-noun compound is always interpreted in Basque as generic: thus, 'house-watcher' is one who watches houses, in general; but in 'father watched the house', a definite house is intended and a definite father, rather than the generic. This requirement that modifiers in noun-noun compounds be generic would also be difficult to reconcile with the view that sentences, in which the subject, object, etc., do not have to be generic, are structurally noun-noun compounds. Finally, Lafon notes a fundamental difference in the semantic content of compound NP's and of sentences: the compound expresses a concept, and has a reference, while the sentence expresses a judgment, and has a truth value. This is surely a fundamental difference in the structure of semantic representations, and hard to reconcile with the claim that sentences and noun phrases are structurally identical.

Martinet (1962) rejects Lafon's objections, but without providing any counterarguments, simply falling back on the claim that constant morphological criteria must be provided to define the notion of subject. Even if true, this would hardly justify Martinet's claims about the structure of sentences in an ergative language like Basque. To our knowledge, no other arguments have ever been provided for such a hypothesis. A similar view is espoused for Eskimo by Thalbitzer (1911) and Hammerich (1951a,b), according to which the sentence in this language (which will be

discussed below) is basically a form of complex NP. Again, the criteria motivating this analysis are entirely those of surface morphology, and it is discussed and dismissed by Rischel (1971).

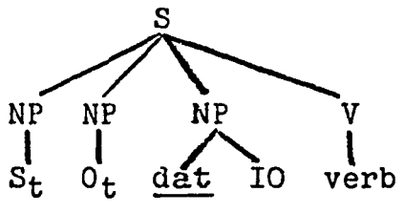
2.2.2 The Sentence as Verb-and-a-sea-of-noun-phrases

A somewhat less radical view of the sentence in ergative languages is nonetheless related to that of Martinet just discussed. Given the fact that standard morphological criteria do not yield, for an ergative language, a notion of subject which is sufficiently parallel to the notion of subject in an accusative language, together with the absence of motivation for any alternative, such as taking the absolutive as subject, we could simply conclude that there is no subject. That is, while some languages select some one of the NP's in a sentence, and give it a special structural position as subject, other languages do not, treating all the NP's in the sentence as equal. An example of a work taking this position is Sommerfelt (19xx). He argues that the bewildering morphology of Georgian (which will be described below) makes it even harder to provide a unitary notion of subject for this language than is the case in Basque. Furthermore, he notes that the Georgian verb agrees not only with S_i or S_t, but also with O_t if present, and in most cases with an indirect object as well. He prefers to reserve the notion of subject for languages that are 'unipersonal', in picking out one NP for special status; a language like Georgian is to be treated as 'polypersonal', with all NP's occupying similar structural positions.

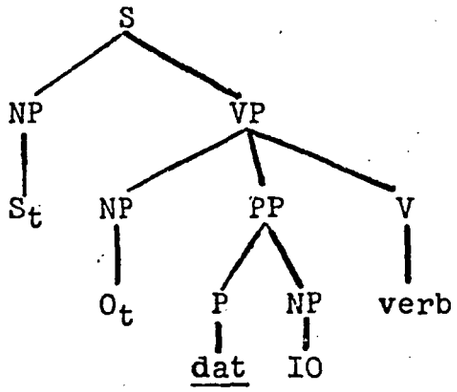
Insofar as this position is to be taken as making serious claims about sentence structures, it seems reasonable to regard it

as analyzing a sentence with transitive verb and indirect object as approximately (2.8a), rather than the traditional view (2.8b):

(2.8) a.



b.



The structure (2.8a), in which all NP's occupy similar structural positions in an undifferentiated 'sea', is rather similar to the underlying structures posited by Fillmore for case grammars. On this view, then, we might take ergative languages to differ from accusative languages by possessing some unfamiliar rule to assign case, and not possessing the rule Fillmore calls 'subjectivization', by which the case structures (resembling (2.8a)) are converted to surface structures (which are more like (2.8b)). This view, however, is also one for which no explicit evidence has ever been presented, to our knowledge, beyond the difficulty of defining a structural subject in purely morphological terms in an ergative language in such a way that the resultant category bears a close resemblance to the traditional subject. While it will not be explicitly considered below, it should presumably be kept in mind as a possibility.

2.2.3 The Sentence as Inherently Passive

By far the most popular view of the way ergative languages differ in structure from accusative ones is the claim that the verb in such a language is inherently passive: i.e., that the position of S_t and O_t in the basic sentence pattern in these languages is the same as the position they occupy in the derived passive construction found commonly in accusative languages. This was the view of the first investigator to discuss ergativity in detail (Schuchardt, 1896), though Schuchardt's motivation for this view was based on a primarily morphological argument.

Schuchardt discusses the structure of sentences in Georgian. He starts from the assumption that 'subject' is a well defined category and that furthermore, this category can be identified with the morphological category of the nominative. It is not difficult to identify the case-form in Georgian which one would want to call 'nominative': the form found for S_i has the position in the nominal paradigm which one expects of a nominative. Now (as will be discussed below), case marking in Georgian varies, depending on the aspect of the verb. In particular, in the aorist series of tenses, O_t is assigned to the nominative, while S_t has a special form, which we can call the ergative. S_i, as in all series, is nominative. Now since O_t is nominative, it must be the subject, and in Schuchardt's terms, this is the defining character of a passive construction: one in which O_t appears as subject. Thus, the aorist series in Georgian involves a passive construction. Schuchardt next notes that most verbs form the stem of the 'present' series of tenses by adding a suffix to the root, but use the root alone as the stem for the aorist series. Accordingly, he concludes

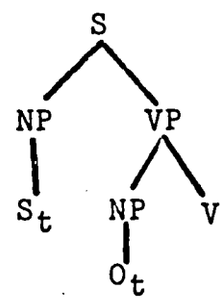
that the 'present' series (in which case marking is nominative/accusative) is derived from the aorist series, and hence that the latter represents the basic character of the verb (or, one might say, the underlying structure). This, as we saw, is therefore passive.

Aside from its somewhat a priori character, this argument can be criticized on grounds strictly internal to the morphology of Georgian, as is done by Vogt (1950). He objects first of all that the process of verb agreement treats subjects (i.e., S_i and S_t) uniformly, and opposes them to objects, and furthermore that this agreement pattern is the same in both present and aorist sets of tenses. This sort of agreement is what one would expect of the 'present' series, where nominative/accusative case marking obtains, but is difficult to reconcile with the proposed interpretation of the structure of sentences with verbs in the aorist series. This, in turn, is hard to reconcile with the claim that the 'present' series is derived from a basically passive structure in the aorist series. Secondly, Vogt observes that the claim that passive structures are basic is hard to maintain in the face of the fact that the language has a perfectly general process of passivization, which applies in all series of tenses. If there is a passive which can be derived from the aorist forms, how can these be basically passive? Finally, Vogt notes that, while Schuchardt is correct in claiming that most 'present' stems are derived (morphologically) from aorist stems, there are some verbs for which the opposite situation obtains: the root is the 'present' stem, and the aorist stem is derived from this by the addition of a suffix. Case marking with these verbs is exactly like that which obtains with the others, which casts doubt on the claim that morphological derivation

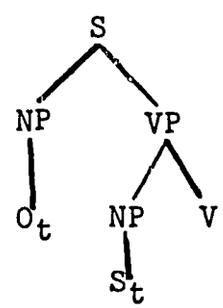
indicates syntactic derivation.

Schuchardt's arguments for Georgian, then, have little cogency, but the corresponding position has been taken for virtually every known ergative language by a wide variety of investigators. Some support has been given to it by the claim that, in some cases, ergative sentence patterns have developed by the reanalysis of an originally derived passive structure as basic (cf. Hale, 1970). Its most convincing basis, however, is the fact that it makes the morphological facts rational. That is, if we take the view that categories such as those of case and verb agreement are based on structural position, it is reasonable to expect that elements which have the same case of the same verb agreement pattern have the same position in sentence structure. If, in an accusative language, S_i and S_t are both nominative because they are both subjects, while O_t occupies a different position, why not say that in an ergative language, S_i and O_t are both 'subject', while S_t occupies a different position? The natural interpretation of these remarks is the claim that transitive sentences in an ergative language have the structure of (2.9b), while transitive sentences in an accusative language have the structure of (2.9a). Intransitive sentences in both cases have the structure of (2.9c):

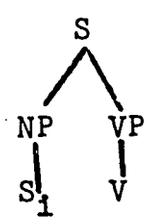
(2.9) a.



b.



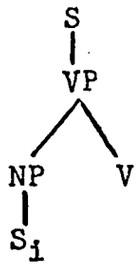
c.



A possible alternative view might claim that there are three kinds of languages, structurally: one, the accusative, has structures

(2.9a) and (2.9c) for transitive and intransitive sentences, respectively; another, the 'passive ergative' has (2.9b) and (2.9c), while a third type, the 'active ergative' languages, has (2.9a) for transitives and (2.10) for intransitives:

(2.10)



The possible existence of 'active ergative' languages, suggested by Silverstein (1972 and elsewhere) requires further evidence before it can be considered, and we will ignore it here. Our concern below will be primarily to consider the possibility that some languages are morphologically ergative because they are structurally of the 'passive ergative' type, characterized by (2.9b,c). These structures are given only for a verb-final language, but similar ones can be constructed for verb-initial or verb medial languages.

While it does not strictly bear on the question of sentence structure in ergative languages, a word should be said here about the psychological interpretations that have been given to this 'passive ergative' conception. Many authors have seen in this structural feature a reflection of the characteristic state of mind of the speakers of these languages. This has ranged from simply noting that speakers of ergative languages tend to be passive politically (e.g., Tibetans, Eskimos; but one could question this view of the Basques) to fairly precise, if extreme, conclusions about fundamental differences in the organization of mental processes. Perhaps the most explicit position in this regard

is that of Uhlenbeck (1916), as quoted by Sapir in a review:

> For the primitive linguistic feeling, the real agent is a hidden power. It acts via the apparent agent, the primary instrument, which again can itself make use of a secondary tool. Take, for example, a sentence like HE KILLS THE BIRD WITH A STONE. A blackfoot would express this in the following manner: THE BIRD BY-MEANS-OF-IS-KILLED-BY-HIM A STONE. He who kills is what is generally called the 'agent', but in truth is only the apparent agent, the primary instrument, which is itself controlled by a hidden power. The apparent agent, though itself dependent, works on the logical object (i.e. the grammatical subject) by its own emanating orenda; and even when it is the logical subject of an intransitive action - which is often the case in the mentality of peoples that recognize the contrast, not of transitive and intransitive, but of active and inactive - it works similarly by virtue of the same outstreaming mystic power. Therefore, the energetic case, the exclusively transitive as well as the general active, can be called casus emanativus, or 'case of outstreaming power'. When it is an active case, it can be more closely defined as the 'case of operative power'; when it is a transitive, as the case of power that operates on something else.

Needless (we hope) to say, no evidence has ever been adduced for such a profound coincidence of grammatical and epistemological structures in the languages of the world.

2.3 Some Facts Suggesting that Ergativity is not a Pervasive Feature

Before we investigate the syntax of ergative languages in order to determine whether or not they make use of a different set of grammatical relations than those of accusative languages (as predicted by the 'passive ergative' conception discussed in the previous section), we examine some facts that suggest that ergativity need not be terribly fundamental as a typological parameter. If the morphological difference between ergative languages and accusative languages is based on a fundamental difference in sentence structure, we would expect the cleavage between the two types

to be quite sharp, especially in the domain of morphology. In fact, we find numerous instances in which a language which displays ergative organization in one part of its morphology shows accusative organization at the same time in some other part of grammar.

2.3.1 Discrepancies Between Case Marking and Agreement

As we noted above, Georgian displays ergativity in case marking in certain circumstances, but has a system of verb agreement that is accusative in structure: i.e., S_i and S_t are treated in the same way, as opposed to O_t, whether the case marking is accusative or ergative. This is not particularly uncommon, but it is interesting to note that the discrepancy always seems to operate in the same direction: it is possible for a language to display ergatively marked NP's while verb agreement is accusative, but apparently not vice versa.

2.3.1.1 Shina

This language is a member of the 'Dardic' family within Indo-Iranian, now generally regarded as a subfamily of Indic, and best-known through Kashmiri. It is, as far as we know, the only modern language within the Indo-European family which displays an ergative nominal paradigm, and from internal evidence, it is clear that this ergativity is of relatively recent origin.

(2.11) a. ma vatus
I came-1sg
"I came"

b. dadi: vatu
grandmother came-3sg
"Grandmother came"

c. mas dadi: zamun
I-erg grandmother beat-fut-1sg
"I will beat grandmother"

(2.11) d. dadi:s ma zamei
grandmother-erg me beat-fut-3sg
"Grandmother will beat me"

e. dadi:s aǰpo zamei
grandmother-erg horse beat-fut-3sg
"Grandmother will beat the horse"

In these sentences, we see that the category of ergative is marked in the noun (or pronoun) by the suffix -s (or -se, which seems to be the underlying form), while the absolutive is unmarked. In verb agreement, however, the verb always agrees with the subject: the absolutive S_i, if intransitive, or the ergative S_t, if transitive.

