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INCORPORATION:

A THEORY OF GRAMMATICAL FUNCTION CHANGING

Vol. 1

by

Mark Cleland Baker

S.B., Massachusetts Institute of Technology
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SUBMITTED IN PARTIAL FULFILLMENT
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INCORPORATION.

A THEORY OF GRAMMATICAL FUNCTION CHANGING

by

MARK CLELAND BAKER

Submitted to the Department of Linguistics and Philosophy
on 19 July 1985, in partial fulfillment of the
requirements for the Degree of Doctor of Philosophy
in Linguistics

ABSTRACT

The nature of processes which seem to change the Grammatical Function (GF) structure of a clause is investigated. It is argued that these processes are not the result of explicit transformational or lexical rules in the grammar, as has previously been assumed. Rather, apparent changes in GFs are side-effects of the general process of movement ('Move Alpha') when it applies so as to take a word level category from its original phrase and adjoin it to a governing word level category This is termed 'Incorporation'. It is derived from the theory of government that the complements of the moved word are governed by the complex word formed by the Incorporation (the Government Transparency Corollary); this gives rise to the appearance of GF changing. Standard principles of syntax (the ECP) determine when this movement is possible, thereby explaining the range of GF changing phenomena observed.

These basic notions are motivated and defined in Chapter 1.

In chapter 2, the notions are applied to the analysis of Noun Incorporation cross-linguistically. In this way, the syntax of this construction is explained including its distribution and the fact that it causes a Possessor Raising effect. Antipassives are shown to be a special case of Noun Incorporation as well. Moreover, Noun Incorporation facts reveal a way of generalizing the Case filter to the 'Condition of Morphological Identification '

In chapter 3, it is shown that the properties of morphological causative constructions can be explained in terms of 'Verb Incorporation', parallel to Noun Incorporation. Apparent differences between causatives in different languages are accounted for in terms of independent differences in the Case assigning properties of those languages. The Incorporation analysis is shown to be superior to alternatives in that it accounts for the way that wh-movement applies to causative constructions.

In chapter 4, it is shown that applicative constructions can likewise be accounted for in terms of 'Preposition Incorporation.' The analysis is extended to cover dative shift alternations, and the properties of all 'double object' constructions are explained in a unified way. Moreover, it is shown that the theory of Incorporation correctly captures the behavior of the various imaginable combinations of applicatives, causatives, and Noun Incorporations.

Chapter 5 shows that the passive is to be assimilated into this framework by analyzing it as involving the incorporation of the verb into the INFL node, which contains the passive morpheme. This explains 'implicit argument' effects, and why passive obeys the '1-Advancement Exclusiveness Law'. Typological differences in passive constructions are related to similar differences in Noun Incorporation. The ways in which passive can interact with other Incorporation processes is also discussed.

It is argued that these analyses imply that a level of underlying syntactic structure must exist, which represents the semantic relationships among phrases in a 'pure way' (the 'Uniformity of Theta Assignment Hypothesis'). Moreover, it is shown that Morphology is a grammatical system which determines the shape of words in the same way whether they are formed in the lexicon or in the syntax by Incorporation. In this way, the strong relationship between morphological forms and syntactic structures is accounted for.

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I have looked through my footnotes and credit lines and notice a pattern: the stronger the impact of the person on this work the less his or her name appears in these places. Doubtless this is because a deep and widespread debt can never be localized in a single place Nevertheless, that is a rather cold sort of complement, so here I will spend a few paragraphs trying to represent things somewhat more aright.

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He will be the sure foundation for your times;
A rich store of salvation, and wisdom, and knowledge;
The fear of the Lord is the key to this treasure.

- Isaiah 33:6

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Chapter 1

INCORPORATION THEORY

The thesis of this work is that is that all Grammatical Function changing rules such as passive, causative, and applicative can be eliminated from grammar. In fact, their effects can be derived entirely from an independently known (though less familiar) process of grammar: namely Incorporation, the process by which one semantically indepedent word comes to be found 'inside' another word. This in turn is no more than the result of standard movement rules applying to words rather than to entire phrases. Grammatical Function changing, in turn, is a side effect of this primary movement. In this way, a natural explanation of the curious properties of Grammatical Function changing phenomena will be found, and deep symmetries will be uncovered. Toward this end this first chapter is organized in the following way. Section 1.1 describes why Grammatical Function changing is important and in need of deeper linguistic explanation than it has received so far. Section 1.2 introduces the notion of Incorporation, and shows how it has the right properties to provide such an explanation. Section 1.3 sets the theoretical background by introducing the Government-Binding theory. Finally, section 1.4 articulates the consequences of this theoretical framework for X-o movement, showing in a preliminary way how this device does indeed reduce Grammatical Function changing to Incorporation.

1.1 The Nature of Grammatical Function Changing

1.1.1 Introduction: GFs and the Association of Form and Meaning

The most fact about human language is that it relates meaning and form. It is this basic property that allows language to be used in verbal communication, in the recording and preserving of knowledge, in the construction of thought patterns, and so on. In short, it is this basic property which makes language a central part of human experience. Moreover, accounting for the nature of the particular associations between meaning and form which make up human language turns out not to be simple task, but one of great intellectual interest. This work seeks to explicate the nature of one of the most interesting and problematic wrinkles in what might otherwise be a simple and obvious type of association: namely the existence of Grammatical Function changing phenomena.

To set the stage for discussion of grammatical function changing phenomena and their significance, and to introduce some basic concepts, I begin with elementary remarks about the general nature of the association between form and meaning that is characteristic of human language. The basic building blocks of this association are--perhaps--simple enough from a linguistic point of view: they are idiosyncratic, and must be learned one by one, through direct exposure. Thus, a speaker of English must learn that a phonetic utterance type that can be 'orthographized' as Linda refers to a particular animate (probably human and female) individual; Rover refers to another animate (probably canine) individual. Meanwhile,

phonetic utterance types like sniffed are associated with an action type rather than an individual, normally one involving the nose, which animate individuals with the proper anatomical equipment can perform. Other languages stipulate completely different associations between similar classes of things.

This type of unanalyzed idiosyncratic associatiation is no more than the beginning of what there is to be say about how human languages associate form and meaning, however. Thus, atomic referring expressions such as those in those mentioned can productively and spontaneously be combined into more complex structures which express relationships among the things referred to by the atomic units, and which refer to more complex and varied things than do the units themselves, such as complex events and properties. At this level, associations between form and meaning cannot be arbitrary, idiosyncratic and individually learned; rather there must be a system--a grammar, if you will. In this sense, language is compositional. In fact, different languages have different systems for doing this, roughly covering the range of reasonable possiblities. English, for example, allows the atomic units mentioned above to combine into the following form which has nontrivial internal structure:

(1) Rover sniffed Linda.

This form then is associated with meaning which expresses relationships among the things signified by the individual parts of the form. Thus, sentence (1) not only mentions a dog, a female human being, and a sniffing action; it also states that it is the dog whose nose is involved in the sniffing, and it is the female human who is contacted by the nose, rather than the other way around. This is signified by the relationships among

the corresponding words: specifically, the fact that Rover precedes the verb that names the type of action, while Linda immediately follows the same verb. Thus, when these linear order relationships are switched, the meaning switches correspondingly, even though the same atomic units are involved:

(2) Linda sniffed Rover.

This time, it is the female human's nose makes contact with the canine. Furthermore, some arrangements of the atoms correspond to no meaning at all, but rather are ill-formed with respect to the language in question:

(3) *Rover Linda licked. (with unmarked intonation)

Indeed, these types of relationships generalize across items in apparently systematic ways. Thus English has the following structures corresponding to (1)-(3), but with the word bit substituted for the word licked:

(4) a. Rover bit Linda.
    b. Linda bit Rover.
    c. *Rover Linda bit.

In (4a), it is the dog's teeth that make contact with the female human, just as in (1) it is the dog's nose that makes contact. Similarly, in (4b) it is the female human's teeth that make contact with the canine whereas (4c), like (3) is not paired with a meaning in the language. This can be repeated with many verbs and many nominals in English. Thus, we begin to see how a language can contain a system to compositionally relate form and meaning in a very simple and intuitive way. Other languages may have other systems. Thus, in Japanese (1) and (2) are improper word orders, not

associated with a meaning by the languages, whereas the normal word order of a sentence equivalent to (1) in English would be that of (3):[1]

(5) Linda ga okasi o taberu.
Linda-nom cake-acc eat
'Linda eats cake.'

In English the 'receiver' of the action is generally represented as the phrase immediately following the verb, whereas in Japanese it is generally represented as a phrase preceding the verb. In fact, in some languages relative word order, so crucial to the pairing of form and meaning in English, is not part of this system at all. Thus, in Basque, changing the word order relationships among the words of a simple sentence has no effect on the (truth-conditional) meaning:

(6) a. Linda-k Rover ikusi du.
Linda-erg Rover(abs) see aux/3sS/3sO
'Linda sees Rover.'

b. Rover Linda-k ikusi du.
'Linda sees Rover.'

c. Rover ikusi du Linda-k.
'Linda sees Rover.'

Instead of using word order to signal meaning relationships among the referents of the parts, Basque uses word <u>shape</u>: the special ending (<u>-(e)k</u>) is attached to the nominal phrase which is the actor of the action type named by the verb, and a distinct one (null) is attached to receiver of the action. Furthermore, the form of the auxiliary verb changes when the actor and receiver change. The first type of relationship is (of course) a (morphological) case relationship, the second a (morphological) agreement relationship. Thus, in Basque, one can change only morphological word endings and thereby change in the meaning relationships or derive a form

which is associated with no meaning at all:

(7) a. Linda Rover-ek ikusi du.
Linda(abs) Rover-erg see aux/3sS/3sO
'Rover saw Linda.'

b. *Linda-k Rover-ek ikusi du.
Linda-erg Rover-erg see aux/3sS/3sO

Thus we see something of the way that languages vary in how semantic relationships are represented in form, together with the deeper theme that each language has a consistent system for this representation.

These pieces are standardly put together in something like the following way. Universal Grammar--the linguistic knowledge that a human infant has independently of experience which allows him to learn a specific language in spite of a striking lack of training or evidence--divides up the set of possible semantic relationships which a thing can have with respect to an action or state into linguistically significant classes, such as the 'agent' (=actor) and 'patient' (=receiver) assumed in the discussion above. Following the terminology of Chomsky (1981), I will call these classes of semantic relationships 'thematic roles', or 'theta roles'. 'Things' of a given type are canonically associated with linguistic phrases of a given type (e.g. Noun Phrases for concrete objects), while action and state types are canonically associated with linguistic phrases of another type (e.g. verbs for physical, voluntary actions) (cf. Grimshaw (1979), Pesetsky (1982)). We say that in a given linguistic form one phrase 'bears a thematic role' of another, or that the second 'assigns a thematic role' to the first, if the language associates that linguistic form with a meaning in which the 'thing' corresponding to the first phrase stands in a (semantic) relationship to the action or state corresponding to the second

which is a member of the class of relationships mentioned by the particular thematic role name. Thus, the NP Rover in (1) bears the agent theta role of the verb sniffed, while this verb assigns a patient role to the NP Linda in the same sentence. Then, as we have seen, languages systematically represent phrases which bear specific thematic roles with respect to others in specific ways, involving some combination of the following possibilities: having adjacency hold between the two phrases in question; having one phrase precede the other; having the receiver of the theta role appear with characteristic morphological marking (i.e. case); having the assigner of the theta role appear with characteristic morphological marking (i.e. agreement); and perhaps forming a phonological/intonational grouping including the two phrases. Languages differ as to which of these formal techniques are used to represent which thematic role relationships, but all seem to involve systematic ways of doing this.

At this point, the term 'grammatical function' comes up. It has been shown from a number of viewpoints that there are important generalizations to be captured in which, for example, the phrases Linda in (2), Linga ga in (5), and Linda-k in (6) all behave similarly with respect to certain linguistic processes, such as playing a distinguished role in raising in control (equi NP deletion), and in determining the antecedents of lexical anaphors and pronouns. This is true in spite of striking differences in the ways this designated NP is represented in different languages (cf. Perlmutter and Postal 1977, Bresnan 1982a, Marantz 1984, and many others). Thus, following a tradition in both traditional and generative linguistics, we say that these NPs all have the grammatical function (GF, also called grammatical relations (GRs)) of subject with respect to the clause they appear in (and with respect to the main predicator of that clause). For

similar kinds of reasons, Rover in (2), okasi o in (5), and Rover in (6) are singled out as bearing the grammatical function of (direct) object with respect to their clause. Other commonly referred to grammatical functions include indirect object, object of a preposition, and a variety of obliques (the relation between a PP (or its object) to the clause). Now the exact role of the notion of grammatical functions in linguistic theory is currently a subject of controversy that divides theoretical frameworks at a fundamental level. Perhaps the standard view, clearly articulated from different perspectives in Lexical-Functional Grammar (Bresnan 1982b) and Relational Grammar (e.g. Perlmutter 1983) and by Marantz (1984), is that grammatical functions 'stand between' the semantic/thematic relationships among phrases and 'surface' form relationships among those phrases. This is to be understood in the following sense: languages state generalizations about how thematic relationships correspond to grammatical functions, and they state generalizations about how grammatical functions correspond to surface form relationships, but they do not (maybe) state generalizations directly in terms of how thematic role relationships correspond to surface form relationships. On this general picture, most seem to agree. Differences arise as to whether grammatical functions can then in fact be reduced to--or at least be fundamentally connected with--the thematic role assignment factors (cf. Fillmore 1968), to 'surface' form factors (in specific senses, Chomsky (1965), (1985)), to a combination of the two (Williams (1984), Keenan (1976), in completely different senses), or to neither (Permutter (1983), Bresnan (1982b), Marantz (1984), again in different senses). For discussion of the various views on Grammatical Functions in the literature, see Marantz (1984, chapters 1 and 8). I will for the most part try to use the terms for the most part in more or less

their standard intuitive senses as a link with the various literatures (see 1.3.3 for the technical view I assume). In this context, I simply point out that Grammatical Functions, whatever their ultimate theoretical status, clearly play a key role in the association between meaning and form which we have been discussing, if anything like the standard view is correct.

Already interesting and far from trivial issues about the nature of the parts of the association between form and meaning that is human language can be framed, many of which are unresolved. Nevertheless, there is an intuitive clarity to the system, and a sense of why each link is present. For example, one linguisitically relevant collection of semantic relationships is something like 'actor' or 'agent', and this theta role canonically maps into the subject grammatical function, at least in English. Finally, the subject can be primarily encoded by almost way simple available in a spoken accoustical medium, as demonstrated above from English, Japanese and Basque. Each of these facets, while not a priori necessary, make intuitive sense given language's fundamental nature as a system for pairing meaning with accoustical form.

Into this highly natural conceptual framework, human language introduces a surprising wrinkle: it allows for the possibility of what I will call Grammatical Function changing phenomena. Consider the following pair of English sentences:

(8) a. Rover bit Linda.

b. Linda was bitten by Rover.