2.3.2 Differences in Case Marking Which Depend on Tense or Aspect

A particularly common way in which accusative and ergative systems coexist in the same language is for one system to prevail in some verbal categories, while the other obtains in a different set of verbal categories. By far the commonest (indeed, virtually the only) example of this is the case where most sentences are organized on a nominative/accusative pattern, but sentences in the perfect aspect are organized ergatively. We will examine two instances of this situation, and then briefly discuss the explanation for it; and then survey the related, but more complicated, facts of Georgian.

2.3.2.1 Hindi

The Hindi verb in tenses other than the perfect agrees in gender and number with its subject (S_i or S_t, as the case may be). Neither subject nor object NP is specially marked. In the perfect, however, S_t is followed by the particle ne, and the verb agrees with the absolutive NP (i.e., with S_i or O_t):

(2.12) a. lərka {kwtta / kwtte} dekhta həy
boy {dog / some dogs} sees(m)
"The boy sees {a dog / some dogs}"

b. lərki {kwtta / kwtte} dekhti həy
girl {dog / some dogs} sees(f)
"The girl sees {a dog / some dogs}"

c. lərka cala
boy walk(m)
"The boy walked"

d. lərki cali
girl walk(f)
"The girl walked"

e. lərka-ne {kwtta dekha / kwtte dekhe} həyŋ
boy-erg {dog / some dogs} has seen ({sg / pl})
"The boy has seen {a dog / some dogs}"

f. lərki-ne {kwtta dekha / kwtte dekhe} həyŋ
girl-erg {dog / some dogs} has seen ({sg / pl})
"The girl has seen {a dog / some dogs}"

Thus, in Hindi, ergativity is confined to the perfect.

2.3.2.2 Burushaski

This interesting language isolate, spoken at the meeting point of the Indic, Iranian, and Tibetan language families, displays basically the same facts as Hindi: non-perfect tenses are associated with accusative structure, while the perfect is associated with ergative structure, as far as NP marking is concerned. Verb agreement is always with the subject (S_i or S_t), regardless of the tense:

(2.13) a. hir i:mo ha:ler nimi
man homeward went
"The man went home"

b. hir "lei hile:s!" sebai.i
man Oh boy! says
"The man says "Oh boy!""

c. hir esqanam
man I-killed
"I killed the man"

d. maper hi:re kau etimi
old man-agt hail made
"The old man called out"

e. di.u safid-e xutba gatanimi
Div white-agt Khutba he-read
"The white Div read the Khutba"

In (2.13b), we have the normal pattern of a non-perfect transitive sentence, in which S_t is unmarked. Similarly, S_i is unmarked in the perfect (2.13a), and O_t is unmarked in the perfect (2.13c-e). In (2.13c-e), however, the particle e is attached to S_t, marking the ergative in transitive perfect sentences. The contrast between (2.13d) and (2.13e) shows that the particle is associated with the entire NP, and not just the head noun.

Two features differentiate this situation from the Hindi one. First, as we have seen, Hindi shows agreement with the absolutive in the ergatively marked perfect, while Burushaski shows agreement with the (nominatively defined) subject even in the tense form which is associated with ergative case marking. Secondly, it is apparently the case that ergative marking of S_t, while only obligatory in the perfect, is optionally possible in other tenses as well. Thus, a few sentences such as (2.14) are found in Lorimer's Burushaski texts:

(2.14) ja thamkus wazir-e sebai.i
my kingship wazir-agt he-eats
"The Wazir is in possession of my kingship."

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It is probably safe to say (though we have no information to speak of on the history of Burushaski) that the feature of ergative case marking is in the process of spreading into the non-perfect tense system. Due to the fact that it is apparently optional for non-perfect verbs at present, however, it is hard to see ergative case marking as indicative of any fundamental structural feature.

This spread of ergativity from the perfect system into the rest of the language is attestable elsewhere, as well. In Shiṇa, as mentioned above, the present situation involves a particle /-se/ attached to S_t for all tense forms. This is, however, only the situation in the major, prestige dialect of Gilgit. Two other dialect areas of the language show slightly different forms. One, the most removed from Gilgiti Shiṇa geographically, shows /-se/ only for non-perfect forms; perfect tense forms mark S_t by putting it in the general oblique case form (the only relevant inflectional forms in the nominal paradigm being nominative, oblique, and agent). The intervening dialect area has essentially this latter situation, except that /-se/ is optionally usable instead of the oblique for perfect forms. What has apparently happened is the following: originally Shiṇa, like other modern Indic and Iranian languages, had a perfect formation involving either dative or instrumental marking of the S_t with perfect verbs. The reflex of this is the general oblique in the two non-Gilgiti areas. It then created the marker /-se/ to serve the same function with other verbs; this innovation has spread at the expense of the original form, completely wiping it out in Gilgit, and serving as optional variant in the transitional dialect area.

The etymology of the /-se/ form is interesting and problematic. It is formed by adding the particle directly to the nominative stem, rather than to the root, as in the oblique forms. This is very unusual in an Indic case form, and indicates that the particle is either a former post-position which took the nominative, or a particle borrowed from another source. Either is a possibility; several early Indic postpositional particles could possibly give Shiṇa /-se/, though none that were associated with the nominative seem terribly plausible on semantic grounds. On the other hand, se added to the nominative is exactly the ergative marker in the neighboring Tibetan dialect of Balti. While borrowing from Balti is thus indicated, there are very few, if any obvious Balti loan-words in Shiṇa, and there is no reason to believe the linguistic relations between the two peoples are particularly close. Furthermore, this borrowing of a morphological element would be virtually unprecedented. Regardless of its etymology, however, Shiṇa /se/ does not seem to indicate anything profound about sentence structure, and neither does Burushaski -e.

2.3.2.3 The Source of Ergative Perfects

While many problems exist in explaining the rise of ergative systems, the sort exemplified just above, where ergativity is confined (at least at the start) to the perfect, have reasonable explanations. In the study of historical morphology, many instances are known in which a language has lost an original perfect formation (frequently because of phonological coalescence with some other paradigm), and has accordingly created a new form for the perfect. In the history of Indo-Aryan, this has happened quite generally,

and the form which has been employed for the perfect is generally the original passive participle, for transitive verbs: that is, the passive participle has come to be used as a finite form with perfect significance. The associated NP has nominative form if S_i, while in transitive sentences (in accordance with the shape of the original passive) O_t has nominative form, while S_t shows up as the reflex of an original instrumental. Historically, at least, the passive ergative analysis is confirmed for this situation. It is still debatable, however, whether the structure should still be dealt with as passive, once the verb form has been reanalyzed as a finite, perfect form. In particular, the fact that agreement seems to tend to shift from ergative to nominative historically would suggest that, once the reanalysis is made, it is made structurally as well as semantically. The tendency, that is, seems to be as follows: originally, in the ergatively marked perfect form, the verb agreed with the absolutive (as in, e.g., Hindi). A later development which is not unfrequent, however, is for this absolutive agreement to be replaced with nominative agreement, (i.e., agreement with S_i or S_t), or for agreement to disappear entirely.

Another possible source of ergative perfect constructions is discussed by Benveniste (1965). He notes that many languages, when they need to create a perfect form, make use of whatever verbal construction they already use to indicate possession. The number of languages in which some idiosyncratic verb is used for possession, and also as a perfect auxiliary, is much too large for this to be completely accidental (forms such as English I have loved, Portuguese tenho amado, Breton gwelet am euz "I have seen", where the auxiliary is the same copula-plus-inflected-preposition form

that indicates possession, etc.). Such forms can be attested, with virtually no etymological connections among them, in virtually every branch of Indo-European, and in many other families as well. Now a particularly frequent device for the expression of possession is the construction in which the possessed appears in the nominative, and the possessor in the dative, linked by a copula: the "the book is to me" construction of, e.g., Russian. When this construction is employed to make a perfect, we have the (transitive) verb, in participial form, associated with the object in the nominative and S_t in the dative. Thus, "I have read the book" is rendered as "I have the book-read", which appears as "The book-read (is) to me". Actual transitions of just this sort can be seen easily in the historical syntax of Latin and other languages. The Breton form cited above is also an example of this sort. The result of this is that, in the perfect tense, S_i is a reflex of the nominative, as is O_t (the verb form itself being a reflex of an original participle, with or without a copula), while S_t is the reflex of a dative. Benveniste demonstrates this development convincingly in Old Persian and Armenian, among others.

What results from the above analyses is the following: two sources are well attested for perfect constructions: the original passive, and an original possessive. In the former case, the expected outcome will be a perfect form in which S_t is the reflex of an original instrumental phrase; in the latter, if the language used the dative-plus-copula construction for possessives, S_t will be the reflex of a dative. In either case (especially in languages like the modern Indo-Aryan family, in which extensive coalescence of oblique case forms has taken place) an 'ergative'

system will arise, which is confined to the perfect, though it may later spread to other tenses.

2.3.2.4 Georgian

The treatment of Georgian, which is one of the world's more celebrated ergative languages, will not be attempted in detail here, due to the complexity of the language's morphology and the difficulty of working with its syntax from available sources. It should be noted, however, that it shows one level of complexity beyond that of the systems we have been considering in this section thus far. As we have noted above, agreement in Georgian is in nominative/accusative terms in both present and aorist tense systems. Case marking, however, varies from tense to tense. Essentially, there are three systems of tenses. One group, usually called 'present', has nominative/accusative case marking (for most verbs, excluding primarily a class of psychological predicates with which the experiencer appears as a dative). Another set, usually called aorist, has S_i in the 'nominative', O_t in the 'nominative', and S_t in a special, 'ergative' case. The third system, usually called 'perfective', has S_i and O_t in the 'nominative', and S_t in the dative/accusative. The names of these tense systems are nearly arbitrary, since the distinction between the first two is essentially durative versus point-action, while the third forms a series of reportive, or dubitative tenses.

(2.15) a. santeli gakreba
candle-nom it-will-go-out (present system)
"The candle will go out"

b. vaxtang cxens dakargavs
(name)-nom horse-acc he-will-lose-it
"Vaxtang will lose his horse"

(2.15) c. santeli gakra
candle-nom it-went-out (aorist system)
"The candle went out"

d. vaxtangma cxeni dakarga
(name)-erg horse-acc he-lost-it
"Vaxtang lost his horse"

e. santeli gamkrala
candle-nom it-went-out (no doubt) (perfect system)
"The candle no doubt went out"

f. vaxtangs cxeni daukargavs
(name)-acc horse-nom it-is-lost-to-him(no doubt)
"Vaxtang has doubtless lost his horse"

The perfect system of tenses are semantic specializations of forms derived from the passives of other tense forms, and hence the case marking here is to be explained (at least historically) in terms similar to those suggested in section 2.3.2.3. The relation of this to the aorist system is unknown, however, at least in historical terms.

2.3.3 Discrepancies Between Case Marking in Nouns and in Pronouns

Several languages have been mentioned in the literature in which ergativity and accusativity coexist with one being restricted to pronouns (perhaps only 1st and 2nd persons), and the other appearing with full NP's (and perhaps 3rd person pro-forms). Many of these are Australian languages, but the situations in question do not appear all to be genetically related. It is interesting to note that it is apparently always the pronominal system which is organized accusatively in such a split system, with the full NP's of the language being marked ergatively, rather than the other way arcund.

2.3.3.1 Dyirbal

This language, spoken in Northern Queensland, Australia, will

figure heavily in the discussion of the next sections. It is fully described in a masterful dissertation by Dixon (1960?), to be revised for publication in 1972. The principal dialect described shows ergatively marked NP's, but accusatively marked pronouns for first and second person (third person pronouns being simply reduced forms of the NP, with all but the determiner deleted):

(2.16) a. bayi yaṛa baninʸu
art-abs man-abs come
"Man is coming"

b. balan dʸugumbil baninʸu
art-abs woman-abs come
"Woman is coming"

c. balan dʸugumbil baŋgul yaraŋgu balgan
art-abs woman-abs art-erg man-erg hit
"Man is hitting woman"

d. bayi yaṛa baŋgun dʸugumbiru balgan
art-abs man-abs art-erg woman-erg hit
"Woman is hitting man"

e. ŋadʸa baninʸu
I-nom come
"I am coming"

f. ŋinda baninʸu
you-nom come
"You are coming"

g. ŋadʸa ŋinuna balgan
I-nom you-acc hit
"I am hitting you"

h. ŋinda ŋayguna balgan
you-nom me-acc hit
"You are hitting me"

(Notice that the inflectional type here involves marking both determiner and head for case.) It is of course possible for NP's and pronouns to appear in the same sentence; in that case, each is marked according to its own system:

(2.17) a. ŋad^{y}a balan dyugumbil balgan
I-nom art-abs woman-abs hit
"I am hitting woman"

b. ŋayguna baŋgun dyugumbiru balgan
me-acc art-erg woman-erg hit
"Woman is hitting me"

The order of the NP's in the above examples is completely free, and no importance should be attached to it.