These two sentences, while not identical for all purposes, express in a fundamental way the same meaning relationships between the things referred

to by their parts: in both, it is the dog's teeth that make contact with part of the female human. In other words, the same phrases have the same thematic/semantic relationships in the two structures. I will refer to such sentence pairs as thematic paraphrases. Still, there is an equally important difference between the two: they express these thematic relationships in very different surface forms. Thus, the agent is in the preverbal position characteristic of English subjects in (8a), while it is postverbal and adjacent to a preposition in (8b), as characteristic of English obliques. Meanwhile, the patient follows the verb and is adjacent to it as objects are in (8a), while it is preverbal like a subject in (8b). Here we see a breakdown in the uniformity of the system of pairing form and meaning in English. Moreover, this is not an isolated case, but a systematic and productive aspect of English. To localize the issue, we say descriptively that language allows grammatical functions to change under certain circumstances. Thus, to relate the very similar structures in (8) to one another, we say that the subject NP in (8a) 'becomes' (more abstractly, 'corresponds to') an oblique in (8b), while the object NP 'becomes' the subject. Describing the relationship between the two sentences in (8) at the level of grammatical functions allows us to recognize when a similar process is at work in languages which encode subjects and objects in a very different way, as pointed out by Perlmutter and Postal (1977) and others.[2] Thus, the following sentences of Japanese are also thematic paraphrases:

(9) a. Sensei wa John o sikar-ta.
teacher-top John-acc scold-past
'The teacher scolded John.'

b. John wa sensei ni sikar-are-ta.
John-top teacher-dat scold-pass-past

'John was scolded by the teacher.'

Moreover, when one takes into consideration the ways in which Japanese associates form with the subject, object, and oblique grammatical functions, one realizes that (9a) corresponds to (9b) in the same way that (8a) corresponds to (8b) at that level: again subject corresponds to oblique, and object to subject. Thus, there seems to provision for the changing of grammatical functions in some sense in Universal Grammar.

This ability to change GFs is not a priori necessary to human language as a system of pairing form and meaning in the way that other aspects of the association which we have discussed are. In fact, the formal languages of mathematics, logic, and computers, which also pair form and meaning, get along better without them. Thus, a language for arithmatic may have either one of the following expressions associated with a meaning, but characteristically they will not have both:

(10) a. (2 + 2) x 3 (standard notation)

b. x + 2 2 3 (Polish notation)

A language which contained both of these expressions and associated them with the same meaning would be analogous to a human language that includes GF changing phenomena like the passive; yet formal languages characteristically lack such alternations: they are superfluous. Similarly, it may be that some human languages completely lack such phenomena; this is said to be at least close to true of Walpiri for example. However, the superfluousness of GF-changing phenomena from an a priori perspective only serves to highlight its interest from the perspective of linguistics and ultimately that of the study of the human mind, since this property of human language must therefore have deep roots

in the nature of human cognition, instead of in simple necessity. The nature and properties of this GF changing phenomena will be the primary object of inquiry in this study.

In fact, I will claim that GF changing does not exist in a fundamental sense, but rather is a side effect of Incorporating one word into another. This type of change will then affect the government relationships between lexical items, giving the appearance of GF changing in the traditional sense. In this way, I hope to provide explanatory account of four fundamental issues related to such processes. These are outlined in the subsections that follow.

1.1.2 On the class of GF changing processes

When one looks at the class of grammatical function changing processes which appear in languages of the world, one finds that not every permutation of GFs is permitted. On the contrary, the class of possible processes is rather restricted. A representative list of productive 'changes' which are attested in a variety of languages and which are evidenced by a variety of distinct considerations[3] includes the following:

Passive. This most well-known GF changing process can be characterized descriptively in the following terms (cf. Perlmutter and Postal (1977), Bresnan (1982c); see also Baker (1985) for an attempt at a relatively neutral description):

(11) subject ---> oblique (or null); object ---> subject

This process has already been exemplified in English and Japanese in (8)

and (9) above.

Antipassive. This (less well-known) permutation of GFs has been described as:

(12) object ---> oblique (or null)

This process is illustrated by a thematic paraphrase pair from Greenlandic Eskimo (Woodbury 1977):

(13) a. Anut-ip miirqa-t paar-ai.
man-erg child-pl(abs) care-indic/3sS/3pO
'The man takes care of the children.'

b. Anut-O miirqu-nik paar-si-vuq.
man(abs) children inst care-Apass-indic/3sS
'The man takes care of the children.'

In (13a) the receiver of the action 'children' appears in absolutive case and triggers verbal agreement, as is standard for direct objects in Eskimo; in (13b) the same thematic argument of the verb appears in an oblique case and fails to trigger agreement on the verb, as is standard for oblique phrases.[4]

Applicatives. This is a cover term for a set of closely related GF permutations, which can be characterized by the following schema:

(14)
oblique indirect object null	---> object; object --->	'2nd object' (or oblique)

Here individual languages have different particular instances of this schema, some allowing locative obliques to become objects, others allowing benefactive obliques or instrumental obliques to become objects, still

others allowing combinations of these. An example of applicatives is the following thematic paraphrase sentence pair from the Bantu language Kinyarwanda (Kimenyi 1980):

(15) a. Umwaana y-a-taa-ye igitabo mu maazi.
child SP-past-throw-asp book in water
'The child has thrown the book into the water.'

b. Umwaana y-a-taa-ye-mo amaazi igitabo.
child SP-past-throw-asp-appl water book
'The child has thrown the book into the water.'

In (15a) the locative 'water' appears as the object of a preposition, and the entire PP is an oblique phrase with respect to the verb; in (15b) the corresponding nominal appears without a preposition and in the immediate postverbal position characteristic of direct objects in the language. In fact a similar alternation is seen in the famous 'dative shift' structures of English, with the sole difference being that the English process is lexically idiosyncratic:

(16) a. I gave my favorite cookie to Joey.

b. I gave Joey my favorite cookie.

Causative. This too is a cover term for a class of processes of which morphological causativization is only the best known example. Descriptively speaking, these processes share the common property that they introduce a new thematic argument as a subject, and that the original subject takes on some other GF. As to what it becomes, there seem to be three major subcases, depending to some degree on whether there is a thematic object present. The cases are:

(17) a. null ---> subject; subject ---> null
(i.e. Add a new subject and delete the old one)

b. null ---> subject;
If there is an object, subject ---> oblique
else, subject ---> object

c. null ---> subject; subject ---> object
If there is an object, object ---> '2nd object' (or oblique)

(For the contrast between (17a) and (17b), see Grimshaw and Mester (1985); For the constrast between (17b) and (17c) see Gibson (1980), Baker (1985), etc.) A simple example of causativization, neutral between (17b) and (17c) is the following from the Bantu language Chichewa:

(18) a. Mtsuko u-na-gw-a.
waterpot SP-past-fall-asp
'The waterpot fell.'

b. Mtsikana a-na-u-gw-ets-a mtsuko.
girl SP-past-OP-fall-cause-asp waterpot
'The girl made the waterpot fall.'

In both (18a) and (18b) it is the water vessel that plummets to the ground; yet in (18a) 'waterpot' is the subject of the sentence, appearing preverbally and triggering subject agreement, whereas in (18b) 'waterpot' is the object, appearing immediately after the verb and triggering object agreement.

Possessor Raising. In this final process, a phrase which bears a grammatical function with respect to one phrase comes to bear one with respect to a larger phrase:

(19) possessor of object --> object; object ---> '2nd object'

An illustration of this comes again from thematic paraphrases in Chichewa:

(20) a. Fisi a-na-dy-a nsomba za kalulu.
hyena SP-past-eat-asp fish of hare
'The hyena ate the hare's fish.'

b. Fisi a-na-dy-er-a kalulu nsomba.
hyena SP-past-eat-appl-asp hare fish
'The hyena ate the hare's fish.'

In (20a) 'hare', the possessor of the patient, appears in a postnominal PP; in (20b) it appears without a preposition and immediately after the verb as an object.

Doubtless, there are many variations on these processes and combinations of them discussed in the literature. Nevertheless, based in part on their crosslinguistic frequency and the consistency of their properties, I will take the set described above to make up the core of the grammatical function changing processes that are allowed by Universal Grammar. Assuming this to be justified, an important question arises: why exactly this particular set? Why not more, or fewer, or different permutations? Some generalizations can be factored out relatively easily, as is done, for example, in the laws of Relational Grammar (e.g. Perlmutter and Postal 1983). Nevertheless, it remains clear that some permutations which can be stated equally easily at a descriptive level simply do not exist. As a concrete example, it seems that no language has a GF changing phenomenon that would be described as:

(21) subject ---> object; object ---> subject

Moreover, there are curious asymmetries among the particular GFs as to their role in the battery of GF changing processes. For example, if one replaced the word 'object' for 'subject' and 'subject' for 'object' in the schemas above, one would derive an apparently impossible system for human language, although one just as reasonable a priori. These observations

call for explanation. Thus, I will seek an analysis which answers the question 'Why this set of apparent GF permutations?' The answer will follow from the answer to the question 'What is the set of possible X-o movements?' when GF changing is properly related to Incorporation.

1.1.3 On GF changing process and morphology

The second fundamental issue concerning the changing of grammatical functions involves the nature of the interaction between morphology and syntax which is associated with such processes. Up to this point, I have emphasized only the syntactic aspect of such processes, i.e. that they modify the relationships among phrases in systematic ways. However, pretheoretically, there are morphological changes which are just as characteristic of this class of processes as these syntactic changes are. In particular, notice that in each of the examples of GF changing given above, the verb form in the second member of the thematic paraphrase pair is related to the verb form in the first member by (productive) affixation. This is seen systematically in (22):

(22) a. Passive: bit -- was bitten (English (8))
sikar-ta -- sikar-are-ta (Japanese (9))

b. Antipassive: paar-ai -- paar-si-vuq (Greenlandic (13))

c. Applicative: y-a-taa-ye -- y-a-taa-ye-mo (Kinyarwanda (15))

d. Causative: u-na-gw-a -- a-na-gw-ets-a (Chichewa (18))

e. Poss Raising: a-na-dy-a -- a-na-dy-er-a (Chichewa (20))

There are perhaps some exceptions,[5] but it is clearly the normal case for grammatical function changing processes to be associated with morphological

changes across languages. Furthermore, notice that it is invariably the sentence in which the expression of thematic roles is not consistent with the canonical patterns of the language which has the morphologically more complex verb form in all of these examples. I will name affixes like those underlined in (22) after the name of the GF changing process they appear with; -si is an antipassive morpheme of Greenlandic Eskimo, -ets is the causative morpheme of Chichewa, and so on. This situation then raises the following question: what is the nature of the theoretical relationship between the morphological aspects of these processes and their syntactic aspects, given that the two seem necessarily associated?

This question can be sharpened immediately. Intuitively, it seems reasonable that since language's function is to systematically relate form to meaning and since GF changing processes threaten to disrupt this association, an overt signal that GF changing has taken place must be included as a cue to ensure that the associations are recoverable. This intuition is represented in a long tradition in generative grammar which captures GF changing phenomena by writing explicit rules which accomplish (or sanction) the observed switches. Such rules may be characterized in different ways (see 2.1), but they all tend include the addition of the characteristic morpheme as a 'side effect' of the change. This morpheme may then register to a language perceiver that a particular GF change has taken place, so that he or she can undo the change. This functional explanation of the association of morphology with GF changing may have a grain of truth to it, but it does not scratch the surface as a full explanation. For example, question movement or relativization can appear to disrupt the canonical surface pattern of a sentence just as much as passivization and antipassivization do; nevertheless the latter are

characteristically associated with GF related morphology on the verb, while the former usually are not. Moreover, the functional explanation fails to account for the fact that the characteristic morphology almost invariably appears on the verb of the sentence, rather than anywhere else in the clause (cf. Williams in preparation). Hence active-passive pairs like (23) are abundant in languages of the world, whereas pairs like (24) are unheard of:

(23) a. Rover bit Linda.

b. Linda 'bit-pass' by Rover.

(24) a. Rover bit Linda.

b. Linda-pass bit by Rover.

A priori, registering a change in GFs on the phrase that becomes the subject should be just as felicitous as registering it on the pivotal verb if the only need is to represent systematically that a change has in fact occurred. Yet languages do not use the second system. Therefore something deeper than this simple functional pressure must underlie these relations between morphology and syntax.

A further strong condition of adequacy on any theory of the relationship between morphology and syntax in this domain comes from Baker (1985). In many languages, more than one GF changing process can take place in a single structure. Baker (1985) observes that when this happens, the morphological changes show evidence of having taken place in exactly the same order as their associated syntactic changes. This is expressed in the following descriptive generalization which is in some way a consequence of Universal Grammar:

(25) The Mirror Principle (Baker 1985 (4))

Morphological derivations must directly reflect syntactic derivations (and vice versa).

I illustrate the content of this principle briefly with the simplest nontrivial example. Suppose that a language has both applicative and passive processes, and the two are occur such that applicative feeds passive. When this happens, first the applicative process will make an (initially) oblique argument of the verb into the object of the verb, while the original object ceases to be one (cf. (14)). Then, when passive applies after this, it will crucially make the originally oblique phrase rather than the initial, thematic direct object into the (final) subject of the clause. The Mirror Principle states that when the syntactic processes unambiguously apply in this order, the morphology associated with the applicative will necessarily be done to the verb before the morphology associated with the passive. In an agglutinative language with clear prefixes or suffixes, this will normally mean that the applicative affix will appear closer to the verb root than the passive affix will.[7] The truth of this claim can be seen in Chichewa (as well as in many other languages):

(26) a. Nkhosa zi-na-tsekul-a chitseko ndi mpiringidzo.
sheep SP-past-open-asp door with crowbar
'The sheep opened the door with a crowbar.'

b. Nkhosa zi-na-tsekul-ir-a mpiringidzo chitseko.
sheep SP-past-open-appl-asp crowbar door
'The sheep opened the door with a crowbar.'

c. Chitseko chi-na-tsekul-idw-a ndi mpiringidzo ndi nkhosa.
door SP-past-open-pass-asp with crowbar by sheep
'The door was opened with a crowbar by the sheep.'

(26a) is a sentence which respects the canonical mapping from thematic

roles to grammatical functions to surface forms in Chichewa; (26b) is a thematic paraphrase in which applicative has taken place; (26c) a thematic paraphrase involving passive. These sentences establish that the Chichewa applicatives and passives correspond to the characterizations of these processes given above, as well as the fact that their characteristic morphemes are -ir and -idw respectively. The following are potential forms in which both applicative and passive have applied such that the former feeds the latter. Note that it is the instrumental phrase and not the patient that appears as the subject:

(27) a. Mpiringidzo u-na-tsekul-ir-idw-a chitseko ndi nkhosa.
crowbar SP-past-open-appl-pass-asp door by sheep
'The crowbar was used by the sheep to open the door.'

b. *Mpiringidzo u-na-tsekul-idw-ir-a chitseko ndi nkhosa.
crowbar SP-past-open-pass-appl-asp door by sheep
'The crowbar was used by the sheep to open the door.'

The structure is fine when the applicative affix appears inside of the passive affix (27a), but ungrammatical when the morphological order is the reverse of the syntactic order, with the passive affix appearing inside the applicative affix (27b). This is in accordance with the Mirror Principle. Baker (1985) goes on to show that the Mirror Principle is valid over a wide range of languages and construction types. He goes on to observe that the Mirror Principle must take the form of a highly unnatural additional stipulation in a number of influential theories of Grammatical Function changing phenomena. In particular, frameworks such as Relational Grammar and (some versions of) Government-Binding Theory which dissociate the morphology and the syntax of GF changing in a rather strong way are inadequate in this respect (see Baker (1985) for details). Rather, the fact that the Mirror Principle is a true generalization strongly suggests

that the morphology and the syntax of GF changing are two aspects of what is fundamentally a single process. Then it follows necessarily that (say) applicative precedes passive both morphologically and syntactically; the contrary would be equivalent to saying that one thing both (properly) precedes and follows the other, a contradiction. Thus, these results imply that the correct theory of GF changing phenomena must unite their morphological and syntactic aspects in a deep way, in order to explain the Mirror Principle.