It is interesting to note that the situation in the pronoun inflection may well be a recent innovation in the Dyirbal dialect illustrated in (2.16-2.17). Dixon describes another dialect, which appears to represent an earlier situation, in which the inflection of pronouns differentiates not simply nominative from accusative, but indeed all of S_i, O_t, and S_t from one another:

(2.18) a. ŋayba banin^{y}u
I-S_i come
"I am coming"

b. ŋinba banin^{y}u
you-S_i come
"You are coming"

c. ŋad^{y}a ŋina balgan
I-S_t you-O_t hit
"I am hitting you"

d. ŋinda ŋan^{y}a balgan
you-S_t me-O_t hit
"You are hitting me"

The coalescence of the three-way system illustrated in this dialect to the nominative/accusative system illustrated by (2.16e-h), if that is indeed the direction of change, will appear all the more surprising in light of the observations we will make in section 2.4.3.1 below about the syntax of Dyirbal.

2.3.4 Summary

Ergative and accusative morphology are found together in the

same language under several situations. While there appear to be some limitations on the sort of mixture that can obtain, these are not such as to reassure one that the morphological division between ergative and accusative systems reflects a fundamental structural distinction, since the two systems can coexist in the same sentence. The metaphysics of allowing a sentence to have simultaneously the structures of (2.9a) and (2.9b) are staggering to contemplate.

2.4 Syntactic Systems in Ergative Languages

Thus far, we have considered ergativity (and accusativity) solely in terms of morphological systems, and have tried to suggest some of the interpretations that could be given to the distinction in terms of sentence structure. The primary serious candidate for a fundamental distinction between the two types of language seems to be the conception of transitive sentences in ergative languages as having the 'passive ergative' structure (2.9b). This conception is based on the premise that morphological categories of case and verb agreement will be based on configurational properties, and that elements assigned to the same category will be located in the same position in sentence structure. Our interest in this work, however, is to describe the range of possible variation in syntactic systems in terms of the rules of their grammars, and not simply in terms of constructions. Accordingly, it is important to inquire, in considering the validity of the 'passive ergative' conception, as to whether the rules of an ergative language are organized in a different way from those of an accusative language, so as to reflect the proposed structural difference.

2.4.1 Syntactic Rules and Structural Configurations

Sentence structures are described in terms of phrase markers; rules operate on these phrase markers in order to convert them to other phrase markers. The rules themselves are stated in terms of structural properties of classes of phrase markers, such that any phrase marker that has the required properties can undergo the rule. Grammatical relations (such as "the NP dominated by S", "the NP dominated by VP", etc.) are the primary defining characteristics of phrase marker structure; accordingly, we would expect the class of elements that figure in the structural descriptions of grammatical rules to include the significant grammatical relations that are defined on the phrase markers of a language. In other words, if some category such as "NP dominated by S" is a significant grammatical relation, we would expect there to be rules that apply to (all and only) NP's that are in this category. Similarly, if a rule applies to some class of NP's, we would expect that this class could be given a structural definition. Our intention in this section is to examine the extent to which this is true for ergative languages if the passive ergative conception of their structure is adopted.

2.4.1.1 Rules and Grammatical Relations in an Accusative Language

We assume that, for a language like English, the accusative conception of sentence structure is correct: i.e., transitive sentences have structures like (2.9a), while intransitives have structures like (2.9c), making allowance for word order. In terms of these structures, the grammatical relations subject-of and object-of have straightforward definitions. On this basis, we would expect

English to have some rules that apply to subjects, or some rules that apply to objects, or some rules that apply to all NP's, but not rules that apply to a class of NP's that cannot be given a structural definition. For instance, the class consisting of C_t and S_i does not, in terms of these structures, have a coherent definition that could be the basis of a grammatical relation; accordingly, we would be very surprised to find in English a rule that applies to these two categories exactly.

Of course, English does have rules that apply to Subjects. These include the rule of Equi-NP Deletion, which deletes the subject of an embedding under identity with some NP in the matrix sentence (where the identification of this NP is the subject of a substantial literature of its own, which does not appear to bear on our problem). This rule produces "Harry expects to laugh" from something like (Harry expects (Harry laugh)), and "Harry expects to enjoy Italy" from (Harry expects (Harry enjoy Italy)), because the embedding in each case has subject Harry, identical to the required controller NP in the matrix clause. The rule cannot operate, however, to give "*Harry expects (for) Mary to love" from (Harry expects (Mary love Harry)); this is because, although there is a NP Harry identical with the controller NP, it is not a subject.

Another rule which applies to subjects is the rule of subject raising. This rule produces "Harry appears to like Italy" from ((Harry likes Italy) appears); cf. "It appears that Harry likes Italy" from the same structure by a different process. Similarly, subject-raising can produce "Harry appears to be choking" from ((Harry is choking) appears). It cannot, however, operate to produce "Harry appears for Mary to like" from ((Mary likes Harry)appears),

because the NP Harry which is raised into derived subject position is not a subject.

Similarly, English has rules that apply only to objects. The rule of object raising (also called tough-movement) applies to yield "Harry is tough to hit" from ((for one to hit Harry) is tough), but cannot give either "*Harry is tough to hit John" from ((for Harry to hit John) is tough) or "*Harry is tough to laugh" from ((for Harry to laugh) is tough), since Harry in these structures is not an object.

English morphology, of course, also seems to be based on the distinction between subjects and objects. Thus, both S_i and S_t are reflected in verbal agreement, but not O_t; and pronouns are divided into a set for subjects (including I, we, he, she, they) and a set for non-subjects (me, us, him, her, them). Thus, English morphology seems to reflect the same set of structural categories that are made use of in the rules of English syntax. There is exactly one circumstance in which English morphology does not operate to group S_t with S_i, as opposed to O_t: this is the passive construction. In a passive sentence such as "He is being hit by me", O_t has the same pronominal form as an S_i, while S_t has a different form; and the verb agrees with O_t, as it would with S_i, not with S_t. We take this, however, not as an indication that English is not really an accusative language, but rather as the consequence of the operation of a rule in the language that (among other things) changes a configuration basically like (2.9a) into one more like (2.9b). The passive rule, that is, changes the grammatical relations within the phrase marker, and makes the O_t, which was originally in the 'object-of' relation, into a NP bearing the 'subject-of' relation.

Similarly, the position of the S_t is changed, such that it becomes a constituent (specially marked by the element by) of the VP. This shift of grammatical relations is reflected in the morphology; therefore, the morphology accurately reflects the grammatical relations obtaining in both active and passive sentences, of both transitive and intransitive type, at a level of structure at least after the operation of the passive rule.

The effect which the passive rule has of shifting the grammatical relations within the sentence is also reflected in the effect of other rules on it: these operate in terms of the derived structure grammatical relations. Thus, with passive complements, we get "Harry expects to be shot by the lunatic" from (Harry expects (Harry be shot by the lunatic)), but not "*Harry expects for the lunatic to be shot (by)" from (Harry expects (the lunatic be shot by Harry)), in turn from (Harry expects (Harry shoot the lunatic)). Even though, in this latter sentence, Harry is in the correct position in underlying structure to be affected by Equi-NP deletion, it is not deleted, because after passive applies, Harry is no longer a subject. Similar arguments can be given for the other rules discussed above. Thus, the rules of English syntax are based on the grammatical relations of 'subject' and 'object' (perhaps among others), which are given coherent definition on the basis of underlying structures like (2.9a,c), together with a rule of passive which changes the grammatical relations of (2.9a) into (approximately) those of (2.9b), in which O_t now fills the structural position of 'subject-of' the sentence.

2.4.1.2 Rules and Grammatical Relations in a 'Passive Ergative' Language

We saw that in an accusative language like English, the rules of the syntax operate in terms of structural categories like 'subject' and 'object', which can be defined in terms of phrase marker configurations. On the other hand, such a language does not contain rules that operate in terms of categories like 'absolutive', that cannot be given a configurational basis as grammatical relations. That is, there is no rule of English which applies only to S_i and O_t (in non-passive sentences), and this is connected with the fact that these two elements do not share a grammatical relation to the exclusion of S_t. The interesting point is that the morphological categories of English surface structures exactly reflect the relevant structural categories of the syntax.

If the parallel situation were to obtain in an ergative language, we would expect the significant structural categories to be those that are reflected in the morphology: ergative vs. absolutive. If this were the case, and the grammatical relations of relevance definable in these terms, we would expect S_i and O_t to be grouped together as far as grammatical relations are concerned, and opposed to S_t. In that case, the structures (2.9b) and (2.9c) would be appropriate for sentences in the language. The prediction which this analysis makes is that the rules of syntax in such a language should operate in the same terms: that is, there should be rules which apply only to absolutives (S_i or O_t, but not to S_t), or only to ergatives (S_t only), but there should not be any rules that apply to undefinable categories. If we did not find rules applying to ergatives or absolutives, but rather found rules applying to subjects

(S_i or S_t) or to objects (O_t), this would indicate that the 'passive ergative' conception, according to which ergative languages have (2.9b,c) as their basic sentence structures, was in error, and that ergative languages, as well as accusative languages, have (2.9a,c) as basic.

2.4.2 Pseudo-ergative Languages

On the basis of the arguments given in section 2.4.1, we will not examine the syntax of several languages with ergative morphology. We will find that despite the morphological facts, the rules of these languages are such that they should not be treated as structurally distinct from accusative languages, and hence that the 'passive ergative' conception is incorrect for them. The reader should not, however, leave us at this point; there is more to come in the next section.

2.4.2.1 Basque

As we saw above (in section 2.1.2.2), Basque is thoroughly ergative in its morphology. It is, in addition, virtually the canonical example of an ergative language, and the passive ergative conception has been suggested for it by many writers, including (within the framework of transformational grammar) DeRijk (1966). Nonetheless, Basque does not seem to have any syntactic rule that operates in terms of the categories of ergative and absolutive outside of the domains of case-marking and verb agreement. It does, on the other hand, have a rule of Equi-NP Deletion, functioning much like the corresponding rule in English to produce subjectless infinitives. The basic structure of infinitival complements in Basque is illustrated in (2.19):

(2.19) a. aita jiteaz atsegin dut
father-abs come-inf-mediative happy I-have-it
"I am happy for father to come"

b. aitaren jiteaz atsegin dut
father-gen come-inf-med happy I-have-it
"I am happy for father to come"

c. jiteaz atsegin dut
come-inf-med happy I-have-it
"I am happy to come"

d. aitak liburu irakutzeaz atsegin dut
father-erg book-abs read-inf-med happy I-have-it
"I am happy for father to read books"

e. aitaren irakurtzeaz atsegin dut
father-gen read-inf-med happy I-have-it
"I am happy for father to read (it)"

f. libururen irakurtzeaz atsegin dut
book-gen read-inf-med happy I-have-it
"I am happy to read books"

The morphological structure of the infinitive consists of the root plus the infinitive marker t(z)e plus a case marker, which can be any one of several cases, depending on the structure of the matrix sentence and the function filled by the complement.

Sentences (2.19a,d) illustrate the case in which the infinitive has associated with it all of the NP's that it would have in a full sentence. Each of these shows the same case marking as that which it would have in a non-infinitive main clause; the S_i in (2.19a), and the O_t in (2.19d), are absolutive, while the S_t in (2.19d) is ergative. In (2.19c,f), the rule of Equi-NP deletion has applied, to an S_i in the first case, and to an S_t in the second. The relevant NP's are simply lost. In (2.19b,e,f), we see the effects of a rule by which, if an infinitive has only one NP associated with it in derived structure, the case marking on this NP may be converted to genitive. In (2.19b), the genitive replaces an original absolutive in an intransitive sentence; in (2.19f), it replaces an

original absolutive attached to O_t after S_t has disappeared by Equi-NP deletion; and in (2.19e) it replaces an underlying ergative after the O_t has been lost either through pronominalization or through indefinite object deletion.

The controlling NP of the rule of Equi-NP deletion may be the subject of the matrix clause, as in the examples of (2.19c,f) and (2.20a) below; it may also be the indirect object, as in (2.20b); it may be the subject even though an indirect object is present, as in (2.20c):

(2.20) a. hiltzea hatze du
die-inf-abs he-deserves
"He deserves to die"

b. on zaio sofritzea
good it-is-to-him suffer-inf-abs
"It is good for him to suffer"

c. hitzeman diot jitea
promise I-it-to-him go-inf-abs
"I promised him to go" (that I would go, not that he would go)

We have already seen in (2.19c) and (2.20) instances of the deletion of S_i. In (2.19f), it was S_t that was deleted. It is not possible for this rule to delete O_t, however, even if this is identical with the controller NP:

(2.21) a. (ogia) jatea ahantzi zait
(bread) eat-inf-abs forget it-is-to-me
"I forgot to eat (bread)"

b. *(basurdek) jatea ahantzi zait
boar-erg eat-inf-abs forget it-is-to-me
"I forgot to be eaten (by the wild boar)"

c. atsegin dut zure ikusteaz
happy I-have you-gen see-inf-med
"I'm pleased to see you"
not:"I'm pleased for you to see me"

In (2.21a), Equi-NP deletion can delete I from the complement, where this is S_t, regardless of whether O_t remains or not. The rule cannot

delete O_t, however, to give a sentence like (2.21b), whether the S_t is overtly present or not. Similarly, in (2.21c), we have one NP remaining in the complement, which has therefore become genitive. If O_t could be deleted, this genitive could represent an original S_t, and hence the sentence could have the meaning "I'm pleased for you to see me". This is not the case, however: the sentence can only mean "I'm pleased to see you", because the only NP that can be deleted is S_t, and hence the remaining NP zure 'you-gen' must represent an underlying O_t.

In Basque, therefore, there is at least one rule which operates in terms of the categories of subject and object, as defined for nominative/accusative languages, but there do not appear to be any rules that operate in terms of absolutive and ergative. We conclude, therefore, that the passive ergative conception is incorrect for Basque.

2.4.2.2 Kâte

This is a New Guinea language, whose affiliations outside of its immediate geographical area are undetermined. It was studied rather extensively by Pilhofer (1933 and other works), and can be considered fairly well known. Ergativity in Kâte is confined to nominal inflection, and usually consists of adding the marker -ǰi to an ergative (S_t) NP. The verb is inflected to agree with the subject (S_i or S_t), and for a moderately (for this group of languages) complex set of tense and aspect distinctions:

(2.22) a. hoe heka'
rain fall-3sg
"It is raining"

(2.22) b. hoečí heka'
rain-erg fall-3sg
"Rain is falling on someone"

c. ɣo' ɣaka'
fire burn-3sg
"The fire is burning"

d. ɣo'čí ɣaka'
fire-erg burn-3sg
"The fire is burning something"

e. k̂pilo ŋgânčí kive'
centipede-erg bite-3sg
"The centipede bit something"

f. k̂pilo ŋgân kive'
centipede bite-3sg
"Something bit the centipede"

g. guŋ fo-ve'
sleeping lay-3sg past
"He slept"

h. guŋ fo-po
sleeping lay-1sg past
"I slept"

i. k̂pilo ŋgân kivepo
centipede bite-1sg past
"I bit the centipede"

The principal syntactic device used in the language appears to be a sort of coordination, and virtually nothing in Pilhofer's texts bears on the syntax of genuine complementation or other subordination. Within this coordinate structure, however, there is a syntactic process which most authors have felt to be the primary characteristic of the language. When two consecutive conjuncts have the same subject (S_t or S_i), the subject does not appear in the first conjunct, but only in the second; and the verb of the first is inflected only for a three way distinction of tense (relationship of the time of the first clause to that of the second). When the two have different subjects, both, of course, appear (unless one or both is a pronoun), and the verb of the first is inflected for the

same three way tense distinction, plus the person of its subject.

(2.23) a. vale-lâ nana na-lâ be' gu̱
came-past(=S) taro eat-past(=S) pig sleeping

fo-ve'
lie-past-3sg

"The pig came and ate taro and then slept"

b. gu̱ fo-hu' mi manapo
sleeping lie-pres(=S) not hear-1sg past
"I was lying asleep and did not hear it"

c. mu-pe kpâtala-me hane'ke-pe
speak-pst-1sg retort-pst-3sg tease-pst-1sg

kio-ve'
cry-past-3sg

"I spoke, and he retorted, and then I teased him and he cried"

d. vi' fo̱ke-kupe somie-ve'
wound tie-up-fut-1sg heal-past-3sg
"When I had tied up the wound (for a long time), it healed"

e. be' hone-lâ gasa'ke-lâ tepe lo-lâ Tumo̱o̱ǒi
pig see-pst= run-pst= gun fetch-pst= (name)-erg

mulutsa'
shoot-irrealis-3sg

"Tumo̱o̱ saw a pig, then ran and fet[illegible] his gun and could have shot it (but didn't)"

f. be' hone-lâ Tumo̱o̱ gasa'ke-ve'
pig see-pst= (name) run-3sg
"Tumo̱o̱ saw a pig and then ran"

g. Tumo̱o̱ǒi be' hone-me gasa'ke-ve'
(name)-erg pig see-pst-3sg run-pst-3sg
"Tumo̱o̱ saw a pig and then it ran"

h. go hone-lâ be' gasa'ke-ve'
you see-pst= pig run-pst-3sg
"A pig saw you and then ran"

i. (go-ki) be' hone-te' gasa'ke-ve'
you-erg pig see-pst-2sg run-pst-3sg
"You saw a pig and it ran"

(2.23) j. *go-ki (be') hone-lâ (be') gasa'ke-ve'
you-erg pig see-pst= pig run-pst-3sg
"You saw a pig and it ran"

(In these examples, '=' or '=S' indicates a form showing subject identity)

From these and similar examples, it is clear that S_i in the first clause can be deleted by either S_i or S_t in the second, and S_t in the first clause can be deleted by either S_i or S_t in the second, but O_t cannot be deleted by O_t or S_i, nor can S_i be deleted by O_t. That is, it is identity of subjects that counts, rather than identity of absolutives. If the structure of the language were that suggested by the 'passive ergative' hypothesis, however, we would expect identity of absolutives to be the relevant condition. We can conclude, therefore, that the passive ergative conception is inappropriate for Kâte, and the active accusative structure is to be preferred.

Note, by the way, that the process in question has to be treated as a distinct rule in the language. As shown by sentences like (2.23e,i), Kâte pronominalization only operates from left to right (at least within these coordinate structures). Since the deletion in question operates from right to left, it cannot be considered a special case of pronominalization. Further, many of the above examples show that the verb is still inflected for person as well as tense when the subject is deleted by some other process (such as pronominalization); it could not, thus, be the case that the person-neutralized verb forms are simply the result of subject deletion. We must suppose a sort of conjunction reduction operation that eliminates the subject (and its person agreement mark, if that is already present) from the first of two conjuncts if identical with the subject of the second conjunct. This process precedes person-number

agreement, while deletion by ordinary pronominalization follows agreement. Note further that it is exactly the immediately following conjunct whose subject is relevant; even if some later conjunct has an identical subject, conjunct-subject reduction is not possible (cf. (2.23c)).

2.4.2.3 Walbiri

With the exception of two small subgroups, the languages of Australia are generally ergative in surface structure. Hale has argued that they are not necessarily so in underlying structure; for Walbiri he suggests that underlying structures are of the active accusative form, but that there is a late obligatory rule of passivization, which accounts for the surface ergativity. The scheme of case marking can be seen in (2.24):

(2.24) a. kudu-ŋku lpa-Ø-Ø wana katu-nu
child-erg pst-he-it snake step-pst
"The child stepped on the snake"

b. wana-ŋku lpa-Ø-Ø kudu yalku-nu
snake-erg pst-he-him child bite-past
"A snake bit a child"

c. kudu lpa-Ø panka-t^{y}a
child pst-he run-pst
"A child ran"

In Walbiri, as we saw in Basque, there is a process which deletes a NP from non-finite subordinate clauses. This rule, which is obligatory in Walbiri, applies to the subject of the subordinate clause: i.e., to S_i or S_t, but not to O_t. The grammatical relation which is relevant for defining the class of affected NP's, then, is defined on the active accusative structure, but not on the presumed passive ergative structure. We illustrate below in (2.25) sentences with

the two complementizers kura and ku, each of which is preceded by the 'gerund' element (ṇi-)nʸtʸa:

(2.25) a. ŋarka-ŋku Ø-Ø-Ø kuḍu nʸa-ŋu waṇa kait-
man-erg pst-he-him child see-pst snake tread-

ninʸtʸa-kura
Ger-comp

"The man saw a child step on a snake"

b. ŋarka-ŋku Ø-Ø-Ø waṇa nʸa-ŋu kuḍu
man-erg pst-he-him snake see-pst child

yalki-ninʸtʸa-kura
bite-ger-comp

"The man saw a snake bite a child"

c. ŋarka-ŋku Ø-Ø-Ø kuḍu nʸa-ŋu panka-nʸtʸa-kura
man-erg pst-he-him child see-pst run-ger-comp
"The man saw a child running"

d. *ŋarka-ŋku Ø-Ø-Ø kuḍu nʸa-ŋu waṇa-ŋku
man-erg pst-he-him child see-pst snake-erg

yalki-ninʸtʸa-kura
bite-ger-comp

"The man saw a child bitten by a snake"

e. ŋarka Ø-na-Ø naru-ṇu wawiri panti-ninʸtʸa-ku
man pst-I-him tell-pst kangaroo spear-ger-comp
"I told the man to spear a kangaroo"

f. ŋarka Ø-na-Ø naru-ṇu wanti-nʸtʸa-ku
man pst-I-him tell-pst duck down-ger-comp
"I told the man to duck down"

g. *ŋarka Ø-na-Ø naru-ṇu waṇa-ŋku yalki-ninʸtʸa-ku
man pst-I-him tell-pst snake-erg bite-ger-comp
"I told the man to be bitten by a snake"

These constructions argue for the existence of a rule which deletes subjects (S_i or S_t); the absence of any comparable rule which treats S_i and O_t together as a structural category casts doubt on any proposal to treat Walbiri as a passive ergative language.

2.4.2.4 Tongan

We noted the ergative pattern of NP marking above in section 2.1.1.3 for this language. There are, nonetheless, two sets of facts which suggest the existence of processes based on the notion of subject, rather than on that of absolutive. One of these is the distribution of possessive forms, representing underlying full NP's with syntactic function, in nominalizations. Possessive pronouns in Tongan, as in other Oceanic languages, have two forms. One of these, beginning with ho, is used for a number of different functions including that of (most) alienable possession. The other set, beginning with 'e, is used for other functions, including (most) inalienable possession. When a sentence is used nominally, a completely productive process converts an associated NP to a genitive expression, which, if pronominal, appears at the beginning of the nominalization as a possessive pronoun. Which of the two series the pronoun belongs to depends on the grammatical relation the corresponding NP bears in the corresponding (unnominalized) sentence.

(2.26) a. Na'e alu 'a Tevita ki Fisi
pst go abs (name) to Fiji
"David went to Fiji"

b. Ko he alu 'a Tevita ki Fisi
Art go prep (name) to Fiji
"David's going to Fiji..."

c. Na'e taki 'e e tu'i
pst guide erg art king
"The king guided (someone)"

d. Ko e taki 'a e tu'i
art guide prep art king
"The guidance of the king (which he gives)"

e. Na'e taki 'a e tu'i
past guide abs art king
"(Someone) guided the king"

(2.26) f. Ko e taki 'o e tu'i
"The guidance of the king (which he is given)..."

g. 'oku ou taki ia
pres I lead him
"I lead him"

h. 'eku taki
my(S) lead
"My leading (someone)"

i. 'oku ne taki au
pres he lead me
"He leads me"

j. hoku taki
my(O) lead
"My being led (by someone)"

k. 'oku ou fakakaukau
pres I think
"I am thinking"

l. 'eku fakakaukau
my(S) thinking

It seems reasonable to think that what happens in these sentences is that the NP in question is first fronted and turned into a prepositional phrase, with either 'a (whose homophony with the absolutive marker is accidental) or 'o. This is what has happened in (2.26) to convert (a) to (b), (c) to (d), and (e) to (f). From these examples, we see that the nominalization process attaches the preposition 'a if the NP was either S_i or S_t (i.e., if it was subject), and attaches 'o if the NP was object. Then, if the NP in question was pronominal, the sequence 'a plus pronoun becomes a possessive of the 'e series, while the sequence 'o plus pronoun becomes a possessive of the ho series. The resulting possessive replaces the determiner (citation particle ko plus article e). The original nominalization process, then, is sensitive to the distinction between subjects and objects.

This process can also apply to derived structures, as shown in (2.27):

(2.27) a. na'e li'ekina au
past desert me
"(Someone) deserted me"

b. hoku li'ekina
my(O) desert
"My being deserted"

c. na'a ku nofo li'ekina
past I remain desert
"I remain deserted"

d. 'eku nofo li'ekina
my(S) remain desert
"My remaining deserted"

Notice that, as (2.27b) shows, a pronoun of the ho series is appropriate for the nominalization of (2.27a). When this sentence is embedded under the verb nofo 'remain', as a subject complement, however, a rule applies to raise the object au into subject position in the matrix sentence, giving (2.27c). When this sentence is nominalized, the pronoun is now in a position such that the appropriate possessive is a member of 'e, or subject series. Many instances of the distinction between 'e series items and ho series items are presumably specified in underlying structure without the intervention of syntactic rules. Thus, the contrast between the NP's of (2.28) seems to be of this type:

(2.28) a. 'ene lao
his law
"His law (that he makes)"

b. hono lao
his law
"His law (that rules over him)"

c. 'eku tu'i
my king
"My king (that I appoint)"

(2.28) d. hoku tu'i
my king
"My king (that rules over me)"

These and other instances of the contrast between the two series of possessives require further study. They should not obscure the fact, however, that in nominalizations the difference is the result of a fully productive syntactic rule (a claim which is confirmed by the fact that it is able to apply to derived, as well as underlying, structures: cf. Chomsky, 1969, for discussion of the status of this sort of argument). The rule in question must be able to treat subjects as a unitary category, as opposed to objects, which is consistent only with the active accusative notion of underlying structure for Tongan.

One other process exists in Tongan which appears to treat subjects as a unitary category. We have seen in sentences (2.26g,i,k) and (2.27c) that pronouns are sometimes found between the tense marker and the verb: i.e., in second position in the sentence, rather than after the verb. If we look at these cases, it is immediately clear that all and only subject pronouns are fronted in this way. Object pronouns, such as ia in (2.26g), or au in (2.26i) or (2.27a), are not fronted. Thus, in (2.29), the subject pronoun au can be fronted (becoming ku), but the object ia cannot (becoming ne): none of the alternative forms of (2.29b) are possible.