I will therefore develop an analysis of GF changing phenomena that explains why it is associated with morphology in the close way that it is. In fact, it is exactly this interrelationship that points to a connection between GF changing phenomena and Incorporation. In particular, this approach will explain why the Mirror Principle is true universally.

1.1.4 On GF changing processes and language variation

The third fundamental issue concerning GF changing phenomena is that of language variation: in particular, what its theoretical roots are and how it comes to be. This is intimately related to issues of learnablity, since any aspect of a particular language which differs from other languages must be acquired by the child learning that language in some way. Language variation in GF changing phenomena shows up in several ways. First, one language may have a particular GF changing process which another lacks entirely. Thus, English includes passive and applicative (assuming that dative shift is related to this), but it lacks any kind of antipassive or morphological causative. Chamorro (Austronesian, Gibson 1980), in contrast, includes all four types of processes. Thus, we must ask about

the theoretical status of the claim that Chamorro includes antipassive, while English lacks it. Second, detailed study makes it apparent that what seems to be fundamentally the same GF changing process can be a part of two different languages and yet have somewhat different properties in each language. This is perhaps most clear in the case of morphological causatives, where some languages employ the process schematized in (17b), while others use the one schematized in (17c). The two are more alike than they are different, but they are clearly not identical. Similar issues arise with the other GF changing processes as well. How this consistency yet variation can be theoretically unpacked beyond an intuitive level is thus in need of explication. Finally, it is possible to observe implicational relationships among the first two types of differences. Thus, we will find that languages which have (17c) type morphological causatives also overwhelmingly tend to be languages which have applicatives of some sort, whereas languages which have (17b) type morphological causatives tend almost as strongly to lack any kind of applicative construction. Given our descriptive characterizations of the GF changing processes, it is not at all obvious why generalizations such as this should be true. The proper theory of GF changing should provide the framework for an natural account of all these facets of the issue of language variation, which is at the same time explanatory in the sense that it makes such variation learnable by a child given the boundary conditions set by impoverished stimulus. Providing such a theory is the third basic goal of this work.

1.1.5 On GF changing composition

The fourth and final basic issue regarding GF changing processes is what happens when more than one of them happens in a single clause. In section 1.1.2, these processes are written in the form of simple functions from one collection of GF assignments to another. Sometimes these 'functions' can be composed (in the mathematical sense) to yield a new structure which is exactly the result that one would expect if one function applied first and then the second function applied to its output. (27a) is an example of this, where the first GF change to apply is applicative and the second is passive. On the other hand, there are cases in which the functional composition of two GF changes would be perfectly possible a priori, but the resulting sentences are simply not grammatical. For example, in Chichewa it is impossible to apply passive first and then applicative, even though the opposite combination is fine:

(28) *Chitseko chi-na-tsekul-idw-ir-a mpiringidzo ndi nkhosa.
door SP-past-open-pass-appl-asp crowbar by sheep
'The door was opened with a crowbar by the sheep.'

First the passive would make the thematic object 'door' into subject, and the thematic subject into an oblique. Next, the applicative would make an oblique instrumental 'crowbar' phrase into a new object. Each of these changes should be acceptable in its own right in Chichewa, neverthelese the result is bad. Thus, something additional must be added to the simple functional descriptions of the GF changing processes to account for the ungrammaticality of sentences like (28). Stipulating that the passive is crucially ordered after the applicative in Chichewa is theoretically unattractive, and it fails to account for the fact that the applicatives of passives are ungrammatical in all languages (cf. Baker 1985). Hence it must be something about the nature of the processes themselves that prevent

them from combining in this particular way. There are other examples of a similar kind. Explaining when it is possible to compose to GF changing processes and when it is not is the final empirical goal of this work. Indeed, the fact that GF changing processes cannot always compose strongly suggests that they are not simple functions in the way that our terminology so far has it, and points toward a new analysis in terms of Incorporation.

1.2 The Notion of Incorporation

The traditional approach to Grammatical Function changing processes from the beginning of generative linguistics up to the present has been to have explicit rules in the grammar which somehow map one set of assignments of GFs to phrases onto another. In the early days, these rules were considered to be transformational rules which map phrase markers onto other phrase markers (see Chomsky (1957), (1975)). Thus, the statement of the passive transformation was something like (cf. Chomsky 1957 (34)):

(29) If NP1-(AUX)-V-NP2 is a grammatical structure, then so is:
NP2-(AUX)+be+en-V-by+NP1.

In fact, the existence of GF changing phenomena was considered to be a primary argument for the existence of transformational rules in the first place, since then the notion of 'thematic paraphrase' could be systematically accounted for (cf. Chomsky 1975:452f). In more recent developments, the idea that GF changing is done by transformational rules defined over phrase structures has been abandoned in a number of ways. Thus, partly searching for crosslinguistic generality, Perlmutter and

Postal (1977) recast GF changing phenomena in terms of rules over direct representations of grammatical function (relations) relationships, called 'relational networks'. For them, passive takes the following form (cf. their (37)):

(30) 'Passive is the rule which sanctions the subjecthood in an immediately successive stratum [i.e. level of description] for a nominal which is an object of a clause at a stratum in which some nominal is a subject.'

In other words, passive is directly responsible for an object becoming a subject. Furthermore, in Perlmutter and Postal's framework, if one nominal takes on a given GF with respect to a given clause, any other nominal that bore that GF with respect to that clause must lose it (the 'Stratal Uniqueness Law', together with the 'Chomeur Condition'). Thus, the stipulation that the object becomes the subject in a clause that has a subject has the immediate consequence that the initial subject becomes an oblique nominal. In another approach, Bresnan (1982c) moves in the direction of accounting for GF changing phenomena at the level of the lexicon, by writing lexical redundancy rules which map the subcategorization and selection requirements of lexical items onto different configurations of subcategorization and selectional restrictions. In effect, this comes to ordering GF changing rules before lexical combination (cf. Baker 1985 for discussion). In Bresnan's terminology, passive then takes the following form (her (1) and (2)):

(31) a. The Rule: (SUBJECT) ---> null or (OBLIQUE)
(OBJECT) ---> (SUBJECT)

b. The Effect: word((SUBJ), (OBJ)) ---> word'((OBL), (SUBJ))
agent theme agent theme

Forms such as (31b) then determine what phrase structure configurations the words can be inserted into.

Notice that all of these approaches have a common core: they all claim that language includes an explicit rule of passivization, which is crucially distinct from (say) the rule of antipassivization. This holds true in spite of their differences as to the level of description and the vocabulary over which this rule is stated. Furthermore, each rule explicitly stipulates, in some terminology appropriate to the conception of GFs in that framework, that the object becomes the subject and the subject becomes an oblique (or is deleted). The other GF changing process types characterized in section 1.1 are translated into explicit rules according to the nature of each framework in a similar way. Moreover, the passive example is in this respect representative not only of how the frameworks described here handle GF changing phenomena, but also of how most frameworks handle them.[8] Rules of this type 'get the job done' in a certain sense; they do characterize the alternations observed in natural languages. Nevertheless, they lack more than a relatively superficial degree of explanatory depth, especially with respect to issues such as those posed in the previous section. The problem is largely inherent in the notion of explicit rules themselves, since anytime one writes an explicit rule, one automatically raises questions such as 'why this particular rule, as opposed to some other written in the same vocabulary?' or 'how could a child learning the language acquire the particular aspects of this rule?' and so on. If this is all there is to Grammatical Function changing phenomena, not much progress can be made on the issues I have raised.

In order to explain the aspects of GF-changing phenomena sketched in the previous section, I claim that a shift in persepective is needed, such that the traditional type of GF-changing rules do not exist at all. Instead, like Phrase Structure Rules in Chomsky (1981) and Stowell (1981), they are nothing more than an epiphenomenon of deeper principles of human language. Of course, it is clear that something goes on in grammatical function changing phenomena; the generalizations captured in GF changing rules of various sorts are after all true. I will claim that at the heart of all apparent GF changing processes is the process of movement of a lexical category--which I will call X-o movement. In section 1.1.3, I observed that GF changing processes are uniformly associated with characteristic morphology appearing on the pivotal verb. Suppose that the characteristic morpheme is in fact generated as an independent lexical item in its own right at underlying syntactic structure, and then undergoes movement in the syntax, leaving its base position and combining with the verb. This movement will then automatically change the government relations in the structure, which gives the primary effect of apparent GF changing. All the other aspects of the syntax will follow from general principles. This perspective allows the GF changing processes to be seen in a very different light.

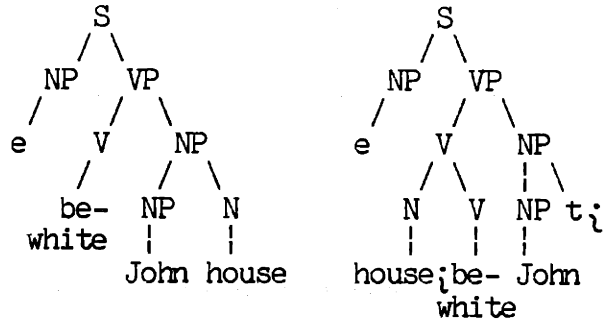
If this approach is correct, it would come to relating GF changing phenomena to another type of linguistic construction independently known from the literature: namely the process of Noun Incorporation (see Mithun 1984). This process can be illustrated by the following set of thematic paraphrases from Mohawk (Iroquoian, Postal (1962)):

(32) a. ka-rakv ne sawatis hrao-nuhs-a?.
3N-be-white John 3M-house-suf
'John's house is white.'

b. hrao-nuhs-rakv ne sawatis.
3M-house-be-white John
'John's house is white.'

Here (32a) has independent verb root -rakv 'be white' and noun root -nuhs- 'house'; whereas the thematic paraphrase (32b) combines the two into a larger verb form. Baker (1985) argues that the pair can be related by assuming that they have parallel underlying structures, but that in (32b) the head noun of the direct object moves in the syntax to combine with the governing verb. Thus, it is associated with the following structures:[9]

(33)



Then to say that GF changing phenomena involve moving one lexical item into another in the syntax comes to identifying GF changing phenomena with this noun incorporation process. Indication that it is in fact correct to the two theoretically comes from the fact that a kind of possessor raising takes place between (32a) and (32b): note that the (object) agreement on the verb switches from neuter agreement with the thematic argument of the verb in (32a) to masculine agreement with the thematic possessor of that argument in (32b). In this particular way, the possessor comes to act like an object of the verb, presumably as a result of the incorporation itself.

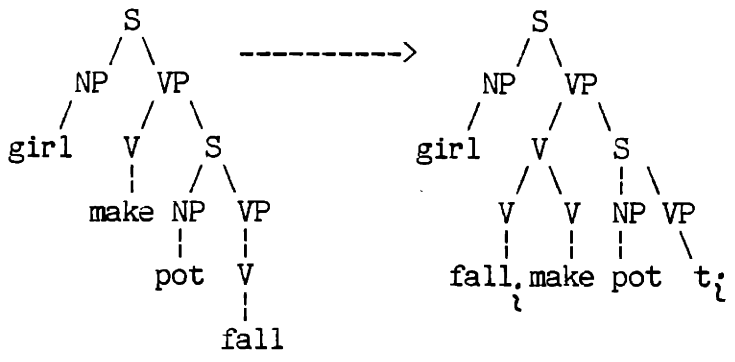
We now begin to see how the traditional GF changing processes of section 1.1.2 can be made to fit into this framework. Thus, reconsider causativization in Chichewa (Bantu). Morphological causatives in Chichewa in fact have thematic paraphrases with a full biclausal structure:

(34) a. mtsikana a-na-chit-its-a kuti mtsuko u-na-gw-e.
girl do-cause that waterpot fall
'The girl made the waterpot fall.'

b. mtsikana a-na-gw-ets-a mtsuko. (=18b)
girl fall-cause waterpot
'The girl made the waterpot fall.'

The important thing to notice about (34a) and (34b) is not only that they are thematic paraphrases, but that they also (apart from syncategormatic morphemes) contain exactly the same lexical stems. (The e/i alternation in the form of the causative morpheme is due to a general rule of vowel harmony.) The key difference between the two sentences is that -gw- 'fall' and -its- 'cause' appear as distinct morphologically distinct verbs in (31a), whereas -gw- appears in the position of -its- and morphologically combines with it in (34b). Thus, it is natural to relate these two sentences by assigning them parallel underlying syntactic structures, and deriving (34b) by moving the verb -gw- 'fall':

(35)



These structures are almost exactly parallel to those in (33), except that

this time it is a verb that moves, rather than a noun. In this way, an 'Incorporation' analysis for the class of causative processes is motivated.

Next, reconsider the example of the applicative given in (15) above, from Kinyarwanda:

(36) a. Umwaana y-a-taa-ye igitabo mu maazi.
child SP-past-throw-asp book in water
'The child has thrown the book into the water.'

b. Umwaana y-a-taa-ye-mo amaazi igitabo.
child SP-past-throw-asp-in water book
'The child has thrown the book into the water.'

These thematic paraphrases can be seen to be related in a similar way to that in which (34a) and (34b) are: (36a) contains a verb root and a preposition that are morphologically independent, while (33b) lacks an overt preposition but adds a related affix onto the verb. If we identify the applicative affix in (36b) with the preposition in (36a), we can relate the two sentences by assigning them parallel underlying syntactic structures, and then deriving (33b) by moving the preposition from its base position onto the verb. This motivates a 'Preposition Incorporation' analysis for the class of applicative constructions.

In this way, we begin to see how the general process of movement of an X-o category from an independent base structure position to combine with another X-o category in the syntax can form the heart of an account of GF changing processes. In the chapters that follow, it will be seen that the other GF changing processes--passive, antipassive, and possessor raising--are properly analyzed as subcases of Noun Incorporation, thus bringing them into the fold as well. Suggested by the original Noun

Incorporation example, I will refer to this particular type of movement with the technical term Incorporation. The notion that essentially all apparent GF changing phenomena can be explained without explicit rules in terms of Incorporation plus independently motivated syntactic principles is the central idea of this work.