(2.29) a. Na'a ku manatu'i ia ('e au)
past I remember him (by myself)
"I remembered him (myself)"

b. *Na'a (ku) ne manatu'i (ia) ('e au)
past I him remember him by me

These facts seem to show the existence of at least two rules of Tongan syntax which make use of the category 'subject', and which

accordingly require that the relevant grammatical relation be defined. We know of no convincing instances of rules in Tongan which utilize the categories of absolutive and ergative, and we therefore conclude that the active accusative structure, rather than the passive ergative one, is appropriate for this language.

2.4.2.5 Eskimo

This is another of the commonly cited examples of ergative languages. The case marking system includes two categories of interest to us: one, traditionally called the absolutive, is used for S_i and O_t; the other, which is traditionally called the relative, is used for S_t and for possessors.

(2.30) a. tiriaŋniaq pisugpuq
fox-abs go-indic-3sg
"The fox walked"

b. tiriaŋniaq takuvaa
fox-abs see-indic-3s/3s
"He saw the fox"

c. tiriaŋniap takuvaa
fox-rel see-indic-3s/3s
"The fox saw him"

d. tiriaŋniap uršuq nirivaa
fox-rel blubber-abs eat-indic-3s/3s
"The fox ate the blubber"

e. tiriaŋniap uršua ayurpuq
fox-rel blubber-3sAbs be bad-indic-3s
"The fox's blubber is bad"

f. arvirup sarpiata umiap suyua agturpaa
whale-rel tail-3sRel boat-rel front-3sAbs shake-indic-3s/3s
"The whale's tail shook the front of the boat"

From these examples, we can see that the verb is inflected for both subject and object; in the transitive sentence, subject concord and object concord are hard to separate, so it is not possible to call

the agreement either ergative or accusative in character. The possessed noun is inflected for the person of the possessor, while the possessor is assigned the relative case.

Underhill, in unpublished lectures, has discussed the basis of Eskimo sentence structure, and concluded that arguments exist for assigning it a basic subject vs. object structure, rather than absolutive vs. ergative. He notes first that there is a category of agreement which refers to the subject of the sentence. This is normally called the 'fourth person' in Eskimological works, though it is clearly a sort of reflexive.

(2.31) a. qiturnaa takuvaa
child-3sAbs see-indic-3s/3s
"He saw his child (somebody else's)"

b. qiturni takuvaa
child-4sAbs see-indic-3s/3s
"He saw his (own) child"

The fourth person is used when a possessed noun or a verb is to agree with a 3rd person NP which is subject of the same or a higher sentence. This can be either S_i or S_t, but is never used for agreement with a noun which is O_t. If Eskimo syntax were based on the relations 'ergative' and 'absolutive', we would expect a category such as this to reflect agreement with an NP which is a higher absolutive (S_i or O_t).

Another process in Eskimo syntax which is based on the relations 'subject' and 'object' is responsible for the introduction of a verbal suffix usually called the 'infinitive', used for compounding sentences which have the same subject.

(2.32) a. qiviarluna takuvara
turn-inf-1sg see-indic-1sg/3sg
"Turning around, I saw him"

(2.32) b. qayarturluni aullarpuq
kayak-use-inf-4s go-indic-3s
"He went away, rowing in a kayak"

c. umiaq kalillugu tikiuppaat
boat-abs two-inf-3s bring-indic-3p/3s
"Towing the boat, they brought it"

d. nunarput takuyumavlugu tamaunarpuq
land-1pl-abs see-want-inf-3s come here-indic-3s
"He came here, wanting to see our country"

As can be seen, this suffix is usable if the subject (either S_i or S_t) of the first clause is identical with the subject (either S_i or S_t) of the second. It cannot be used, however, if there is simply identity between an Ot and an S_i or other O_t. Thus, this category (which is somewhat like the conjoined identical-subject forms in Kâte) provides another argument in favor of subject/object as the basic grammatical relations of Eskimo, rather than ergative/absolutive.

2.4.3 Real Ergative Languages

In the preceding sections, we have seen instances of rules in languages with ergative morphology that argued for a treatment of those languages in terms of active accusative structures. The grammatical relations which define categories of constituents for the operation of syntactic rules were seen to be subject (S_i or S_t) and object (O_t), rather than the categories of absolutive and ergative that are naturally definable in passive ergative structures.

It might well be, however, that this line of argument is simply mistaken. We have illustrated some rules in ergative languages that are based on subject and object, and many others could be cited from these and other families of ergative languages, while we know of no rules in these languages which are based on the other

set of grammatical relations. This might be simply beside the point, however. It might be that this feature of syntactic rules in these languages is due to some hitherto unconsidered factor, having nothing to do with fundamental sentence structure; that is, it might be that the test we have employed above is (for irrelevant reasons) intrinsically incapable of discriminating between languages with active accusative structure and languages with passive ergative structure. It is thus extremely important to ask whether there are any languages for which this test could give the opposite result (that their sentence structures are fundamentally different). If there are any such languages, it seems to us that this fact would considerably enhance the value of the proposed typological parameter, since it would show that it makes sense for the syntactic rules of a language (and hence its sentence structures) to be organized on an ergative pattern. In this section we discuss the syntax of the two examples of this sort that are known to us: Dyirbal, in Australia, and Hurrian, an ancient Anatolian language.

2.4.3.1 Dyirbal

We discussed the ergative morphology of this language above in section 2.3.3.1. As far as its syntax is concerned, the first thing that strikes one as peculiar is the fact that it has a very general rule of the same sort as the passive of accusative languages: a rule which puts the ergative NP in a transitive sentence into absolutive position in the derived structure, while displacing the underlying absolutive to either the dative or the ergative, also attaching a marker of derivation (/-ŋay/) to the verb. This

is very unusual: most languages with ergative morphology lack such a rule. Some exceptions to this are treated by Jacobsen (1969); some are found in languages with completely ergative morphologies, such as Mayan (not discussed in any depth here due to the complexity of the arguments needed to establish underlying sentence structures in the several Mayan languages), while others are suspiciously ambiguous cases, such as Georgian. In any event, a rule of this sort is not at all common in an ergative language. It has the effect of converting sentences like (2.33a,c) into the forms in (2.33b,d):

(2.33) a. bayi bargan baŋgul yaraŋgu dʸurganʸu
art-abs wallaby-abs art-erg man-erg spear
"Man is spearing wallaby"

b. bayi yara {baŋgul bargandu / bagul bargangu} dʸurgaŋanʸu
art-abs man-abs {art-erg wallaby-erg / art-dat wallaby-dat} spear-'pass'
"Man is spearing with respect to wallaby"

c. balan dʸugumbil baŋgul yaraŋgu balgan
art-abs woman-abs art-erg man-erg hit
"Man is hitting woman"

d. bayi yara {baŋgun dʸugumbiru / bagun dʸugumbilgu} balgalŋanʸu
art-abs man-abs {art-erg woman-erg / art-dat woman-dat} hit-'pass'
"Man is doing hitting with respect to woman"

This rule is of great importance for the rest of the syntax of the language, for it has the effect of making an NP into an absolutive when it would otherwise not be. We will use only the variants with the underlying absolutive converted to dative; Dixon's discussion does not make clear how these differ from those in which the underlying absolutive shows up as ergative, but these latter structures do not appear to have interesting added properties. We will refer to the rule which operates in (2.33) as the anti-passive

rule.

Other rules of the syntax of Dyirbal treat the absolutive as a unitary category. The most important of these are involved in the process Dixon calls 'topic chain formation'. This is the joining of several sentences on the basis of their possession of a common absolutive NP. In his thesis, Dixon seems to confuse two distinct rules in the process of topic chain formation: one is a process of conjoining of coordinate sentences, and the other is a process of Equi-NP deletion in complements (it is our understanding that Dixon now distinguishes these two processes). We will consider the reduction of coordinates first.

In most languages, reduction of conjunctions can apply if both conjuncts have the same subject, but not if the subject of one is identical to the object of the other. In Dyirbal, it is the latter situation and not the former that obtains. In (2.34) below, a and b can be conjoined to form c, because they share S_i; similarly, (2.34a) can be conjoined with (2.34d) to give (2.34e); but (2.34a) cannot be conjoined with (2.33a) to give (2.34f). Identity of S_i with S_t is not a sufficient condition for conjunction reduction to apply. In order to perform this conjunction, the second conjunct must be antipassivized to (2.33b); then they yield (2.34g):

(2.34) a. bayi yara walman^{y}u
art-abs man-abs get up
"Man got up"

b. bayi yaṛa wayn^{y}d^{y}in
art-abs man-abs go uphill
"Man went uphill"

c. bayi yara walman^{y}u wayn^{y}d^{y}in
art-abs man-abs get up go uphill
"Man got up and went uphill"

(2.34) d. bayi yaṛa baŋgun dʸugumbiṛu balgan
art-abs maṇ-abs art-erg woman-erg hit
"Woman is hitting man"

e. bayi yaṛa walmanʸu baŋgun dʸugumbiṛu balgan
art-abs maṇ-abs get up art-erg woman-erg hit
"Man got up and woman hit him"

f. *bayi yaṛa walmanʸu bayi bargan dʸurganʸu
art-abs maṇ-abs get up art-abs wallaby-abs spear
"Man got up and speared wallaby"

g. bayi yaṛa walmanʸu bagul bargaŋgu dʸurgaŋanʸu
art-abs maṇ-abs get up art-dat wallaby-dat spear-'pass'
"Man got up and did spearing with respect to wallaby"

This paradigm could be extended with sentences whose first conjunct is transitive, where it would appear that, if the second conjunct is intransitive, its S_i must be equal to the O_t of the first conjunct, while if it is transitive, its O_t must be equal to the O_t of the first. The point is that conjunction reduction is possible if and only if the two conjuncts in question share an absolutive NP.

The second part of topic chain formation deals with structures that appear to involve embeddings. When the two clauses share absolutive NP's, the absolutive is deleted from the embedded clause, and the tense mark of the verb in this clause is replaced by a non-finite complementizer:

(2.35) a. balan dʸugumbil baŋgul yaraŋgu balgan
art-abs woman-abs art-erg maṇ-erg hit
"Man hits woman"

b. balan dʸugumbil badʸinʸu
art-abs woman-abs fall down
"Woman falls down"

c. balan dʸugumbil baŋgul yaṛaŋgu balgan badʸigu
art-abs woman-abs art-erg maṇ-erg hit fall down-comp
"Man hits woman so that she (*he) falls down"

d. bayi yara waynʸdʸin yalu
art-abs maṇ-abs come uphill to here
"Man came uphill to here"

(2.35) e. bayi yara baŋgun dunduŋgu mandʸan
art-abs man-abs art-erg bird-erg point out
"Bird points out man's presence"

f. bayi yara waynʸdʸin yalu baŋgun
art-abs man-abs come uphill to-here art-erg

dunduŋgu mandʸali
bird-erg point out-comp

"Man came uphill to here so that bird pointed out his presence"

g. *bayi yara waynʸdʸin yalu balan dundu
art-abs man-abs come uphill to-here art-abs bird-abs

mandʸali
point out-comp

"Man came uphill to here to point out bird's presence"

As we see from these sentences, the same facts obtain as for conjunction: the absolutive of the embedding must equal the absolutive of the matrix clause. Subject identity, if one or both subjects is not absolutive, is not sufficient.

In case it is the ergative subject of the embedding which is identical with the absolutive of the matrix, it is necessary to perform the operation of anti-passivization on the embedding first, before Equi-NP deletion can apply:

(2.36) a. balan dʸugumbil baŋgul yaraŋgu mundan bagum
art-abs woman-abs art-erg man-erg take art-dat

miranʸgu
beans-dat

"Man took woman to beans"

b. balam miranʸ baŋgun dʸugumbiru babin
art-abs beans-abs art-erg woman-erg scrape
"Woman scraped beans"

c. balan dʸugumbil bagum miranʸgu babilŋanʸu
art-abs woman-abs art-dat beans-dat scrape-'pass'
"Woman did scraping with respect to beans"

(2.36) d. balan dʸugumbil baŋgul yaraŋgu mundan bagum
art-abs woman-abs art-erg man-erg take art-dat

miranʸgu babilŋaygu
beans-dat scrape-'pass'-comp

"Man took woman to beans (for her) to scrape (them)"

Here, we must anti-passivize (2.36b) into (2.36c) before we can embed it into (2.36a) to give (2.36d). We also see in this sentence the fact that Equi-NP deletion can delete a dative NP in the lower clause under identity with a dative in the matrix. We have another instance of this process (this time with intransitive matrix clause) in (2.37b):

(2.37) a. balan dʸugumbil yanu bagum miranʸgu
art-abs woman-abs go art-dat beans-dat
"Woman went to beans"

b. balan dʸugumbil yanu bagum miranʸgu babilŋaygu
art-abs woman-abs go art-dat beans-dat scrape-'pass'-comp
"Woman went to beans to do scraping (with respect to them)"

Sentence (2.37b) is obtained by embedding (2.36c) into (2.37a). It is important to note, however, that reduction of datives, ergatives, etc., is impossible unless the prior condition of identity of absolutives is met.