This proposal naturally finds its place as part of a more general shift in linguistics--and in particular in the Extended Standard Theory and its successor Government-Binding Theory--away from positing specific and explicit rules, in an effort to acheive explanatory depth and to account for that fact that language can be learned. Instead, linguistics has focused more and more on the discovery of certain very general constraints each of which in part determines the nature of a wide variety of superficially very different processes. Thus, to give a few examples, Ross (1967) observed that a wide variety of transformational processes such as question movement, relativization, and topicalization seemed to obey identical conditions (his 'island' conditions), and proposed that these conditions should be factored out of the statement of the transformational rules themselves and studied in their own right. Chomsky (1977) made a further move, claiming that processes such as question movement, relativization, and topicalization (in English) are in fact not independent transformational rules at all, but rather specific instances of a more general transformation 'move-wh', with apparent differences being consequences of independent conditions. In another domain, Chomsky (1981) and Stowell (1981) show that explicit phrase structure rules of the familiar type seen in Chomsky (1965) are nearly or completely redundant and should be eliminated from the grammar in favor of specifications of the subcategorization/selection properties of individual lexical items together

with certain very general constraints of Universal Grammar and particular languages (namely the X'-convention and Case Theory; perhaps Theta role assignment also plays a role--see Koopman (1983), Travis (1984)). Thus, while the generalizations about word order and phrasal groupings traditionally captured by Phrase Structure Rules are true, the Phrase Structure Rules themselves appear to be no more than epiphenomenal consequences of other things. In this example, the shift in perspective reaches its natural limit, and the entire burden of linguistic explanation falls on the interplay of general conditions, rather than on the existance of explicit rules in the grammar. My claim about GF changing processes is parallel: they are all simply reflections of X-o movement, as it is restricted by other conditions of grammar.

Finally, one can already see how this idea is the right kind to properly explain the properties of these processes as sketched in section 1.1. First, a glance at (33) and (35) shows that incorporation simultaneously has two types of consequences in a linguistic structure: it both creates a complex category of the X-o level, and creates a syntactic link between two positions in the phrase marker. The first of these is a morphological change, the second a syntactic change. Thus, Incorporation gives the right foundation for answering the question of how and why GF changing processes fundamentally link the two (section 1.1.3). Second, the concept of movement of XP type phrases (e.g. NP, PP, etc.) is a familiar (if controversial) one, whose linguistic nature and properties are fairly well defined in Chomsky (1981) (for example). Assuming that X-o movement can be naturally assimilated to the more the familiar XP movement, general constraints on the latter will also be constraints on the former. One can then appeal to these independently motivated constraints (notably the ECP) in order to

limit the class of possible Incorporations. This in turn will limit the class of possible GF changing processes in an explanatory way (section 1.1.2). Next, on this view the weight of determining how GF changing processes function falls on a system of independent principles and constraints. Thus, when languages vary in the precise form of these constraints, this variation will be reflected in apparent variation in the behavior of the GF changing processes themselves. In this way, highly particular aspects of how GF changing takes place in a given language can be related to more general distinctive properties of that language (section 1.1.4). Finally, note that the derived structures in (33) and (35) are <u>not</u> identical to the surface structures of simple transitive sentences, due to the traces left by the X-o movement. This makes it likely that these structures will not be subject to other processes in exactly the same way that simpler structures are. This provides a basis for explaining the successes and failures of composing more than one GF changing process (section 1.1.5). I conclude that the program of explaining GF changing processes in terms of Incorporation is a highly promising one. Whether it can be proven to be satisfactory in detail is, of course, quite a different matter--and one which the remainder of this work will explore.

1.3 The General Theoretical Framework

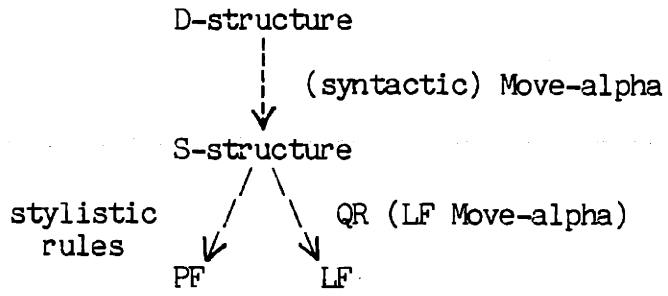
It is futile to claim that the effects of GF changing phenomena can be derived from Incorporation as governed by independent principles of grammar unless one has fairly detailed and specific theoretical framework in mind. The framework which I will adopt is the Government-Binding Theory (GB), as

it has been developed by Chomsky (1981, 1982, 1984) and others. This theory cannot be adequately introduced in a handful of pages; nevertheless, I will present an overview of its basic structure, so that the specific notions of Incorporation Theory can be properly located within it. I hope that this overview will aid in making the chapters that follow more readily accessible to those who have minimal familiarity with the system, and that it will aid in clarifying the exact form of the concepts which I assume for those who have maximal familiarity with the system.

1.3.1 The system of levels and rules

Government-Binding theory typically includes the following levels of representation and processes relating them:

(37)



Formally, each of these levels (except perhaps PF) is a phrase marker, normally represented as a tree or a labeled bracketing. D-structure ('deep' or underlying structure) is a formal syntactic level of representation at which the thematic relations among items and phrases are directly represented. LF (logical form) is the level at which the language faculty is assumed to interface with the conceptual faculties of the brain; here the scope of quantifiers and operators of various kinds is directly represented, in addition to the thematic relations among items. PF

(phonological form) is the level at which the language faculty interfaces with perceptual and motor faculties; here the phonological shapes and groupings of items are directly represented. Finally, S-structure is the level which is not directly interpreted, but which must be properly related to all of the other three structures simultaneously. S-structure is related to D-structure in that it is derived from it by successive applications of the generalized movement transformation 'Move Alpha', where 'alpha' equals some category, the features of which vary somewhat from language to language. A basic tenet of the current work is that 'alpha' can include categories of minimal bar level as well as of maximal bar level. LF is related to S-structure primarily by 'QR' (quantifier rule), which is 'Move alpha' in a different guise. It effects are invisible because of its separation from PF. Finally, the syntactic levels of description of a given sentence are only properly related to one another if they jointly satisfy a fundamental principle of GB theory: the Projection Principle. Intuitively, this principle states that representations at each syntactic level (LF, D- and S-structure) are projected from the lexicon in that they represent the lexical selection properties of items categorially (cf. Chomsky 1981:29). This principle of course presuppose the existence of a lexicon, which lists the idiosyncratic properties of lexical items, and in particular what thematic relations they may have with other phrases (i.e. what phrases they subcategorize and assign theta roles to). The Projection Principle has the important consequence that categories moved by 'Move Alpha' will (generally) leave phonetically null copies, traces behind them to preserve the representation of these selectional properties. A moved category and its trace are related to one another by a particular type of coindexing, identification indexing. Taken together they

constitute a more abstract unit called a chain. This study will be primarily concerned with D- and S-structures and the mapping between them; the Projection Principle will play an important role.

1.3.2 The system of constraints

This is only the beginning of the theory, however. As discussed in the previous section, the systems of principles and constraints are at least as crucial to GB theory as the levels of representation and rule types are. These principles are generally broken down by Chomsky (e.g. (1982)) and others into subsytems. I will introduce each in turn.

X-bar Theory

This subtheory constrains the set of phrase markers allowed, and it holds fundamentally at D-structure. Although the details will not be particularly essential, I will assume the X-bar theory of Chomsky (1985) for concreteness. Here the basic lexical categories are Noun, Verb, Adjective, and Preposition (more generally 'adposition' or particle). Higher level, phrasal categories are projections of these lexical category, according to the following schemata:

(38) a. X' = X XP*

b. XP = X' XP*

where 'X' ranges over the category types and order is subject to cross-linguistic variation. XPs on the right hand of (38a) are called complements; XPs on the right hand of (38b) specifiers. With regard to the

structure of clauses, I will assume that the nonlexical categories of complementizer and INFL are also heads that form projections in accordance with (38) (see section 3.3.2), although this further structure will sometimes be ignored.

X-bar theory defines the notion 'maximal projection' (XP), which is then used to define a fundamental structural relationship of linguistic theory, c-command (cf. Aoun and Sportiche (1983)):

(39) A c-commands B iff A does not include B and for every maximal projection C, if C includes A then C includes B.

This notion, or some version of it, is used by other subsystems of grammar.

Theta Theory

This subtheory is concerned with how semantic/thematic dependencies are represented in grammar. Ultimately, it is this theory that divides the possible semantic dependencies into linguistically significant classes--called theta roles--and characterizes how each theta role is normally represented in linguistic structure, although this is not a very developed aspect of the theory. Theta roles may be 'assigned' by a lexical head (see section 1) to a complement of that head as defined by X'-theory, or they may be assigned compositionally by the head and its complements to a subject position (specifier of INFL' or specifier of N); the former are called internal arguments, the latter external arguments (cf. Williams (1981)). I will assume that the class of theta roles includes at least

'agent', 'patient'/'theme', 'goal', 'instrument', 'benefactive', 'location', 'direction', and 'possessor' in something like their usual senses (cf. Fillmore (1968), Gruber (1965), Jackendoff (1972). Furthermore, I will assume without argument that (at least at D-structure) all languages canonically assign the agent theta role to an external argument, and the patient/theme theta roles to an internal argument, although this is controversial (cf. Marantz (1984) and section 6.1). Following Stowell (1981), I will represent the theta assignment relation between two items by (Theta) coindexing them.

The fundamental principle of Theta theory is the Theta Criterion, a biuniqueness condition on theta role assignment, which can be stated as (cf. Chomsky 1982):

(40) Every term of LF that requires a theta role (each argument) is associated with one and only one position to which theta roles are assigned, and each theta role determined by the lexical properties of a head is uniquely associated with one and only one argument.

Here theta roles are taken fundamentally as being assigned from a specified position to a specified position, and both arguments and theta assigners are associated with the key positions either by actually occupying them, or--given the existance of 'Move Alpha'--by being the antecedent of a trace that occupies them. In other words, the Theta Criterion holds of chains.

Predication Theory

This subtheory, possibly related to Theta theory, has as its fundamental

principle that predicates must be associated with a maximal projection (usually called its 'subject', where the term is used in a somewhat different sense than we have used so far), where a predicate can be taken to be any maximal projection which does not itself receive a theta role (cf. Williams 1980, Rothstein 1983). The predicate and its subject must mutually c-command each other. Given that VP is always a predicate, this condition has as a special case the consequence that clauses must have subjects (cf. the 'extended' part of the Extended Projection Principle (Chomsky 1981)).

Government Theory

This subtheory defines a notion which is central to the theory as a whole, the relation of government, which is essentially a strong locality condition on various structures:

(41) A governs B if and only if A c-commands B and there is no category C such that C is a barrier between A and B (cf. Chomsky 1985).

The proper notion of barrier in this basic definition will be discussed in detail in section 1.4.3. I assume without argument that at D-structure all languages contain a VP node which is a maximal projection, so that the V will fail to c-command and hence to govern the subject (specifier of INFL') of its clause, although various things can happen in the course of the derivation to change this state of affairs.

This subtheory also contains the Empty Category Principle (ECP), a

condition on the traces left by 'Move Alpha' (and perhaps other categories) that must be satisfied at LF:

(42) a. Traces must be properly governed.

b. A properly governs B if and only if A governs B, and A and B are coindexed.

where the notion 'coindexed' in (40b) apparently includes both Theta indexing and the indentification indexing introduced by 'Move Alpha' (cf. Chomsky 1981, Stowell 1981, Kayne 1983).[10] Both government and the ECP will play a central role in this work.

Case Theory

This subtheory has to do with the assignment of (abstract) Case to categories. Certain lexical items--notably transitive verbs, prepositions, and tensed INFLs--are lexically specified as being Case assigners. They then assign their Case to a category (usually an NP) provided that they govern that category. This relationship between categories I will represent with yet a third kind of coindexing, Case indexing (cf. Chomsky 1985). Case comes in various types (structural, inherent, semantic), and what categories assign can assign what types of Case under what more specific conditions is an important source of crosslinguistic variation, as we shall see (cf. Kayne (1983), Stowell (1981), Chomsky (1984)).

It is usually necessary for an NP to receive Case in some way (the Case Filter of Chomsky (1980), Rouveret and Vergnaud (1980)) because of the following Visibility condition on LF (cf. Chomsky 1981, 1984, who follows

Aoun):

(43) An NP position which is the head of a chain (i.e. the last position of a moved category) can only bear a theta index if it bears a Case index.

Since an NP must normally be Theta indexed by the Theta Criterion, it must also be Case indexed.

It has been suggested that the Visibility condition be extended in various ways. First, it seems that subjects of predicates must receive Case at LF, even when they are expletive and need no theta index. Second, Fabb (1984) proposes that theta role assigners must be made visible in a similar way as theta role receivers are by (43). I will adopt this suggestion for verbs, and assume that INFL in ordinary clauses must assign a kind of (verbal) Case to the (head of the) VP in order for the V to be theta indexed with its arguments. Finally, in section 2.3.2 I will propose that (43) needs to be modified, in particular by extending the notion of what counts as 'Case indexing'. The notions of this subtheory will also be crucial for the analyses that follow.

Bounding Theory

This subtheory relates to locality conditions; in particular, the Subjacency Condition that limits how far 'Move Alpha' can take a category in one step (Chomsky 1973). In essence, Subjacency states that a phrase cannot be moved out of more than one category of a certain type (a bounding category). Exactly what counts as a bounding category is yet another locus

of language variation (Rizzi 1982). This subtheory turns out to be quite peripheral to the concerns of this work, except in section 3.4, where it is used to get evidence as to the true nature of Incorporation structures. There I will assume the Subjacency theory in Chomsky (1985) for concreteness.

Binding Theory

This subtheory is concerned with the relations of anaphors and pronominals--phonologically overt and otherwise--to their antecedents. Here the basic notions are the Binding Conditions, which specify that anaphors (e.g. reflexives and reciprocals) must have an antecedent in a local domain, whereas pronominals must not have an antecedent in such a domain (Chomsky 1981, 1984). Here, the local domain, called a governing category, is determined as a category which contains both a subject (in the X' sense) and an item which governs the element in question. This subtheory also will not be central to our concerns, but will be used at various points to give evidence about the nature of Incorporation structures.

Control Theory

This is the subtheory--perhaps related to Binding Theory--which is concerned with the choice of antecedents for PRO, the null pronominal anaphor which appears as the embedded subject in 'control' or 'equi'

structures (see Manzini 1983)). This subtheory will come up only very briefly in chapter 5.

1.3.3 On Grammatical Functions in GB

The reader may have noticed that I have laid out the essential structure of GB with no direct mention of Grammatical Functions, in spite of the fact that they are presumably central to the focus of the current work. This is no accident, because GFs have a derivative rather than fundamental role in this theory. Normally, Chomsky defines the grammatical functions in terms of phrase structure configurations and the primitives of X-bar theory (Chomsky 1965, 1984). Thus, the 'subject of a clause is defined as the X' theory specifier of INFL or N (also written [NP, S] or [NP, NP]); the '(direct) object' of a clause is defined as the (NP) X' theory complement of an X-o (particularly V) category (also written [NP, VP], [NP, N'], etc.); and so on. However, in relating the literature on GF properties and GF changing that comes from other linguistic traditions to GB, there is an important point to be made. For concreteness, let us focus on the GF 'object'. Certainly, there is a core sense of this term in which all agree that (for example) the NP Linda in (44) is an object:

(44) Rover bit Linda.

Nevertheless, given the modular nature of the GB theory, NPs in other structures typically may form a natural class with this NP with respect to some of the subtheories but not with respect to others. Thus, consider the following range of structures:

(45) a. Rover [VP swam the river] (after biting Linda).

b. Linda$_i$ [VP seems [S ti to have been scarred by the bite]]

c. Linda [VP considers [S Rover to be dangerous]]

d. Linda and Rover would [VP prefer [S' (for) each other to die]]

e. Linda [VP hopes [S' that Rover will never return]]

Which of the underlined NPs is an object of the matrix verb, in the sense that it behaves like the object of (44)? The answer is clearly that it depends on what subtheory one has in mind when one phrases the question. Thus, the NP in (45a) is identical to that of (44) with respect to X' theory (and most of the others), but perhaps not with respect to Theta theory--if it is linguistically significant that it receives a path thematic role rather than a patient one. The NP in (45b), on the other hand, is not similar to that of (44) with respect to X' theory (or Theta theory), but it is similar with respect to Government Theory, in that both are governed by the matrix verb. The NP in (45c) is similar to that in (45b), except that it is also identical to that of (44) with respect to Case theory; both are Case indexed (and with structural Case) by the matrix verb. The NP in (45d) is not an X' theory sister to the matrix verb, nor a thematic dependent of the verb, nor governed by the verb, nor Case marked by the verb; yet it is still in a natural class with that of (44) with respect to Binding theory--both have the entire matrix clause as their governing category. Finally, the NP in (45e) is not parallel to that of (44) with respect to any subtheory. On the other hand, it is parallel to each of the underlined NPs in (45b-e) with respect to various of the subtheories, showing that the notion of 'subject' is just as slippery as that of 'object'. Thus, we see that given the structure of GB theory it is very natural to make the traditional GF names into relational terms, which

have meaning with respect to a given subtheory. Hence, when a researcher gives evidence that a particular nominal is an object, we must ask which subtheory this evidence is evidence with respect to. Moreover, the framework predicts that NPs will show hybrid properties; for example, they may act as an object with respect to some subtheories and as a subject with respect to others. We will see that this is an important explanatory virtue of this system. In what follows, I will use the terms 'subject', 'object' etc. somewhat ambiguously when it is clear from the context which subtheories are relevant. Two senses which are particularly important for our purposes are the X-bar notion of the GFs and the Government/Case notion of the GFs. To distinguish them, I will sometimes use terms like 'structural object' to refer to the former and the term '(NP with (surface)) object properties' to refer to the latter.

1.4 Toward a Formal Theory of Incorporation

In the previous section, I laid out the basic context of Government-Binding framework in a general way. However, certain aspects of this framework need clarification and refinement so that they can be applied to the notion of Incorporation as defined in section 1.2 in a clear and contentful way. The task of this section will be to do this, and to explore what consequences the grammar has for X-o movement. Some of the concepts will be applied immediately to our basic examples, but the focus is to derive tools for future chapters.

1.4.1 D-Structure and the Uniformity of Theta Assignment

The first concept to be clarified is that of D-structure. Chomsky (1981:43f) characterizes D-structure as 'a pure representation of thematically relevent Grammatical Functions (=GF-theta).' Essentially what this means is that at D-structure all phrases must appear in the position to which the theta role they receive is assigned. As an example, whose luggage and Jerry's luggage must both appear in the position marked 'x' in the D-structures of (46a) and (46b) respectively, because they bear the same theta role as the phrase Jerry's luggage in (46c):

(46) a. Whose luggage did the airline [lose x]?

b. Jerry's luggage was [lost x] by the airline.

c. The airline [lost Jerry's luggage].

There have been attempts to essentially eliminate D-structure from the grammar as a level with independent status in terms of (say) chain formation algorithms (e.g. Rizzi 1983b, Sportiche 1983, Brody to appear); nevertheless, there is a growing weight of evidence that D-structure must be taken to exist (see Burzio to appear, Chomsky 1984, Baker 1985). If this is correct, its character as a linguistic representation of thematic structure must be taken seriously. In this light, I propose a strengthening of the notion of D-structure such that it is a direct representation of thematic structure in general. Toward this end, I take something like the following to be a guiding principle of grammar which characterizes the level of D-structure:

(47) The Uniformity of Theta Assignment Hypothesis (UTAH)

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

This hypothesis clearly includes the idea that D-structure directly represents 'GF-theta' as a special case, but is somewhat more general. In order to make this fully formal one would need a more exact theory of theta roles then we now possess;[12] hence I will leave it at a more intuitive level.

Even so, the UTAH can be seen to constrain linguistic analyses in meaningful ways. For example, it supports the so-called Unaccusative Hypothesis (Perlmutter 1978 Burzio 1981), according to which certain intransitive verbs with nonagentive subject NPs have that NP as a structural object at D-structure. This NP then becomes the subject at S-structure via 'Move Alpha'. Given such an analysis, sentences such as those in (48) have the D-structures given in (49):

(48) a. Julia melted the ice cream into mush.

b. The ice cream melted into mush.

(49) a. [S Julia [VP melted [the ice cream] into mush]]

b. [S e [VP melted [the ice cream] into mush]]

The D-structures in (49) are exactly those that the UTAH implies; the same thematic relationship holds between the ice cream and the melting action in both sentences in (48), and this is represented by having the same structural relationship hold between them at D-structure, as in (49). In fact, this analysis has been shown to the correct one for alternations such

as this by much evidence in Italian and many other languages (see references above, etc.). On the other hand, the UTAH is not consistant with the analysis of the dative shift construction put forth by Kayne (1983, chapter 7). On his analysis, the thematic paraphrases in (50) have the strongly nonparallel D-structures in (51):

(50) a. Brian gave a nickel to Sophia.

b. Brian gave Sophia a nickel.

(51) a. Brian [VP [V' gave a nickel] to Sophia]

b. Brian [VP gave [S Sophia a nickel]]

Sophia bears the goal role with respect to the verb in both sentences, yet this relationship is not represented in the same way in the D-structures (51a) and (51b). Thus, we see how the UTAH can be used to guide the construction of analyses--both by the linguist and by the child--in a nontrivial way.[13]

The UTAH has consequences for GF changing processes as well. Consider again the thematic paraphrases involving causatives in Chichewa (Bantu):

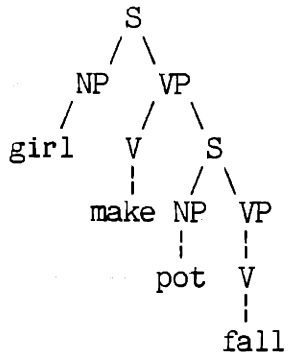
(52) a. mtsikana a-na-chit-its-a kuti mtsuko u-na-gw-e.
girl do-cause that waterpot fall
'The girl made the waterpot fall.'

b. mtsikana a-na-gw-ets-a mtsuko.
girl fall-cause waterpot
'The girl made the waterpot fall.'

In each of these sentences, mtsuko 'waterpot' seems to bear the same thematic relationship to the verbal root -gw- 'fall'; thus the UTAH can be interpreted as meaning that the same structural relationship should hold between these two items in the D-structures of both. This in turn implies

that the verb root must be an independent constituent in an embedded clause in the D-structure of (52b), just as in the D-structure of (52a):

(53)



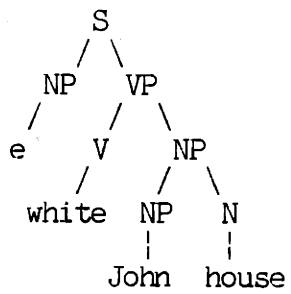
A similar conclusion follows in the case of Noun Incorporation thematic paraphrases such as our example from Mohawk (Postal 1962):

(54) a. ka-rakv ne sawatis hrao-nuhs-a?.
3N-be-white John 3M-house-suf
'John's house is white.'

b. hrao-nuhs-rakv ne sawatis.
3M-house-be-white John
'John's house is white.'

The nominal -nuhs- bears the same thematic relation to the stative verb -rakv in both sentences; therefore it must occur in the same D-structure configuration in both. Assuming that, as a stative predicate -rakv is unaccusative, this configuration must be:

(55)



More generally, whenever a part of a word shows syntactic signs of either assigning or receiving a thematic role in the same way that morphologically independent constituents do, the UTAH will claim that that part of the word appears in an independent structural position at D-structure, to represent that thematic relationship in the canonical way.[14] Thus, the Uniformity of Theta Assignment Hypothesis points away from a base generation analysis of causative, applicative, and noun incorporation structures, and provides theoretical motivation for an analysis of such processes in terms of syntactic X-o movement.

1.4.2 S-Structure and the Projection Principle

Given that the UTAH determines certain properties of the D-structure representations of 'GF-changed' sentences, the Projection Principle determines properties of their S-structure (and LF) representations. Chomsky (1981:38) states this fundamental principle of GB theory in the following way:

(56) (i) If B and A are immediate constituents of C at L-i, and C = A', then A theta marks B in C.

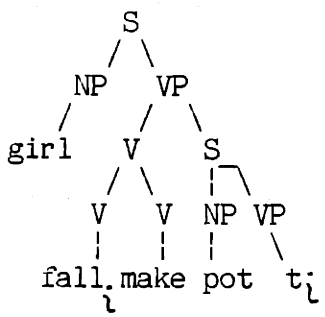
(ii) If A selects B in C as a lexical property, then A selects B in C at L-i.

(iii) If A selects B in C at L-i, then A selects B in C at L-j.

Part of the content of this principle (made explicit in (iii)) is that transformational processes can neither create nor destroy categorial structure which is relevant to the lexical properties of items, including the thematic relationships that they determine. There is, however, some

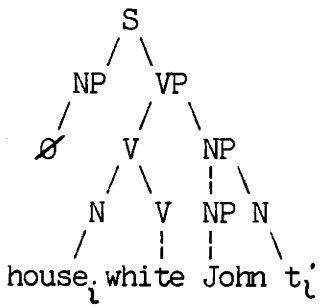
ambiguity as to what type of item is referred to by the variable 'A' in this principle. To take a particular example, in sentence (52b) above, the item(s) whose properties must be represented categorially at every level could (on the one hand) be taken to be both the root -gw- 'fall' and the affix -ets-, or (on the other hand) it could be taken to the combination of the two -gw-ets-. This ambiguitiy arises as long as all three are assumed to be listed in the lexicon. If the second interpretation is taken, (50b) presumably will have the structure of an ordinary transitive sentence at every syntactic level. However, the UTAH implies that this option is incorrect (in some cases) and that the two morphemes must be independent at D-structure. Then, the Projection Principle takes over, and determines that the lexically determined theta marking properties of each item must be categorially represented at every other level as well. Thus, in our example, the causative affix -ets- must take a clausal complement at S-structure (and LF) because it takes one at D-structure. Similarly, -gw- must (participate in) assigning an external theta role to a subject position, since it does so as a lexical property and at D-structure. In short, the Projection Principle implies that X-o movement preserve structure by leaving traces, just as XP movement must. Thus, the S-structure of (52b) must not be indentical to that of a simple transitive verb, but rather essentially:

(57)



By the same token, the S-structure of (54b) must be:

(58)



Similar consequences follow for any case of Incorporation where the UTAH requires that two items be separate at D-structure. Chomsky makes it clear in his discussion of (56) that 'B', the theta role receiver, must refer to a position rather than a category; due to 'Move Alpha', that position can be filled either by the selected category or its trace. Now we see that a similar remark must be made about 'A', the theta role assigner; it too must refer to a position which can be filled by either the selector or its trace. Notice that the surface type structures assigned to sentences like (52b) and (54b) are different from those assigned by virtually any other theory, even those which derive the sentences syntactically (e.g. 'Old Style' Transformational Grammar, Marantz (1984)) due to the presence of the null structure. The respecting of a strong Projection Principle is a distinctive characteristic of my theory.[15]

In closing, I point out that there is a creative tension between the Projection Principle and the Uniformity of Theta Assignment Hypothesis; together they constrain the theory and make it interesting. One consequence of the Projection Principle is that certain conceivable transformational processes (e.g. Raising to Object (Chomsky 1981)) are ruled out in principle; transformations cannot modify syntactic structure

beyond a well-defined point. However, it is possible to escape much of the empirical bite of the Projection Principle by claiming that structures such as causatives and applicatives are in fact base generated, with identical structures throughout the syntax. In the limit, this process would force all such grammatical relationships into the lexicon. There explanation of their properties would still be necessary at that level and nothing is gained. In effect, the Projection Principle is thereby emptied of explanatory content. The UTAH, on the other hand, leads away from base generation in many cases. Yet unless the power of the transformational component is limited by principles like the Projection Principle, it makes little difference what D-structure is assigned to a given form, because anything could happen on route to the interpreted levels of PF and LF. In this case, the UTAH would have little explanatory content. However, in a theory which contains both, each provides checks against the the undisciplined avoiding of the other. This is the kind of creative tension from which deep and true explanations can arise. Thus, a linguistic theory is stronger if it contains both in balance.

1.4.3 Movement, Government, and the ECP

Up to this point, I have developed D-structure in such a way that what constitutes a single morphologically complex unit on the surface may in fact be a combination of things which are independent constituents at D-structure for principled reasons. Furthermore, I have clarified S-structure and the Projection Principle so that it is clear what the representational consequences of such a situation will be at that level. The stage is thus set for giving analyses of linguistic phenomena in terms of syntactic Incorporation. The next step is to investigate the notion

that Incorporation is in fact the syntactic movement of an X-o level category. Within the GB framework, this is not a vague or meaningless claim. The term 'movement' here is properly interpreted as a technical term; it means that Incorporation is a subcase of the generalized transformation 'Move Alpha'--in particular, the subcase where the 'bar-level' feature of alpha is taken to be zero. This then makes the claim that significant generalizations are captured by saying that Incorporation is fundamentally the same process as more familiar and well studied instances of 'Move Alpha', such as NP-movement in raising, or wh-movement in question formation. Based on his study of these latter cases, Chomsky (1981:55ff) discovers the following properties of the 'Move-Alpha' relation as it holds between a trace and its c-commanding antecedent:

(59) (i) The trace is (properly) governed.
[i.e. it is subject to the ECP]

(ii) The antecedent of the trace is not in a theta-position.

(iii) The antecedent-trace relation satisfies the subjacency condition.

All of these properties are not true of other, superficially similar linguistic relationships, such as the construal relation that holds between PRO and its antecedent, as Chomsky shows. Thus, they can be taken as a valid characterization--perhaps in part a definition--of the movement relation. Hence, if Incorporation is in fact movement in the technical sense, we expect it to obey these three conditions.

Consider first property (59ii). For XP movement, this has the consequence that NPs can never move into an object position, and can only

move into the subject position when the VP assigns no theta role to that position, as in unaccusative verbs and raising verbs. In fact, this property does not need to be stipulated independently; it follows from the Theta Criterion (40), which implies a biunique relationship between theta roles assigned by items and phrases that need theta roles. If an NP moved from a position where a theta role is assigned to another such position, it would thereby be associated with two theta roles, in violation of this condition. Following Koopman's (1983) discussion of Verb movement, I observe that the movement of theta role assigners must obey the same constraint as the movement of theta role receivers in this regard: if a theta role assigner moved from a position where it assigns a theta role to one argument to a position where it assigns that theta role to another argument the biuniqueness between theta roles and arguments is again broken. This time, the other half of the Theta Criterion is violated. Thus, the notion 'theta-position' in (59ii) is to be interpreted--somewhat more broadly than Chomsky intended--as 'position from which a theta role is assigned' as well as 'position to which a theta role is assigned.' In other words, a theta-position is any position which is relevant to the establishment of thematic relationships. A glance at the putative Incorporation structures in (57) and (58) shows that they satisfy this property of movement; the antecedent of the trace is in a position which is (Chomsky) adjoined to a lexical item--surely not in general a position of either theta role assignment or reception. In fact, given that X'-theory holds at D-structure, adjoined positions in general will not exist at this level, where the set of thematically relevant positions is defined (cf. Jackendoff (1977), Stowell (1981)).