In these cases, we have wanted to perform the operation of anti-passivization before performing Equi-NP deletion into the complement. Now consider the following sequence of sentences:

(2.38) a. balan dʸugumbil baŋgul yaraŋgu wawum bagun
art-abs woman-abs art-erg man-erg fetch art-dat

nʸalŋgagu
girls-dat

"Man fetched woman to girls"

(2.38) b. balan nʸalŋga baŋgun dʸugumbiru walmbili bagum
art-abs girls-abs art-erg woman-erg get-up art-dat

wudʸugu
fruit-dat

"Woman gets girls up for fruit"

c. balan wudʸu baŋgun nʸalŋgagu burbili
art-abs fruit-abs art-erg girls-erg pick
"Girls pick fruit"

d. balan nʸalŋga bagum wudʸugu burbilŋay
art-abs girls-abs art-dat fruit-dat pick-'pass'
"Girls do picking with respect to fruit"

e. balan nʸalŋga baŋgun dʸugumbiru walmbili bagum
art-abs girls-abs art-erg woman-erg get-up art-dat

wudʸugu burbilŋaygu
fruit-dat pick-'pass'-comp

"Woman got girls up to do picking with respect to fruit"

f. balan dʸugumbil bagun nʸalŋgagu walmbilŋay
art-abs woman-abs art-dat girls-dat get up-'pass'

bagun wudʸugu burbilŋaygu
art-dat fruit-dat pick-'pass'-comp

"Woman did getting up with respect to girls to do picking with respect to fruit"

g. balan dʸugumbil baŋgul yaraŋgu wawun bagun
art-abs woman-abs art-erg man-erg fetch art-dat

nʸalŋgagu walmbilŋaygu bagum wudʸugu
girls-dat get up-'pass'-comp art-dat fruit-dat

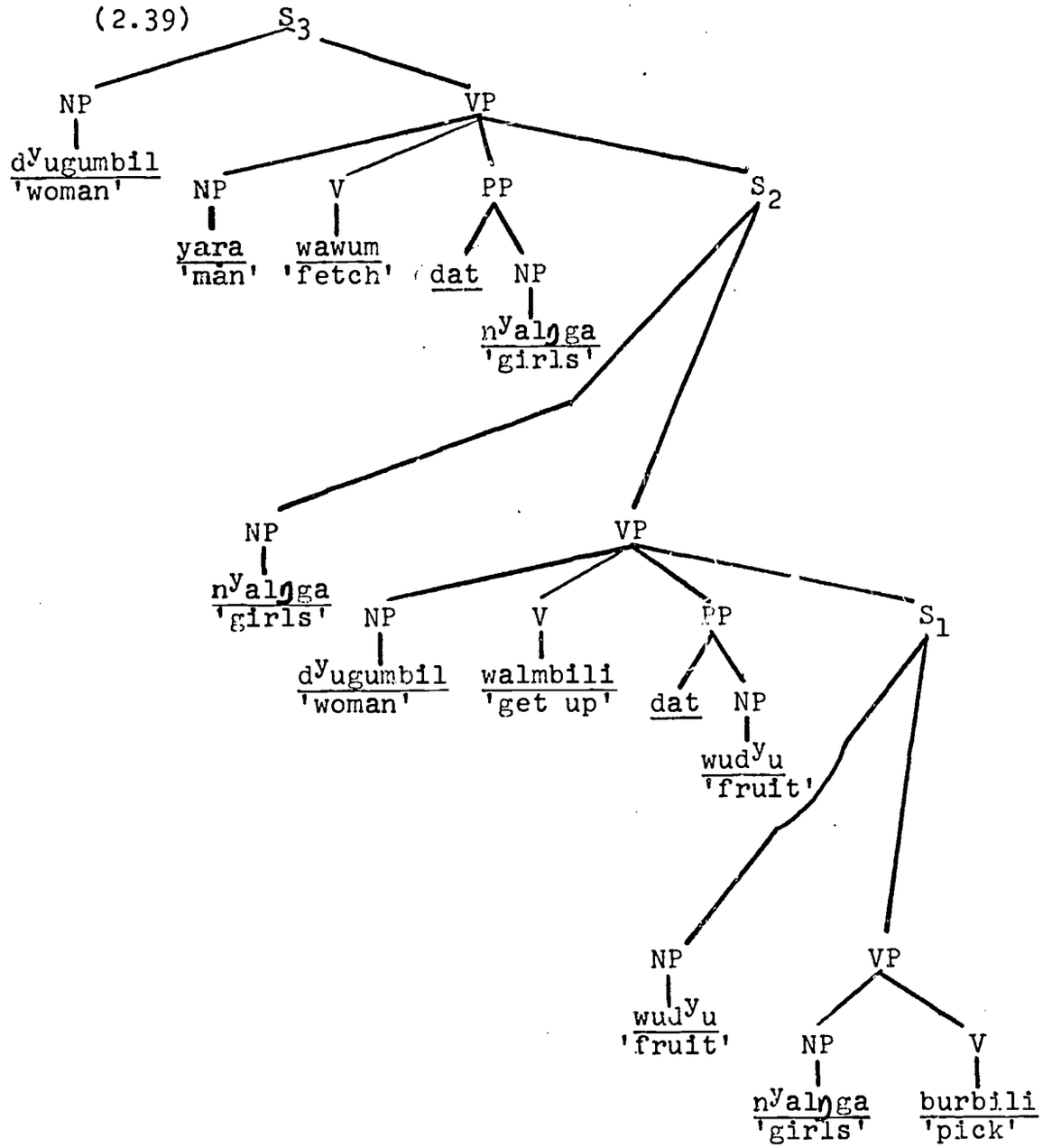
burbilŋaygu
pick-'pass'-comp

"Man fetched woman to get girls up to pick fruit"

Notice the sequence of operations that have been performed here. First, it was necessary to anti-passivize (2.38c) into (2.38d) in order to embed it into (2.38b) to give the complex (2.38e). It was then necessary to anti-passivize this sentence (2.38e) into (2.38f), before it could be embedded into (2.38a) to give the final sentence

with two levels of embedding, (2.38g). Thus, anti-passive had to apply before Equi-NP deletion in the first instance, but after it in the second instance. The point is that balan nʸalŋga 'girls' must be in the absolutive of the middle level of structure for the first embedding to apply, but balan dʸugumbil 'woman' must be absolutive of this same level for the second embedding operation. These two conditions cannot, obviously, be satisfied by the same representation. The sequence anti-passive-Equi-antipassive-Equi is completely rigid, and cannot be altered if the correct output is to be obtained and the conditions for each operation of each rule are to be satisfied. This order to application appears, at first sight, to be paradoxical; but when we look closer, we see that the application of anti-passive which follows the first instance of Equi is operating in a higher level of the structure than is the instance of anti-passive which precedes this instance of Equi. Similarly, the instance of Equi which follows the second instance of anti-passive is operating at a higher level of the structure than is the instance of Equi which precedes it. This is, in fact, the canonical form of an argument for the cyclic application of rules: the rules can be ordered such that Equi precedes anti-passive, and applied in this way successively at each higher level of structure. To clarify this somewhat, we give the underlying structure of (2.38g) below, with articles, etc., omitted:

(2.39)



The cycle of rules first applies to S_1. On this cycle, only anti-passive can apply, since S_1 by itself contains no embedding. Then the cycle is applied within the domain of S_2. Here, the conditions for Equi-NP deletion are met, and this rule can apply. Then anti-passive can apply again, this time to S_2. The rules now pass on to S_3, where again Equi-NP deletion can apply. Anti-passive could

also be applied, but we choose not to, and wind up with (2.38g) (the production of the intermediate stages of this derivation is left as an exercise for the reader).

Notice that this discussion presumes crucially that the tree structures of Dyirbal sentences are, as represented in (2.39), of the 'passive ergative' sort. That is, in the transitive sentence O_t is the NP dominated by S, while S_t is part of the VP. In this structure, the grammatical relations required by the rules of Dyirbal syntax are properly defined.

We have thus seen two rules in Dyirbal which require us to posit structures of the 'passive ergative' type for this language. One other process in the language also makes use of the absolutive/ergative division. The rule of relative clause formation in Dyirbal can only apply to NP's that are absolutive; if it is necessary to relativize an ergative NP, the sentence must first undergo the rule of anti-passive, to put the underlying ergative into derived absolutive position. Beside the fact that this rule classifies absolutives together, it provides further support for the positing of 'passive ergative' structures due to the nature of the constraint itself. We saw in part 2 of this work that one of the constraints which can be found on relative clause formation was a restriction to NP_{rel} which is in subject position. This suggests that the absolutive in Dyirbal is a category in some sense isomorphic to the category of subject in active accusative languages.

On the basis of the fact that Dyirbal has three rules which treat absolutives as a uniform and distinct class (conjunction reduction, Equi-NP deletion, and relative clause formation),

together with the fact that all of these are cases which, in other languages, are known to take subjects as a uniform and distinct class (rather than some other arbitrarily defined NP class), we conclude that the absolutive in Dyirbal is structurally parallel to the subject in accusative languages. This fact is expressed by positing underlying structures of the 'passive ergative' sort (2.9b,c), while other languages with superficially ergative morphology (i.e., those discussed in section 2.4.2) are assumed to have active underlying structure (2.9a,c).

2.4.3.2 Hurrian

Another language like Dyirbal for which the evidence seems to suggest 'ergative' structure as appropriate for underlying forms is Hurrian. This language of the ancient Near East is unrelated to any other known languages (with the possible exception of Urartean, which doesn't really get us much further), and has not been spoken for approximately 3000 years. The textual material available in Hurrian is nowhere near so extensive as that in Hittite, Akkadian, Sumerian, etc., and (in part because of the absence of related languages) some passages are either highly questionable or completely uninterpretable. Nonetheless, it is possible to make some generalizations about its structure. At least one connected text in a non-formulaic style, the so-called Mittani letter, is sufficiently long (ca. 500 lines) to give us some idea of syntactic matters; a large corpus of fragmentary attestations and translations from and into other ancient languages furnishes further hints.

The language marks case functions with Ø representing the absolutive and -š the ergative. The absolutive appears in nominal

sentences (such as (2.40a) below) and to represent the subject of intransitives (e.g., (2.40b)); in transitive sentences O_t is in the absolutive and S_t in the ergative, with -s (e.g., (2.40c)):

(2.40) a. un-du-u-un Ma-ni-e-na-an še-e-ni-iwiwu-ú-e
now then+n Mane+n+an brother-my-of

pa-aš-ši-it-hi
envoy

"And now then Mane is my brother's envoy"

b. un-du-ma-a-an in-na-me-e-ni-i-in še-e-ni-iw-wu-ú-e
now then+man Mane+n+an brother-my-of

aš-ti ú-ni-e-et-ta
wife arrive-will

"Behold, indeed my brother's wife will arrive"

c. še-e-ni-iw-wu-uš-ša-a-an aš-ti ša-a-ru-uš-ša
brother-my-erg+an wife requested-by-him
"My brother requested a wife"

(note that these and other Hurrian citations are mostly given in uninterpreted cuneiform transliterations)

The connectives +n, +an, and +man in these and other sentences are of uncertain significance, but do not appear to affect the syntax of the rest of the sentence.

In addition to the ergative pattern of case marking, Hurrian also displayed an ergative pattern of verb agreement, of a sort not previously encountered in this survey. There are two aspects of this agreement: first, a pronominal element agreeing with the NP in the absolutive case appears enclitic to the first word in the sentence. This clitic pronoun is always present if the absolutive is first or second person and often if it is third person:

(2.41) a. i-nu-ú-ut-ta-a-ni-i-in hé-en-ni še-e-ni-iw-wu-uš
as-me(=tta)+nin now brother-my-erg

ta-a-ti-ya
loved-by-him

"As my brother now loves me"

(2.41) b. an-du-ú-a-at-ta-a-an te-u-u-na-e tiš-ša-an tiš-ša-an
about-it-I(=tta)+an much very very

pi-su-us-te-e-wa
rejoice-should

"So that I should rejoice over it very very much"

c. i-nu-ú-me-e-ni-i-in bé-en-ni še-e-ni-iw-wo
as he(=me)-indeed-+n now brotherly-my

i-ša-aš ta-a-ta-ú
me-by loved-by-me

"As I myself now love my brother"

In addition to this clitic, however, Hurrian has an agreement marker which appears on the verb, but only with the transitive verb, and agrees only with the ergative NP. Such a marker can be seen in the -a-ú 'by me' of (2.41c), and the -ya 'by him' of (2.41a). The difference between the clitics agreeing with the absolutive NP and the inflections agreeing with the ergative NP are clear in these instances and in the following:

(2.42) a. ú-ú-na-al-la-a-an
coming-they(=lla)+an
"And so they come"

b. an-nam-mil-la-a-an un-du še-e-ni-iw-wu-ta gu-lu-ša-ú
thus-they(=lla)+an then brother-my-to tell-past-by-me

"And these things then I told my brother"

In both sentences of (2.42), -lla represents the third person plural absolutive NP, while the first singular ergative NP in (2.42b) is represented by -a-ú.