More interesting is the question of whether the Incorporation type X-o

movement must satisfy condition (59i): i.e. whether the trace that such a movement leaves is subject to the ECP. One may think of the ECP intuitively as a requirement that the position (and perhaps the content) of a phonetically null trace must be strictly locally identified, either by an item that theta marks it or by the antecedent itself. In fact, there seems to be a strict locality condition on Incorporation that comes to mind in this connection. Travis (1984:131) gives this condition shape in terms of the following constraint on what I have called incorporation structures (based on observations about Germanic Verb and INFL movement together with the ideas on Noun Incorporation in Baker (1984)):

(60) Head Movement Constraint (HMC)

> An X-o may only move into the Y-o which properly governs it.

Notice that each of the putative Incorporation cases introduced so far (section 1.2) obeys this condition: in (34b) a verb moves into the verb that governs it; in (36b) a preposition moves into the verb that governs it; in (32b) a noun does the same. I will put off the task of establishing that this is true in general, and for the time being will assume that the HMC is a descriptively correct generalization. Note, however, that as an independent principle of grammar, it is suspicious. In particular, it makes use of the notion 'proper government', which is the hallmark of the ECP. I will endeavor to show that the HMC can be derived from the ECP, and in fact it is simply the empirical evidence that traces of X-o movement are subject to this principle, just as all other traces of movement are. In order to do this, some particular assumptions are necessary.

Assume that the trace of an X-o known to exist by the Projection

Principle as discussed in section 1.4.2 must be properly governed. This means that it must be governed by an element which is either theta-indexed with it (i.e. a head) or by an element which is identification-indexed with it (i.e. an antecedent). Now suppose that X-o level categories are never theta marked by an argument taker; only the XP level categories which they head are. This makes sense from a number of perspectives. Formally, it is in a way implied by the combination of X' theory and Theta theory: by X' theory only XP level categories can be sisters of (complements of) a lexical head, and by Theta theory (direct) theta marking takes place under sisterhood. Thus, XPs are theta marked and not X-o's. From a semantic viewpoint, this also makes sense. To take a particular example, the linguistic relation of theta marking as it holds between a verb and a nominal phrase is supposed to correspond to a given semantic relationship that holds between the referent of the nominal expression and the action or state type named by the verb.[16] Now it is the category NP which is typically used to refer, and not the category N. Thus, it is reasonable to say that the V theta marks the NP but not the N. This can be illustrated with the following trivial example:

(61) I finally found [[someone] who really cares about me].

Here the point is obviously not that the speaker located anyone in general--the potential referent of the head N taken on its own--but rather a very particular person--the referent of the NP as a whole, including the restrictive relative. Thus, XPs can be theta marked but Xs cannot. Formally, this can be represented by saying that theta indexes are initially assigned to the XP node under sisterhood as above, and stipulating that theta indexes do <u>not</u> percolate to the head X-o of that XP,

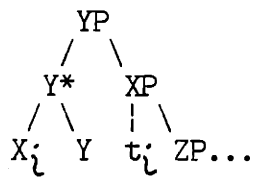
although other types of indexing do percolate. This has the implication that the trace of an X-o can never be properly governed by a lexical head since it will never bear a theta index. It then follows from the ECP that it must be governed by its antecedent. This consequence can be stated in the following form:

(62) An X-o must govern its trace. (<== ECP)

Given that X-o movement must leave a trace, (62) will be logically equivalent to (60) if it can be shown that an X-o will govern its former position if and only if it appears in a position where it is united with a Y-o which governs the XP that X headed at D-structure.

For an X-o (or any category) to govern its trace, it has to meet two conditions, in accordance with the definition of government given in (41). The first is that it must c-command its trace. Consider the abstract Incorporation structure given in (63):

(61)



The central idea of the c-command relation is that the first branching node of a particular type that dominates the c-commander must also dominate the node to be c-commanded (cf. Reinhart 1976). The question then is whether the zero level node Y* counts as a branching node of the relevant type for c-command: if it does, X will not c-command its trace; if it does not, it will. Clearly, we must assume that it does not in order to allow Incorporation structures at all. The intuitive idea is that branching

structure with in a X-o level item is simply not relevant with respect to syntactic relations such as c-command. This can be formally accomplished in a number of ways; perhaps the easiest is to assume that branching X-o structures are interpreted in accordance with the following convention:

(64) The indexes of the parts of an X-o category count as indexes of the X-o category itself.

This convention is essentially identical to that assumed by Borer (1983:35f) her analysis of clitics.[17] Given this, the identification index of X would be considered an index of Y* as well, and Y* certainly c-commands the trace of X. Thus, this requirement for government is satisfied in an incorporation structure. On this view, it is technically the complex category Y* = X+Y which will be the c-commander and proper governor of the trace, but crucially by virtue of the fact that it contains the antecedent. Thus, I will often speak as if it were the antecedent itself that governs the trace.

The second requirement that must be met in order for an X-o to govern its trace is the locality requirement proper: there must be no <u>barrier</u> category which intervenes between the two, where the notion of barrier is introduced by Chomsky (1985). Chomsky has the insight that what counts as barrier to government between two nodes must be made relative to those nodes themselves. Thus, consider the following structures:

(65) a. John decided [S' e [S PRO to [VP see the movie]]]

b. John preferred [S' for [S Mary to [VP see the movie]]]

c. How$_i$ did John want [S' t*$_i$ [S PRO to [VP fix the car t$_i$]]]

In (65a), decide must not govern the embedded subject position, since PRO can appear in this position. Therefore, either S' or S (or both) must be a barrier to government here. Nevertheless, S cannot be a barrier to government in (65b), because the complementizer for assigns Case to the subject and must therefore govern it across the S boundary. Furthermore, S' cannot be a barrier to government in (65c), because the wh-word how must properly govern its trace in COMP across this boundary, following Lasnik and Saito (1984). Therefore, neither S' nor S can be inherently a barrier to government; one of them must be a barrier in (63a) relative to the particular positions of the elements involved in some sense.

In this context, Chomsky considers two distinct notions of what creates a barrier for government, both of which have roots in the literature. One is that maximal projections of certain kinds block government (cf. Aoun and Sportiche 1983); Chomsky proposes that in fact it is maximal projections which are not theta marked arguments that create barriers. The second idea is a 'minimality' one, in which government between two nodes A and B is blocked if there is another lexical head C which is closer to B than A is (cf. Rouveret and Vergnaud (1980), Reuland (1983)). On this idea, we might say that a category which contains such a C and B but not A is causes a barrier between A and B. Chomsky explores both notions to some degree, but does not ultimate chose between them. In fact, if the Head Movement Constraint is correct and is a reflection of the ECP, we have evidence that both notions are necessary. Thus, suppose that both (66b) and (66c) are impossible Incorporations, where the links represent the theta marking relationships (for evidence that this is true, see sections 2.1, 3.1, 4.1):

(66) a. $[_{YP}\ X_i + Y\ [_{XP}\ t_i\ ZP]]$

b. $*[_{YP}\ X_i + Y\ [_{XP}\ t_i\ ZP]]$

c. $*[_{YP}\ Z_i + Y\ [_{XP}\ X\ [_{ZP}\ t_i\ ]]]$

Here structure (66b) would be ruled out given the first notion of barrierhood, since 'XP' is a non-theta marked category intervening between X (or X+Y) and the trace. The second notion would not rule it out, however. On the other hand, structure (66c) is ruled out by the second notion of barrierhood, but not the first: both XP and ZP are theta marked and hence not barriers in the first sense, but XP does contain the trace and a lexical head but not the antecedent, and is therefore a barrier in the second sense. Thus both notions seem to be required; neither is redundant. As it stands, this is rather unattractive conceptually. Fortunately, the two conditions can in fact be reduced to a single condition in a simple way: in Chomsky's definition, the notion 'barrier' is relative only to the governed element B; I propose to replace this notion with one that makes the notion of barrier doubly relativized with respect to both A and B in the following way:

(67) The maximal projection C is a (government) barrier between A and B if and only if C contains B, C does not contain A, and C is not theta indexed (with A).

Let us see how this definition gives the right results with respect to the abstract test cases in (66). In (66a), the only maximal projection which contains X+Y but not t is 'XP', so this is the only potential barrier. However, this category is theta indexed with Y and hence also with X+Y

given (64); thus is not in fact a barrier between the two. Hence X+Y governs t. In (66b), the potential barrier XP is not coindexed with Y (or anything else) and thus is an actual barrier. Hence, government is blocked between X+Y and the trace, and this structure will be ungrammatical by the ECP. Finally, in (66c) both XP and ZP are potential barriers. XP is theta indexed with Z+Y via Y and therefore is not a barrier; ZP however, although theta indexed, is theta indexed with X and not with Y or Z+Y. Therefore, it is a barrier between Z+Y and the trace, although not between X and the trace. This is how the minimality condition is encoded into (67); A will never theta mark the potential barrier unless that barrier is a sister of A by Theta theory, so any more distant potential barrier will always be an actual barrier. The result is that X is not coindexed with the trace, so it is not a proper governor, and Z+Y (although coindexed with it) does not govern it, so it is not a proper governor either. Therefore, (66c) is also ungrammatical by the ECP, as desired. Thus we see that the definition of government in (41) together with the definition of barrier in (67) gives the correct range of consequences in a conceptually unified fashion.

Several remarks are in order with respect to (67):

First, it is necessary to understand the phrase 'C contains B' in this definition as 'C contains or is equal to B' rather than 'C properly contains B.' The empirical consequence of this is that in a structure like:

(68) $[_{YP}\ Y\ [_{XP}\ X\ [_{ZP}\ Z\ ]]]$

Y will not only fail to govern Z, but also ZP--the ZP node itself will be a barrier for each. In this way, we achieve the result of Belletti and Rizzi

(1981), that if Y governs a phrase XP it governs the head of that phrase X but no other category in the phrase. This will be required for certain Case theory and Binding theory facts in section 2.2. Perhaps it is unintuitive to think of a category as being a barrier between some other category and it itself, but the actual definition gives the correct results in a straightforward way.[18] The word 'barrier' may be unfortunate in this respect, but I will maintain it for the sake of consistency with Chomsky (1985).

The second remark to be made about (67) is with respect to the parentheses. One of the goals of Chomsky (1985) is to use essentially the same notion of barrier in both government theory and bounding theory, such that if the path between two nodes crosses one barrier government is blocked, if it crosses two barriers a subjacency violation results. Chomsky notes that it is reasonable to expect a minimality condition to hold on government but not on bounding theory. Thus (67) defines two slightly different but intimately related notions of barrier: one, without the parenthesized phrase which induces minimality, which is relevant to the Bounding theory; and one, with the parenthesized phrase, which is relevant to Government theory.

The third remark to be made about (67) is that in some cases it determines a different set of barriers to government from Chomsky's definition. For example, in (65a) both accounts agree that it is crucially the presence of the two nodes S' and S between the verb and the PRO that causes one of them to be a barrier; the difference is that for Chomsky it is S' that becomes the barrier and given (67) it is S that formally does the blocking. In this case, however, the effect is the same. Indeed, this

is true of most other such cases. Since the difference between the two formulations is in no way fundamental to the idea behind (67),[19] I will not explore the possibility of distinguishing the two notions empirically.

Returning to the major theme, we now successfully derive the Head Movement Constraint on X-o movement from the Empty Category Principle. The pieces fit together into the following formal proof. Suppose that an X-o 'X' moves into an X-o 'Y' that theta marks (= properly governs) XP. Then the complex category X+Y will govern the trace of X, since the only intervening maximal projection is XP. XP is not a barrier between X+Y and t because by hypothesis it is theta indexed with Y, and therefore with X+Y given (64). X+Y is also identification indexed with t since X is, again by (64). Thus, X+Y both governs and is coindexed with t; therefore it properly governs t, and the ECP is satisfied. Thus movement of an X-o into a Y-o which properly governs the XP that the X-o heads is permitted. Now suppose that X-o moves anywhere else, say to a Y which is not theta marked with the XP that X heads. The only elements which are identification indexed with the trace are X and X+Y; yet neither of these will govern the trace. The reason is that XP, which now contains the trace but not X or X+Y, is by hypothesis not theta indexed with Y. Therefore it is not theta indexed with X or X+Y either, and it will always be a government barrier between these and the trace. It follows that the trace can never be antecedent governed. Neither can it be lexically governed, since it is an X-o level category and, as discussed above, X-o categories never bear theta indexes. Therefore, the trace cannot be properly governed at all, and ECP is violated. Hence it is forbidden for the X-o to move anywhere but to the Y-o that properly governs its projection. Thus, the Head Movement

Constraint (60) follows entirely from the ECP. Now, we are justified in interpreting the fact that X-o movement obeys the HMC as showing that the trace of X-o movement in fact is subject to the ECP. In other words, Incorporation crucially does have property (59i), the first of the characteristic properties of the 'Move Alpha' relationship, as well as property (59ii).

There is an important empirical point to be made here, in addition to the conceptual points. We predict that the pattern of movement of X-o's and the pattern of movement of XPs should be parallel in certain respects, since both are determined in part by the same principle, the ECP. This will be masked somewhat for argument XPs, because they. unlike X-o's, can be properly governed by the local head that theta marks them, thereby satisfying the ECP in a way which is unavailable to X-o's. Adjunct XP phrases, however, have no theta marker by hypothesis. Therefore their traces, like those of X-o's, must be governed by the antecedent, and we predict that the two will have similar distribution in certain ways. In fact, this is true. It is possible to wh-move adjuncts under certain conditions:

(69) a. I fixed the car in a careful manner.

b. In what manner did you fix the car?

Following Chomsky (1985), I assume that, at least in the case of adjuncts, wh-phrases can move through a position adjoined to VP on their way to COMP. Thus, (69b) will have an S-structure approximately like (68):

(70) [In what manner]$_i$ did you [VP t_i [VP fix [the car] t_i]

Here, the movement from the VP internal position to the VP adjoined position is parallel to the very strictly local movement allowed in X-o movement, illustrated in (66a). On the other hand, it is quite impossible to extract an adjunct out of an adjunct clause (cf. Huang 1982, Lasnik and Saito 1984):

(71) *In what manner did you leave [before fixing the car t]

The full structure of this clause will be something like:

(72) [In what manner]$_i$ did you...
[VP t_i'' [VP leave [S' before PRO [VP t_i' [VP fixing the car t_i]]]

Here the structure is ungrammatical because t'' fails to govern t', since the intervening S' node is not theta indexed and hence a barrier between the two traces. This is directly parallel to the fact that it is impossible to move X-o's out of adjuncts (66b). Moreover, it is also impossible to move an adjunct if it is embedded one level further, even in a complement, when that complement is headed by another lexical item. Thus compare (from Huang 1982:564):[20]

(73) a. Of which city did you [witness [the destruction t]]?
b. Of whom did you [buy [the pictures t]]?

(74) a. *On which table did you [t [buy [the books t]]]?
b. *From which city did you [t [meet [the man t]]]?

In the sentences in (73), the PP is a complement of the object NP; therefore its trace is properly governed by the head N, and the structures are acceptable. In (74), however, the PP is an adjunct of the NP and hence

it must be governed by its antecedent. The nearest that an antecedent can be is in the position adjoined to VP. Here the object NP category contains the initial trace but excludes the adjoined trace. Moreover, even though this NP is theta indexed, it is certainly not theta indexed with the adjoined trace; hence according to the definition in (67), NP is a barrier to government. Thus, the sentences in (74) are correctly ruled out by the ECP on this account, crucially by the added minimality phrase of (67). This case is directly parallel to the fact that X-o movement is impossible when the trace is separated from its antecedent by one extra phrasal node, even if that phrase is a complement (66c). Thus, this range of evidence from adjunct extraction gives independent evidence for the theory of government that includes the doubly relativized notion of barrier in (67). More importantly, we have discovered a deep similarity between the distribution of Incorporation and that of XP movement, thereby confirming the hypothesis that Incorporation does in fact involve the same relation 'Move alpha'.[21]

The final property of 'Move Alpha' which we expect to appear in Incorporation processes is that Incorporation should respect the subjacency condition (59iii). In fact, this requirement is vacuous, because the ECP induces a strictly stronger locality condition on X-o movement already, as we have seen. Subjacency says that a movement cannot cross more than one barrier (cf. Chomsky 1985), but if an X-o moves over even one barrier its trace will never be properly governed. Thus, we can assume that Incorporation is in fact subject to Subjacency, but this condition will always be redundant, just as it is for the wh-extraction of adjuncts (Chomsky 1985) and (at least for the most part) in NP-movement (cf.

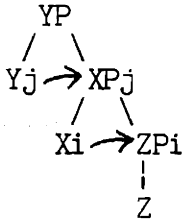
Marantz 1982).

In conclusion, we have seen that Incorporation can be fully subsumed as a special case of the general transformational rule 'Move Alpha'. The main empirical consequence is that it makes it possible to derive the distribution of Incorporation--as described by the Head Movement Constraint--in terms of the ECP, thereby also capturing parallelisms with the distribution of wh-movement. The explanatory benefits of this will be seen to be many in later chapters; ultimately this will provide the explanation for why one certain GF changing processes are possible. In what follows I will sometimes continue to refer to the HMC for clarity and convenience, but it should be kept in mind that this is not a basic principle of Universal Grammar, but rather a derived consequence of it.

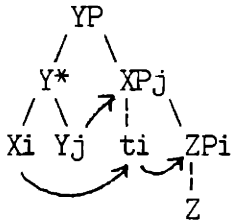
1.4.4 The Government Transparency Corollary

The concepts and conventions defined in the last subsection have a further consequence that will be of fundamental importance in this work: the consequence that Grammatical Functions (appear to) change in Incorporation structures Consider once again an abstact example such as that in (75b), and compare it with the parallel structure without Incorporation in (75a), where the theta indexing are explicitly represented:

(75) a.



b.



In the last subsection we discussed (75a) and concluded that Y governs into XP to govern X, but it does not govern ZP; ZP, since it is not theta indexed with Y, is a government barrier for itself. There is a crucial difference in (75b), however. Here the parallel lexical category Y* again governs the head of XP, properly governing the trace in that position. However, our principles imply that Y* also governs ZP in this configuration. This can be stated in the following terms:

(76) The Government Transparency Corollary (GTC)

> A lexical category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position.

By standard convention, I assume that when a category moves, it both carries its indexes with it and leaves them on its trace. Thus, in particular, when X moves onto Y in (75b), it carries the theta index that it shares with ZP with it. Independently of convention, this is probably a necessary assumption for the Theta Criterion to be satisfied at LF--there every theta assigner (of which X is one) must be theta indexed with an argument. Now by convention (64), this theta index of X will be considered to be a theta index of the containing lexical category Y* = X+Y, just as the theta index of Y is. This implies that neither of the maximal projections that intervene between Y* and ZP will be a government barrier between the two: XP is theta indexed with Y* = X+Y via Y; ZP is theta indexed with Y* = X+Y via X. Y* certainly c-commands ZP, and it follows that Y* governs ZP. Now, (75b) is the structure that is derived from (75a) by the Incorporation of X. Thus we see that X-o movement automatically changes the government properties of a structure in the way described in (76), simply by virtue of the fact that it, like all movement, induces a

coindexing relationship between two distinct nodes. (76) is called 'Government Transparency' because intuitively it says that an XP becomes transparent/invisible for the purposes of government when its head is incorporated. This conclusion follows automatically from the very same principles that were seen to make Incorporation possible in the first place; thus the theoretical framework captures the fact that Government Transparency is an essential property of Incorporation.

The GTC is of fundamental importance because it explains the fact that GF-changing phenomena as characterized in section 1.1 are inherently associated with Incorporation. Take again one of our introductory examples of Incorporation: Noun Incorportion in Mohawk:

(77) a. ka-rakv ne [sawatis hrao-nuhs-a?]. (=32)
3N-white John 3M-house-suf
'John's house is white.'

b. hrao-nuhs-rakv ne [sawatis t].
3M-house-white John
'John's house is white.'

Here the unincorporated sentence (77a) includes exactly the structure of (75a), while the incorporated sentence has that of (75b), where the verb -rakv 'white' is 'Y', the noun -nuhs- 'house' is 'X', and the NP sawatis 'John' is 'ZP'. Now assume, following standard assumptions, that a verb can only agree with an NP which it governs. Then the GTC immediately explains the peculiar shift in verbal agreement between (77a) and (77b): in the unincorporated structure (77a) the verb does not govern the possessor and hence cannot show masculine agreement with it; if, however, the intervening head is incorporated as in (77b), it does govern the possessor, and agreement with that possessor is possible. In other words, the possessor comes to have a canonical object property of Mohawk as an

automatic side effect of the incorporation, thereby giving the appearance of Possessor Raising--one of the core GF-changing processes of section 1.1.2.[22] Recall from section 1.3.3 that grammatical function names in GB can be defined relative to a particular subtheory of the framework, because of the framework's modular structure. Thus, we can say that 'John' changes from a possessor to an object of the matrix verb with respect to government, even though it does not change GFs at all with respect to X' theory (the standard definition of the GFs in the work of Chomsky). More generally, we predict that such a phrase stranded by incorporation will always come to behave like an object of the higher verb with respect to the Government theory module, and those modules which are directly dependent on it (notably Case theory), although it does not change status with respect to X' theory and those modules dependent on it. Thus, it will appear that the GFs change, although only partially so. This fact, which makes sense only with the GB type notion of the nature of grammatical functions, will be the root cause of the idiosyncracies of GF changing processes described in section 1.1.5 In fact. the Government Transparency Corollary will be the pillar of my explanation of the so-called Grammatical Function changing phenomena at large.

1.4.5 The Place of Morphology

The last general issue about the framework that must be addressed with respect to Incorporation is how the theory of Morphology relates to the theory of syntax. This has been a topic of rather lively debate in recent years: see, for example, Anderson (1983), Pranka (1983), Fabb (1984), Sproat (in preparation), and Marantz (1984), (1985) for a variety of

views. The view which I will adopt is one with essentially the same content as that which emerges from the work of Marantz: I claim that morphology is in effect another subtheory, with a status roughly on a par with the established subtheories of principles of Government-Binding theory as enumerated in section 1.3.2. As such, Morphology theory (as we may call it) can be characterized as the theory of what happens when a complex structure of the form $[_{Z-o}\ X + Y\ ]$ is formed. In this way, it is parallel to (say) the Binding Theory, which is the theory of structures of the form $[\ NP_i \ldots NP_i'\ ]$, where the index is a referential index. Morphology theory's responsibility is twofold: first, it has the task of determining whether a structure dominated by an X-o level category is grammatical or not in a given language; second, if the structure is well-formed it has the responsibility of assigning it a phonological shape. Thus, Morphology theory potentially includes whatever principles, Universal or particular, determine the level ordering effects of Seigel (1974) and Allen (1978); principles of the strict (phonological) cycle; principles of morphological subcategorization and feature percolation such as those of Lieber (1980); or whatever else in this general domain proves relevant. Probably, Morphology theory also has at its disposal a simple list of forms in order to deal with phonological exceptions and suppletions of various kinds.

All or many of the various functions listed above have been for the last 15 years or so been generally restricted to the lexicon (since Chomsky 1970 and the Lexicalist Hypothesis). I am using the term <u>lexicon</u> in a specific sense, however, as a defined level of grammar at which the inherent properties of lexical items are represented; in particular, those properties which are atomic from the point of view of other levels (cf.

Fabb 1984). Morphology theory, in contrast, is like the other subtheories in that it is somewhat freed from inherent association with any one particular level of description, although it may of course contain principles which make specific reference to a given level. In this way, it can be compared, for example, to Government theory, which includes both the definition of government--relevant to all syntactic levels levels--and the constraint ECP, which holds specifically at LF. Similar remarks are in order with respect at least to Case theory and perhaps the Binding theory. Thus, I will assume many of the constraints of Morphology theory simply have the same consequences for an X-o and a Y-o that combine to form a category of zero bar level, regardless of the level at which the combination takes place. In particular, it becomes natural from this perspective to have the same morphological principles apply when two morphemes come together in the lexicon in the standard way, and when similar (or the same) morphemes come together in the syntax as a result of Incorporation.

In fact, this seems to be the usual case in language. To take a simple example, consider the morpheme <u>-ir</u> in the Bantu language Chichewa. As we have seen in (27) above, this is the characteristic morpheme of the applicative construction in this language, which I propose to analyze as Preposition Incorporation (section 1.2, cf. chapter 4). It appears in structures like the following:

(78) a. Msangalatsi a-ku-yend-a ndi ndodo.
entertainer SP-pres-walk-asp with stick
'The entertainer walked with a stick.'

b. Msangalatsi a-ku-yend-<u>er</u>-a ndodo.
entertainer SP-pres-walk-<u>appl</u>-asp stick
'The entertainer walked with a stick.'

(79) a. Mbalame zi-ma-uluk-a ndi mapiko.
birds SP-hab-fly-asp with wings
'Birds fly with (using) wings.'

b. Mbalame zi-ma-uluk-ir-a mapiko
birds SP-hab-fly-appl-asp wings
'Birds fly with (using) wings.'

Here the underlined applicative morpheme in the (b) sentences is associated with a clear, semantically transparent instrumental thematic role (the one assigned to the postverbal NP); the same role which is canonically assigned to [NP, PP] in this and other languages, as shown by the (a) sentences. Thus, the Uniformity of Theta Assignment Hypothesis implies that this morpheme must be an independent constituent at D-structure, and hence the (b) sentences are derived by (P) Incorporation. Hence, the verb and the affix must together in the syntax in these sentences. Now compare the following sentences from the same language:

(80) a. Mkango u-ku-yend-er-a anyani.
lion SP-pres-walk-appl-asp baboons
'The lion is inspecting the baboons.'

b. Mkango u-ku-yend-a ndi anyani.
lion SP-pres-walk-asp with baboons
*'The lion is inspecting the baboons'
(OK 'The lion is walking with the baboons.')

(81) a. Mtolankhani a-ku-thamang-ir-a chiphadzuwa.
journalist SP-pres-run-appl-asp beauty
'The journalist ran toward/pursued the beautiful woman.'

b. Mtolankhani a-ku-thamang-a ndi chiphadzuwa.
journalist SP-pres-run-asp with beauty
*'The journalist ran toward/pursued the beautiful woman.'
(OK 'The journalist ran with the beautiful woman.')

The verbs in the (a) sentences contain a recognizable morpheme very similar in shape to the applicative morpheme; yet in these cases there is no consistent semantically transparent theta role associated with its appearance--and certainly not a prepositional theta role--as a comparison

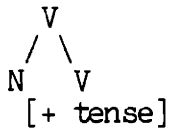
with the corresponding (b) sentences shows. Rather, the theta role assigned to the postverbal NP in these sentences must simply be listed in the lexicon as an idiosyncratic property of the forms -yend-er- and -thamang-ir-. Thus, given the UTAH and the Projection Principle, the two morphemes in these words must not be independent constituents at any syntactic level. Thus, the verbal affix in these structures must be a simple derivational transitivizing affix, which combines with verbs in the lexicon. Now, one may or may not want to identify this affix synchronically with the one that appears in (78b), (79b). Either way, however, the two share a property that certainly must be captured by the grammar: both occur in two forms -ir- and -er-, as the examples show. Which form appears is determined in both cases by a simple rule of vowel harmony--the form with tense /i/ appears after verb stems whose last vowel is tense (/i/, /u/, or /a/); the form with lax /e/ after verb stems whose last vowel is lax (/e/ or /o/). Moreover this rule of vowel harmony is a very general one in Chichewa. The very same morphological principle is at work in determining the shape of combinations formed in the lexicon and in determining the shape of combinations formed in the syntax. Further examples of this will be abundant in the chapters that follow. This situation argues in favor of the view that Morphology is simply the theory of the shape of structures dominated by an X-o level node, independently of how or where this structure is formed; such a view is equipped to explain these similarities without duplicating rules or principles.

A further virtue of this approach to the relationship between morphology and syntax is that it allows principles which are fundamentally morphological principles to determine syntactic structure in various ways. In this way, Morphology theory is again parallel to other subtheories such

as Case theory and Binding theory, whose requirements either force or forbid certain movements in the syntax. This can come about in a variety of ways.

The most important effect which Morphology Theory has on syntax is that it filters out various impossible Incorporations. Thus, 'Move Alpha' can be allowed to apply freely, but if it generates an X-o level structure which Morphology rules illformed or to which it fails to assign a phonological shape, the structure as a whole will be ungrammatical. Thus, Incorporation processes need not be absolutely productive, since an idiosyncratic gap in a morphological paradigm will suffice to block the incorporation from taking place. Moreover, this gives us a way of answering certain questions about language variation. For example, it can be a consistent morphological property of a language that it has no productive compounds of the form:

(82)



English, in fact, has just this property.[23] Then if the Morphology component of a language rules out structures like (82) derived in the lexicon, it will also rule out such structures derived in the syntax, thereby making Noun Incorporation impossible in the language. Thus, we have the beginnings of an explanation of what it means to say that English lacks Noun Incorporation but Mohawk has it, without claiming that there exists an explicit rule of Noun Incorporation which a language can either have or lack. Finally, we can use this to explain why the position of

adjunction to a X-o category is normally a possible landing site for X-o movement, but not for XP movement. It is a natural principle of morphology to block syntactic phrases inside a word. Thus, for example, one cannot normally form English compounds such as 'eat-lunch-in-parks-hater', meaning 'one who hates eating lunch in parks' because of a principle such as this. This could be expressed as:

(83) * X-o
       |
       X-n, where n is greater than 0

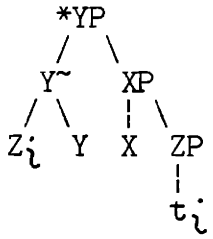
This Morphological wellformedness condition, which blocks the creation of impossible compounds in the lexicon, would also then block the same structure from being formed in the syntax, thereby ruling out adjunction to X-o as a valid landing site for XP-movement. This then has the consequence that 'phrase incorporation' will generally not be allowed in natural language, a positive result (e.g. cf. section 2.2).