In addition to its unusual agreement pattern, Hurrian is also virtually the only known exception (others include Tsotsil and possibly Aleut) to Greenberg's generalization about word order in transitive sentences: while maintaining a generally fixed word order, the subject does not usually precede the object. The basic

word order of the language is apparently object-subject-verb. This is confirmed not only by the overwhelming statistical preponderance of this order, but also by a number of peculiar mistranscriptions of Akkadian texts by native Hurrian speaking scribes at Nuzi. Several passages exist in which the sense of the sentence has been completely reversed as a result of the scribe's altering it to make the first NP the object and the second the subject, in contrast to the Akkadian original. Thus, a passage of the mistranscribed laws states, literally, that "the widow who remarries contrary to the provisions of her husband's will is allowed to expel the legal heirs." In the original, of course, the legal heirs were allowed to expel her; the scribe has interchanged subject and object, since he took the first NP (in the Akkadian) to be the object and the second the subject. It would be nice to have firmer evidence than this for OSV as the underlying word order, but it seems convincing enough. There must have been interesting errors commited by Hurrian tourists with limited knowledge of other languages.

Hurrian seems to show two processes that treat absolutives as a uniform class, in distinction to ergatives, and no examples of rules which operate in terms of subjects (S_i or S_t). One of these former is a process of relativization. The element <u>se</u> is used, in derivation, to form abstracts from nouns:

(2.43) a. erwi 'lord'; erwiše 'feudal service'

e-ew-ri-iš-še-ḫi 'pertaining to lordship' (<u>ḫi</u> forms adjs.)

b. šar-ra 'king'; šar-ra-aš-ši 'kingship'

The same element can be used to form 'free relative' clauses from

sentences:

(2.44) ma-ni-e-ra-la-an ú-na-aš-še-na
Mane-with-they+n arrive+še+na (pl. relational particle)
"The things that Mane brought with him"

These clauses can also be used as modifiers, in which case they generally form part of the same NP as the Noun modified, and may have a case marking attached to them which is the same as that NP:

(2.45) a. aš-t-in še-e-ni-iw-wu-ú-e a-ru-u-ša-ú
wife+n brother-my-gen give-past-by-me

še-e-ni-iw-wu-ú-e-ni-e-en ta-ša-a-an-na ši-ra-aš-še
brother-my-gen-rel+n heart+n-stative pleasing+še

"I gave my brother's wife, who is pleasing in accord with my brother's heart"

b. tup-pe ni-ḫa-a-ar-ri-e-we a-ru-u-ša-uš-še-ni-e-we
tablets dowry-gen give-past-by-me+še+ne+gen
"The tablets of dowry that I gave"

c. i-i-al-li-e-ni-in še-e-ni-iw-wu-ú-uš du-be(-na-a-ma-a-
what-they-indeed brother-my-erg tablets+man an)

šu-ú-al-la-ma-an ge-pa-a-nu-u-ša-a-aš-še-na
all-they+man send-past-by-him+se-relational

"All such tablets as my brother sent"

d. še-e-ni-iw-wu-ú-š-al-la-an ge-pa-a-nu-ša-a-uš-še-na
brother-my-dative-they+an send-past-by-me+se-relational

ge-pa-nu-ša-a-ul-la-ma-an
send-past-by-me-they+man

"The things (which were to be) sent by me to my brother were sent by me."

This is an extremely frequent construction in the Hurrian texts which we have, and is the only one which seems to serve the purpose of relative-clause-formation. The interesting point is that the head of the construction, the relativized NP or the (deleted) indefinite pro heading a free relative, is always the absolutive of the underlying clause. It may be the S_i, as in (2.44) and (2.45a), or it may be O_t, as in (2.45b-d). In the absence of either a great

deal more textual material or a native speaker, it is of course impossible to be sure that še clauses were impossible with ergative heads, but there is a strong presumption that the process was restricted to absolutives. As with Dyirbal relativization, this restriction would then fall in the class of relativization rules restricted to subjects, if the Hurrian absolutive were structurally parallel to the subject in an accusative language.

Another rule which seems to have applied in Hurrian to the class of absolutive NP's was a process deleting one of a pair of coreferential NP (the second), if the NP with which it is coreferential in the preceding clause bears the same grammatical relation (absolutive or ergative):

(2.46) a. hazile pisandištennan
hear-opt rejoice-intensive-aspect+an
"May I hear, that I may rejoice"

b. anzannohožaf kulliman
begged-by-me saying+man
"I begged, saying..."

c. hiyaruhhattan teuna ženifuš kebanuen
gold-I+an much brother-my-by sent-shall-be-by-him

wurdenittan
pleased-fut

"May I be sent much gold by my brother, and I will be pleased"

d. ḫa-šu-u-ša-ú-ú-um pi-ša-an-du-ši-i-it-ta-a-an
heard-by-me rejoice-past-I+an
"I heard it and rejoiced"

In (2.46a), the complement of hear is adverbial rather than a direct object, so the verb hazile is here intransitive. The subjects of optatives in Hurrian are always deleted (parallel to imperatives); thus there is no 1st person pronoun in the first clause. In the second clause, however, there is no pronoun -tta to represent

the first person subject. This is due to the deletion process in question, since both instances of 1st person would be S_i. In (2.46b), both verbs are formally transitive, but only the first has the ergative agreement pronoun. The ergative has been deleted from the second verb, since it is identical to the ergative in the preceding clause. In (2.46c), hiyaruhha 'gold' is in the stative case, and hence an adverbial or other oblique complement, rather than a direct object. The direct object of the first clause is thus tta 'me', showing perhaps the operation of some sort of dative rule. In the second clause, it appears that the absolutive NP is again tta 'me', this time as S_i. In the form wurdenittan, however, the element tta must be regarded as the future tense marker (contrary to Speiser's discussion of this item); if the pro-form were present here as well, we should expect wurdenittattan. Thus, the actual absolutive pro-form is missing from the second clause. This might simply be a haplology, but we attribute it to the operation of the pronoun deletion process. The sentence (2.46d), finally, shows that the pronoun is not deleted under conditions of subject identity where one subject is S_t and the other is S_i. The first person subject in the first clause here is an ergative, while that of the second clause is an absolutive; hence no deletion takes place.

As with the relativization process, we would need a good deal more information to be certain that this pronoun deletion process is in fact operating in terms of the grammatical relations proper to a passive ergative language. Such evidence as there is, however, seems to point to such a conclusion, and (most important) there is no evidence in favor of the active accusative structure as the basis

of grammatical relations relevant to the syntax of Hurrian. We therefore conclude that Hurrian was structurally like Dyirbal in being passive ergative.

2.5 Conclusions

In the survey undertaken above of the syntax of languages with ergative morphology, we have found that most of these have a syntax based on the grammatical relations which are appropriate to structures defined by the active accusative type, rather than those of the passive ergative type. Two languages, however, (Dyirbal and Hurrian) proved to have a syntax based on passive ergative structures. We therefore conclude that the interpretation of ergativity as reflecting an underlyingly passive transitive construction (in the sense that O_t occupies the structural position of subject, while S_t occupies a position within the VP) is a valid typological parameter. That is, languages of this form exist. It is not the case, however, that ergative morphology is the reflex of this feature of syntactic organization. Morphologically ergative languages exist (and indeed are vastly in the majority) which have a syntax of the common active accusative sort. Syntactic ergativity is much rarer than morphological ergativity. This result predicts the existence of languages which are morphologically accusative, but syntactically ergative, if it is really the case that morphological and syntactic ergativity are independent; we know of no evidence for the existence of such a language. Further investigation may well produce one, however, or it may well be the case that some independent factor is responsible for the non-appearance of this combination. The principal conclusion of this section is the following:

since morphological ergativity is not generally associated with syntactic ergativity, it cannot be the case that categories which are morphologically unitary, such as 'absolutive', are based on structurally uniform categories. Case marking rules, that is, have some other basis than simply assigning a mark of a given sort to an element occupying some constant position defined by grammatical relations in a phrase marker.

3. The Structure of Case Marking Rules

The evidence of section 2.4 confirms the impression given in section 2.3 that morphological ergativity is not a very profound fact about a language's sentence structure. On the one hand, we have seen that case marking and/or agreement facts may vary within a language from one verbal category to another without this entailing a difference in syntactic behavior; on the other hand, we have seen that languages which are consistently ergative in these morphological respects may behave syntactically in the same way as languages that are accusative in structure. These facts lead us to suspect that ergativity is a rather low-level feature of language structure, and that the attention which has been devoted to it in the past has been a result of the fact that the field of syntax was, until recently, essentially limited to providing a rationalization for morphology.

3.1 Possible Explanations for Ergativity

If ergativity is to be treated as a low-level morphological feature, it is still necessary to provide an account of how it arises, and of how ergative languages differ from accusative

languages. We have already concluded that the morphology of case marking and agreement cannot be explained by positing rules which assign constant marks to the occupants of configurationally defined structural positions, in terms of the grammatical relations they bear in the sentence in Chomsky's sense. If this is not the case, what explanation is there?

3.1.1 Hale's Obligatory Passive Rule

Hale (1970) proposed an explanation for the conflict between accusative syntax and ergative morphology in Walbiri. Hale noted that the syntax of the language argued against case marking rules that assign marks to the bearers of particular grammatical relations. But, he noted, though all of the syntactic rules of the language function as if its structures were accusative in form (i.e., as if S_t occupied the same structural position as S_i), this still does not provide us with direct evidence about the nature of surface structure phrase markers. He noted that there was a certain amount of historical and comparative evidence for relating the morphology of the Walbiri transitive sentence (and the same construction in some other Australian languages) to that of an earlier passive construction. Therefore, he suggested that the grammar of Walbiri is organized as follows: base structures have active accusative form. All of the rules of the syntax except case marking and scrambling apply to these structures. After all these other rules have applied, an obligatory passive rule applies, converting the active accusative structure to the passive ergative one. At this point, configurationally determined case-marking rules could be applied, giving ergative morphology, and then scrambling could apply.

If this were true, it would explain one puzzling fact: why is it that so many morphologically ergative languages lack a rule of passivization? If, in fact, their ergative morphology were a consequence of the application of a late, obligatory passive rule, then (under the natural assumption that a language cannot have more than one instance of a given rule in its grammar), this fact would be explained.

While it is undoubtedly possible that a generalization of an original passive rule can be the source historically of an ergative morphology, we do not feel that this explanation can be accepted as a synchronic one. First, it is peculiar (if a language can have an obligatory rule of passivization) that this rule is apparently always ordered at exactly the end of the grammar. One would expect to find languages in which the syntactic rules which apply up until some intermediate point in the grammar operate in terms of accusative type structures, and after this point, in terms of ergative structures. Actual optional passive transformations in accusative languages are nearly always found embedded in the set of rules, and it would be peculiar if the fact of becoming obligatory were to force the rule out of this ordering and up to the very end of the grammar.

Secondly, there is no evidence beyond the historical and comparative facts Hale cites for relating the ergative construction in Walbiri or any other language to the operation of a synchronic passive rule. One might look for properties that are known to be associated with passive rules, and inquire as to whether ergative languages generalize these properties to all transitive sentences. For instance, it is well known that many languages are subject to

a restriction such that the passive cannot apply if subject and object are coreferential. In English, for example, sentences such as "*John was washed by himself" or "*Himself was washed by John" are impossible. It does not seem to be the case, however, that any ergative language systematically excludes coreferentiality of ergative and absolutive NP's. Most, indeed, have overt processes of reflexivization that operate, as one would expect on the basis of accusative structures, to convert the O_t into a special form or verbal suffix under identity with S_t.

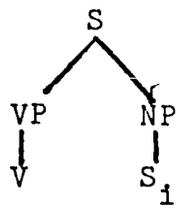
Finally, it is not really true that ergative languages have no passive rules. A language like Dyirbal does not count: we have argued above that Dyirbal underlying structures are indeed of the passive ergative type, so no obligatory passive rules are needed here. Such a language could, and does, possess an optional 'anti-passive' rule. But other languages with ergative morphology also have passive rules, despite having a syntax based on accusative structures. Georgian and most of the Mayan languages are of this type; Jacobsen (1969) argues that such a rule exists in Basque as well, though it does not affect case marking. At the very least, we must conclude that the hypothesis of a late obligatory passive rule cannot be generalized to account for ergative morphology in all languages, and, further, that there is no direct synchronic evidence for it even in one.

3.1.2 Case-marking Rules Subject to String Conditions

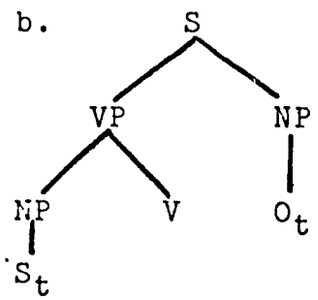
One fact which we have glossed over until now is the following: in languages which we know to be nominative-accusative, the categories of subject and object are defined by some combination of case, verb

agreement, and word order. In particular, there are languages in which subjects always precede the verb, and objects follow it. Among ergative languages, however, the device of word order is apparently never used. There are, that is, no ergative SVO languages. If ergativity were really a fact about the structure of phrase markers, even in surface structure, we should find some language with basic structures like those of (3.1):

(3.1) a.



b.



In such a language, the absolutive is the category of the NP which comes after the verb, while the ergative is the category of the NP which precedes the verb. Yet languages like this do not, as we say, exist. As a result, it is never the case that the verb intervenes between subject and object in an ergative language, and hence it <u>is</u> the case that subject and object are adjacent in underlying structure in all ergative languages.

This fact, combined with the fact noted above that virtually all pseudo-ergative languages (languages with ergative morphology and accusative syntax) are subject to extensive scrambling processes, gives us a hint as to what the case marking rule in question might be for. Recall that the structure of a case system, in morphological terms, is generally such that the absolutive in ergative systems, or the nominative in accusative systems is unmarked: either literally, in having no ending, or in terms of the structure of the paradigm. The ergative and the accusative, on the

other hand, are generally overtly marked. We might then suggest that at least some case marking rules have the function of allowing us to recover information about which of two NP's was originally first, when the two are adjacent and may have been interchanged by a scrambling rule or other reordering. Such a rule, whose function is to allow the recovery of information about the basic order of two items, could obviously function equally well by marking either one of them. If the rule says "Given two NP's in a row, put a special mark on the first", the result is an ergative language; if, on the other hand, it says "put a special mark on the second", the result is an accusative language. A similar interpretation can be given for verb agreement: such a rule could say either "make the verb agree with the first NP in the clause", or it could say "make the verb agree with the last NP in the clause". In the first case, we get accusative agreement; in the second case, ergative agreement. Such a conception, then, does not need any rules to perform radical rearrangements of structure prior to the operation of case marking; indeed, it denies that configurational position is the basis of case marking rules, and replaces this with simple conditions based on linear order. We will refer to such a basis for case marking rules (somewhat inaccurately) as 'string conditions'.

3.1.2.1 Qualifications on String Based Case Marking

The simple statement that 'given two NP's, do so and so', or 'pick the first NP in the sentence', obviously will not suffice. Most sentences contain many NP's, but most of these do not count. In particular, NP's in prepositional phrases or other adverbs do not affect case marking; NP's in subordinate structures such as

possessives or NP's in lower clauses do not affect case marking; and NP's which are predicate nominatives do not affect case marking rules. The same exclusions apply to verb agreement. These exclusions are, as far as we know, universal: that is, every language appears to disregard the presence of any NP's of these types in assigning case marking or verb agreement. Case marking and verb agreement rules, then, are subject to restrictions of a sort we saw in some languages for relativization rules, in part II of this work. In such languages, relativization cannot apply to (and ignore the presence of) NP's embedded in other structures, such as prepositional phrases, possessives, and lower clauses. Similarly, relativization rules (perhaps universally) cannot apply to predicate nominatives: thus, we do not get sentences like "*The sea captain that Harry is has no boat." Again, as was the case for relative clauses, NP's marked with an oblique case (i.e., one with substantial semantic content, such as dative, locative, instrumental, etc.) function in the same way as NP's in a PP: they are disregarded. The difference between the two types of process is this: while restrictions of this sort were optional, language-particular choices for relativization, it seems that all case marking and verb agreement rules in all languages are restricted in this way. Nevertheless, the situation in relativization supports the division of NP's into two classes in the required way.

3.1.2.2 Arguments for String Based Case Marking Rules

In order to make this account plausible, we must provide positive evidence that this is the sort of basis on which case marking rules operate. Since we are suggesting that case marking is a

process which applies when two NP's are adjacent, there are two sorts of evidence that could be imagined: first, we could look for cases in which some process applies to eliminate one of the NP's in underlying structure, and see if this inhibits case marking from applying. Secondly, we could look for other configurations in which two NP's are adjacent, and see whether case marking applies here also, as well as within the clause as a whole.

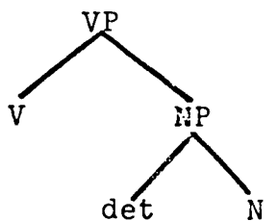
3.1.2.2.1 Arguments from Disappearing NP's

An argument of the first sort would have to take the following form, in an ergative language: we would have to find some process which eliminates O_t, and see if this has the effect of causing S_t to revert from ergative to absolutive. If we found such a process, but it did not have this effect, this would not constitute an argument against the conception of case marking we are discussing; for it could always be the case that the elimination of these objects took place after case marking had already applied. But if we find such a process which does have this effect, it would constitute a powerful argument for the proposed rule; for it is hard to see how a configurationally based theory of case marking could account for such facts. It would have to assume that every deletion of an object also involves the structural relocation of S_t into absolutive position, which is an unnecessary and unmotivated complication.

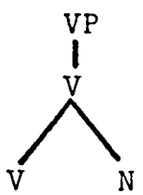
In fact, processes of this sort are quite common. The simplest case, in which objects of verbs like eat, smoke, etc., are simply deleted, has the effect of turning ergatives into absolutives in some languages (like Tsotsil) but not others (such as Basque). For the first class, we assume deletion precedes case marking; for the

second, that it follows it. This is perfectly reasonable; Perlmutter and Hankamer have both argued that the effects of deleted items typically persist until quite late in the grammar. Other processes are not so equivocal, however. Many ergative languages have processes of incorporation for objects which are indefinite or generic. By this process, an NP typically loses its determiner and becomes a constituent with the main verb. In some languages, this can apply not only to O_t, but also to S_i; in this case, we assume it is a rule which incorporates an indefinite or generic NP which is adjacent to the verb in linear order, without specifying its structural relation. The result, at any rate, is that the NP comes to be part of a subordinate structure: a configuration like (3.2a) becomes like (3.2b):

(3.2) a.



b.



In all cases we know of, the operation of this process of incorporation has the effect of giving the subject (S_t) of the (underlyingly transitive) sentence absolutive case marking rather than ergative. A partial list of such languages would include Tongan, Chukchee, Walbiri, Tsotsil, Tsimshian, and many others. A similar phenomenon is found in Eskimo. In this language, indefinite objects are put into the instrumental, thus becoming oblique. This also results in the reversion of 'relative' subjects to absolutive. All of these cases, then, constitute evidence for the string conditioned conception of case marking.

In the case of an accusative language, there is also an analog to this sort of fact that we could look for. We could look to see whether processes which delete subjects typically have the effect of causing accusative objects to become nominative. Now in fact many subject-deleting processes would not be expected to have this effect. A typical rule is Equi-NP deletion, which deletes the subjects of certain complements. Deletion of the subject, however, has the effect of causing the sentence node to disappear by Ross' tree-pruning convention, and hence the VP in question becomes part of the higher sentence. Now if the complement was in object position, this higher sentence will still have its subject, so the conditions for case marking to make the complement object accusative will still obtain. No such explanation is available for subject complements, but Postal has shown that the subjects of complements affected by Equi cannot in any event actually be deleted until very late in the derivation.

A better example for our purposes is the operation of imperative formation. This rule only affects main clauses, and hence the consequences of tree-pruning (whatever they may be in imperatives) can be ignored. Now in fact, there are several languages which display exactly the predicted facts. Uto-Aztecan languages, including Tübatulabal and Southern Paiute, display an accusative structure, but these languages have the peculiarity that the objects of imperatives are nominative, rather than accusative. Similarly, the two groups of languages in Australia that are accusative rather than ergative, typified by Lardil and Ngaluma, also have this property. In Europe, Finnish displays nominatives as the objects of imperatives, while objects are elsewhere genitive (the modern form of the

Finnish accusative). In Finnish, in fact, the process is more far-reaching: objects also revert to nominative in infinitives, which have lost their subjects, exactly if no other NP is present in the clause into which the infinitive is raised (by virtue of the clause being impersonal or imperative). Similar facts concerning the objects of impersonal infinitives are discussed for dialects of Old Russian by Timberlake: in these dialects (which do not, however, show nominative objects in imperatives), the object of an infinitive becomes nominative, rather than accusative, exactly if a) there is no other NP in the clause into which it is raised; and b) the NP is one which can distinguish nominative from accusative, but which does not undergo a morphological process typical of Slavic called 'animate accusative', which makes the accusative equal to the genitive under some circumstances. These facts require further reflection and investigation, but they all seem to provide confirmation for the notion of case-marking advocated here. In all of these cases, rules which delete one of a pair of NP's will have the effect of making inapplicable a rule that says 'put a special mark on the first (or second) of two NP's', but should not affect the operation of a case marking rule based simply on phrase marker structure.

3.1.2.2.2 Arguments from Other Cases of Two NP's

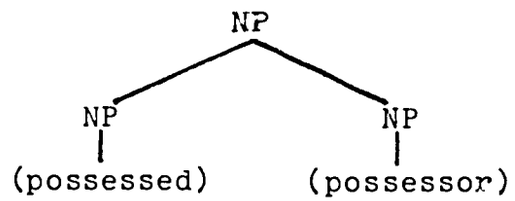
It has recently been suggested by Chomsky (1969) that the domain of application of syntactic rules may be not only the sentence, but also the NP. If this is true, we might look to see whether it is ever the case that a sequence of two NP's arises entirely within the NP: if so, we might expect a case marking rule

to apply there too. This is, in fact, the case, if we stretch somewhat the notion of NP. The best instances of non-subordinate NP's within another NP are, of course, possessives: even if these are, from the point of view of the sentence, embedded in a subordinate structure, from the point of view of the NP, they are not. Now it is well known that the mark of the ergative is frequently associated with a possessor NP, as well. We saw this above in Eskimo, for example. Similarly, in Mayan languages, the situation is as follows: these languages distinguish two sets of clitic proforms which function as agreement markers. One group, called 'set A', is found to correspond to S_i and to O_t. The other group, called 'set B', corresponds to S_t and to the possessor of another noun. Set B, then, functions as an ergative. The basic word order in these languages is VOS (a defense of this statement would take us much too far afield; this is, however, the surface word order at least in Tsotsil, and we maintain that it is also the underlying order in others). The set B pronoun associated with S_t is attached to the verb. The rule which does this, then, in our terms, says "attach a set B proform to the beginning of the sentence, which agrees in person and number with the second of two NP's (in basic order)". Within the NP, the possessor follows the possessed object, which is preceded by a set B pro-form agreeing with the possessor. We could state this as "attach a set B proform agreeing with the second of the two NP's to the beginning of the entire NP". Obviously, both of these rules fall under the single generalization "Within either an S or an NP, attach a set B proform to the beginning of the constituent which agrees in person and number with the second of two NP's found within the constituent". Further confirmation for

this analysis comes from the structure of prepositional phrases in Mayan. These have the form [Pro $_i$-prep NP_i]. Since the prepositions in question are mostly related transparently to nouns, this is simply another instance of the possessive construction.

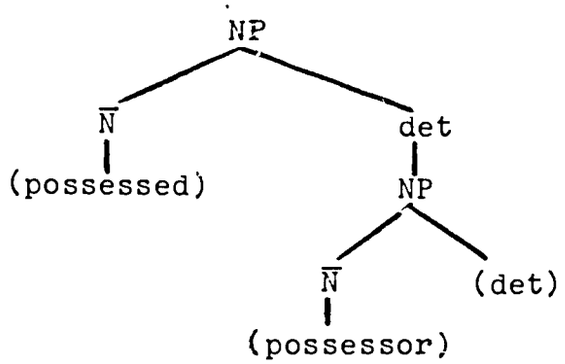
In order for this to work, it is necessary to make the possessed object fall under the definition of NP. There are two ways we could do this. First, we might simply say that the structure of the NP containing a possessor is as given in (3.3):

(3.3)



It is not generally the case, however, that the phrase representing the possessed object has the full structure of an NP. In particular, it cannot generally take determiners, including other possessors. To describe this structure, some investigators have recently posited a level of constituency within the NP which we can call $\overline{N}$, which consists of the head noun and all of its complements, but excludes its determiner (including possessives). On this analysis, the structure would be like (3.4):

(3.4)



In these terms there are no longer two NP's to deal with. We could, however, perfectly well change the statement of the case marking

process (and, for Mayan, the set B agreement process) to refer to two instances of $\bar{N}$, rather than of NP. We have no evidence for this, but it seems not implausible. The process in Eskimo is then the same: the relative case there says "within either an NP or an S, attach relative case to the first of two $\bar{N}$'s."

One of the ways in which languages can differ, of course, is in whether or not ergative marking is assigned to a possessor phrase. We might describe this by saying that languages can differ in whether their case marking rules refer to NP or to $\bar{N}$; or we might say that languages can differ in whether their case marking rules apply within the domain of NP, as well as of S. We have no evidence to choose between these alternatives. It is clear, however, that the fact that the string-condition rule of case marking can be extended easily to account for the fact that possessors are frequently marked in the same way as ergatives constitutes positive evidence for this conception of case marking rules.

3.2 Summary

We have seen above how the evidence concerning the low-level character of ergative morphology can be interpreted. We propose that ergativity is a result of a very low-level choice between possible case marking rules: these rules are restricted to marking with a special indicator either the first or the second of a sequence of adjacent NP's, subject to the limitations discussed above in section 3.1.2.1; the distinction between accusative languages and ergative languages is then simply the difference between marking the second and marking the first. Similar interpretations can be given for verb agreement rules, which we also consider are limited

by similar conditions. We have presented some evidence for the correctness of this conception of these rules, and in the process, suggested some of the consequences which may ensue in a particular language from having a case-marking rule of this form.

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(Note: As will be clear immediately, this is only a partial list of the works consulted in preparing this report. It contains items directly cited in the text, and a few important sources. Many other sources, and much of the secondary literature, are omitted.)

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