This filtering function of morphology can take place in the opposite way as well. Lieber (1980) claims that affixes are specified for all of the same types of features as independent words are, including category. I am accepting this conclusion (at least for a range of cases) in a strong way when I assume that elements which appear as affixes on the surface can head phrases and assign theta roles in exactly the same way as normal words do at the level of D-structure (section 1.4.1). The difference between affixes and words then, according to Lieber, is simply that affixes must attach to a word--clearly a morphological requirement. Then, if an item is specified as being an affix, but is generated independently at D-structure in accordance with the UTAH, that item will obligatorily have to undergo X-o

movement to adjoin to some other X-o; failure to do so will result in a structure which violates a principle of Morphology theory. This notion will be presupposed in section 2.4, and developed in more detail in section 3.2. Thus, we see how Morphology theory can make Incorporation obligatory in some cases, and forbidden in others, even though the movement process is itself, as always, technically optional.

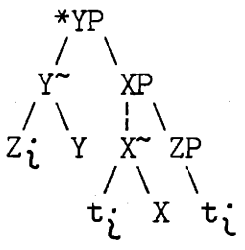
Finally, we can appeal to Morphology Theory to close one remaining gap in our derivation of the Head Movement Constraint from the ECP. In section 1.4.3, it was shown that a structure such as (84) is ruled out by the ECP:

(84)



However, a priori there would be another possible derivation that would result in the same impossible surface string as (84) but without violating the ECP: namely having Z undergo a type of successive cyclic movement through a position adjoined to X. This would yield:

(85)



This derivation can plausibly be ruled out by Morphology theory. It is obvious that 'Move alpha' cannot in general move a part of a word to some

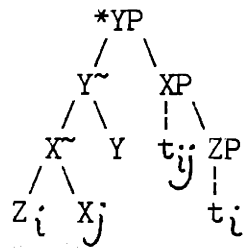
other part of the string. This part of the old Lexical Integrity Hypothesis still seems true. This can be captured in terms on an obvious principle of Morphology theory such as:

(86) $*[_{X\text{-}o} \ldots t_i \ldots]$

In other words, a trace can never be dominated by a zero level category, meaning that there are no traces inside words. This principle, of independent value, will rule out structure (85): the category X˜ violates the constraint. Now, the HMC does truly follow from the ECP.

It should be mentioned in this regard that there is still one kind of 'successive cyclic movement' available to 'Z' in order for it to appear farther from its intial trace than is usually possible: the whole derived category X˜ can incorporate into its governor Y, yielding a structure such as:

(87)

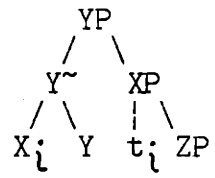


Here no morphological principles are violated. Moreover, since X˜ is coindexed with the trace of Z (by (64)), when it moves it will leave a copy of this index behind on its trace. Hence, the (original) trace of Z continues to be properly governed after the second Incorporation, and ECP is satisfied. In fact, in the course of our investigation we will find sentences with substructures such as that in (87).

Thus, we see how the view of Morphology as a semi-independent system of

principles rather as than a subpart of the lexicon proper has a number of attractive consequences. This perspective in turn makes possible an analysis of GF changing phenomena in terms of Incorporation from the morphological point of view, since the complex word structures that X-o movement generates in the syntax can legitimately be considered to be morphological structures in good standing; they have the same status as lexically formed structure with respect to the Theory of Morphology. Hence, in a typical case of Incorporation such as:

(88)



the X-o movement simultaneously causes a morphological change--by creating a new zero level structure Y~--and a syntactic change--by creating a new indexing between two nodes, thereby causing apparent GF changes by the GTC. Thus an Incorporation analysis would explain the fundamental link between Grammatical Function changing and morphology, thereby answering the questions raised in section 1.1.3. In the chapters that follow, I will show that, for each of the GF changing processes considered in its own right, there is strong empirical evidence for exactly such an analysis of the process.

CHAPTER ONE: FOOTNOTES

1. For glossing and transcription conventions, see appendix A.

2. In particular, see Keenan (1975). Chomsky (1981) has a critical discussion on the validity and empirical content of identifying processes of 'passive' (for example) across languages. His points are valid in part, and will be addressed in what follows.

3. I restrict the domain of inquiry in these ways to focus on what seem to be 'core' grammatical processes rather than those which are peripheral in the sense of Chomsky (1981), and to limit the possibility of misanalysis by individual researchers.

4. The case marking on the subject in (13a), (13b) changes as well; this however is a normal reflex of the fact that Eskimo employs an ergative case marking system in which the subject of an intransitive verb bears the same morphological endings as the object of a transitive verb. This contrasts with the more familiar accusative case marking system in which the subject of an intransitive verb bears the same morphological endings as the subject of a transitive verb (as in Latin, for example). For recent discussion of this case marking difference in frameworks compatible with mine, see B. Levin (1983), Marantz (1984), J. Levin and Massam (1984). Thus, the case shift on the actor NP is not evidence that its GF has changed, but it is further evidence that the GF of the patient has changed, such that it is no longer an object, thereby triggering the intransitive case marking pattern. Often in the course of this work I will abstract away from this difference in case marking systems, calling 'nominative' any structural case assigned to the subject and 'accusative' any structural case assigned

to the object.

5. For example, Lawler (1977) argues that the passive in Achenese (Austronesian) has no overt morphology. Mark Durie (personal communication) claims that what Lawler calls a passive is more properly a type of topicalization process, however.

6. It is not rare for (say) a special particle to appear on a verb in a question clause; what is more unusual is for such a particle to reflect the grammatical function of the questioned phrase with respect to that verb (but see Chung 1982).

7. See Baker (1985) for discussion of the morphological issues involved here.

8. An important exception to this is Marantz (1984). Comparisons with his approach will be made throughout this work. On more current GB approaches to the phenomena discussed here, see section 6.3.

9. Here I assume without argument that the stative verb 'be-white' is unaccusative in the sense of Perlmutter (1978). See section 2.1.1 for discussion.

10. It seems that Case indexing must be included in 'coindexing' as well, given Exceptional Case Marking structures (Lasnik and Saito 1984).

11. In fact, it is this that will given an explanatory account for the facts that necessarily involve relativizing GFs to strata in Relational Grammar or taking GFs to be 'cluster concepts' in the terminology of Keenan (1976).

12. In particular, one would need to understand exactly what counts as an identical thematic relationship. Possibly to be avoided is the result that Mary must have the same D-structure position in the following two sentences, since they both imply that Mary came to own the gift as a result of the event:

(i) a. Mary was given *(t) a nice gift yesterday.

b. Mary received (*t) a nice gift yesterday.

13. In fact, the study of Incorporation will provide more crosslinguistic evidence in favor of the Unaccusative Hypothesis (section 2.1) and evidence against Kayne's analysis of dative shift (section 4.3). Kayne later (1983, chapter 9) extends his analysis of dative shift to include the existance of a phonetically null preposition governing Sophia in (48b); this part of his analysis is in fact implied by the UTAH and confirmed by incorporation evidence (cf. section 4.3.1, 4.4).]

14. Marantz (1984) also assumes a principle which has the consequence of forcing certain items which appear as morphological affixes on the surface to be independent in underlying syntactic structure (his (7.1)):

> If a lexical item assigns a semantic role or has an argument structure [corresponds to 'assigns a theta role'], it is an independent constituent at l-s structure [corresponds to D-structure].

The UTAH is in a sense stronger than this principle, in that it implies that theta role receivers as well as theta role assigners must be independent constituents at D-structure, thus requiring incorporation analyses of Noun Incorporation, Passive, and Antipassive, as well as of Causative and Applicative.

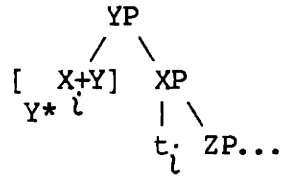
There is also a conceptual similarity between the UTAH and the 'Universal Initial Assignment Hypothesis' of Relational Grammar.

15. Marantz's (1984) derivation of causatives like (51b) is syntactic and obeys a projection principle in the loose sense that the surface structure is related to the underlying, semantically determined structure. Nevertheless, in Marantz's framework the relationship need not be--and in this case crucially is not--full isomorphy of categorial structure.

16. The correspondence between theta marking relationships and true semantic relationships cannot be a direct one, as shown by Chomsky's examples 'I found the flaw in the argument' versus 'I found the coat in the closet.' These sentences are thematically parallel but not parallel in real semantics. Nevertheless, the point in the text holds.

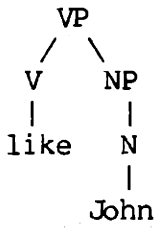
17. Borer would write (63) in the following form:

(i)



This may make the c-command properties of the structure slightly more clear, but the interpretation of the two diagrams is exactly the same. As Marantz (1984:43) points out, some principle is needed just so that the actual verb like c-commands and hence governs its object in spite of the intervening node V in an elementary structure such as (ii):

(ii)



(64) fills this need as well.

18. For an alternative, see note 19.

19. The basic idea of (67) is to collapse the adjunct-type barriers with minimality type barriers by making reference to the category that theta marks the potential barrier in the definition. This can just as easily be worked into Chomsky's definitions in the following way:

(i) C is a (government) blocking category between A and B if and only if C includes B but is not theta indexed (with A).

(ii) C is a (government) barrier between A and B if and only if it excludes A and (a) or (b):

(a) C immediately dominates a D, D a (government) blocking category between A and B.

(b) C is a (government) blocking category between A and B, C not of category S.

These definitions without the parenthesized material--which again is only relevant to government theory--are identical to Chomsky's. I chose to work with the definition in the text primarily because it is simpler. It should be mentioned that both Chomsky's definitions and mine must include some special stipulations about the role of complementizers and INFLs (see section 3.3.2).

20. As Huang observes, the contrast between (73) and (74) interacts with the possibility of Preposition Stranding in English. For some speakers,

P-stranding is highly preferable in both structures, and this can cause the contrast to become less clear. Huang shows that in French, where P-stranding is never possible, the same contrast holds very clearly.

21. Of course there are also differences between the distribution of adjunct movement and the distribution of X-o movement. These follow from independent differences between the two types of categories; notably differences in where they can be generated given X' theory, and differences in possible landing sites. Adjuncts as XP categories can adjoin to the XP category VP (cf. Chomsky 1985); X-o's can adjoin to the X-o category V (see section 1.4.5).

22. This and related examples will be studied more closely in sections 2.2 and 2.3.

23. This is true apart from a few backformations based on deverbal compounds such as babysit (from babysitter).

24. Condition (83) may be subject to linguistic variation. Thus Dutch and German apparently form phrasal compounds much more readily than English does. I do not know if this type of freedom carries over to incorporation in any languages or not.

Chapter 2

NOUN INCORPORATION

Consider the following sentences from Mohawk, an American Indian Language of the Iroquoian language family (data from Postal 1962):[1]

(1) a. watesyvts hra-nuhs-nuhwe?-s
doctor 3MS-house-like-perf
'The doctor likes the house'

b. i?i ye-k-kar-hrek-s
I tl-1sS-bark-push-perf
'I push the bark'

c. i?i k-rihw-nuhwe?-s
I 1sS-custom-like-perf
'I like the custom'

Each of these sentences consists of two morphophonological words which are independently inflected: a subject N(P) (which may optionally be 'pro-dropped') and a verb. Moreover, the verb is morphologically complex: it consists of both a basic verb root and a noun root, in addition to a standard collection of agreement, tense, and aspect morphemes. The special characteristic of these sentences is that the noun root seems to count as the direct object of the structure, productively receiving a thematic role from the verb root. This can be seen by comparing the Mohawk sentences in (1) with their only natural counterparts in English:

(2) a. The doctor likes the house

b. I push the bark

c. I like the custom

In each of these sentences, there are three independent lexical items (not counting the nonlexical determiners and INFLs), a subject, a verb, and a direct object. In fact, examples with similar structure occur in Mohawk, alongside those in (1):

(3) a. watesyvts hra-nuhwe?-s ne ka-nuhs-a?
doctor 3MS-like-perf pre-house-suf
'The doctor likes the house'

b. i?i ye-k-hrek-s ne yao-kar-?
I tl-1sS-push-perf pre-bark-suf
'I pushed the bark'

c. i?i k-nuhwe?-s ne yao-rihw-a?
I 1sS-like-perf pre-custom-suf
'I like the custom'

In these examples, as in English, there is no noun root in the verb form; rather the thematic object nominal appears as a seperate word, heading its own phrase and receiving a theta role from the verb in the ususal way. This is the expected situation, with the verb acting as a sort of semantic function, and the direct object serving as the argument of that function. Superficially, the sentences in (1) do not seem to have this same function/argument structure at all. This not withstanding, sentences like those in (1) and (3) are good paraphrases of one another. In particular, the same thematic roles and selectional restrictions relate the same verbs (or verb roots) to the same nouns (or noun roots) in the sentences in (1) as in the sentences in (3). One may say that one morphologically complex word in Mohawk can 'do the work' of two words in a language like English, creating a kind of mismatch between morphology and syntax. Similar

constructions exist in Southern Tiwa, as described by Allen, Gardiner, and Frantz (1984). Compare (4) with (5):

(4) Seuan-ide ti-mũ-ban
man-suf 1s:A-see-past
'I saw the/a man'

(5) Ti-seuan-mũ-ban
1s:A-man-see-past
'I saw the/a man'

Again, (4) has a standard verb and direct object NP structure; while (5) is a thematic paraphrase of (4), but with the root noun of the direct object appearing inside the verb form rather than as an independent phrase. Constructions like those in (1) and (5) are often referred to as instances of 'Noun Incorporation'; I will follow this usage, developing it into a particular analysis of these structures in terms of the theory of Incorporation (in the technical sense) sketched in Chapter 1. Noun Incorporation also exists in the other Iroquoian languages (Onondaga, Chafe 1970; Tuscarora, Williams 1976; Oneida; Seneca), Wichita (Caddoan, Rood 1976), Nahuatl (Merlan 1976), Eskimo (Sadock 1980, to appear), Niuean (Austronesian, Seiter 1979), and many others. A comprehensive survey of languages in which NI occurs and its various superficial forms can be found in Mithun (1984).[2]

Noun Incorporation in languages like Mohawk and Southern Tiwa must be distinguished from cases of noun-verb compounding in English. The two are similar in one way: both alow a noun and a verb to combine rather productively into a larger word, in which the noun is arguably associated with one of the verb's thematic roles (see Lieber (1983), Fabb (1984), Selkirk (1982), Sproat (to appear)). Thus forms like the following are

acceptable in English, partly parallel to those in (1) and (5):

(6) a. The doctor is a compulsive house-liker.

b. Bark-pushing is illegal in civilized cultures.

c. Custom-ignorers should be fined heavily.

d. Martha went man-watching.

Nevertheless, these are very different from true Noun Incorporation cases. For example, the N-V combinations in (6) are crucially deverbal; the resulting form serves as a noun (or an adjective) instead of as a verb. This contrasts with Mohawk, where the N-V combination is regularly the main verb of its clause. In English, there are a few cases of N-V compounds acting as main verbs:

(7) a. I babysat for the deOrio's last week.

b. (?)We need to grocery-shop tomorrow.

but these are unproductive and sporatic forms, which are quite clearly backformations from the productive deverbal compounds illustrated in (6). Hence the forms in (7) depend on the existence of very common forms such as babysitter and grocery-shopping. Furthermore, in these cases there is no general relationship between a 'Noun Incorporation' structure and an unincorporated counterpart, as there is in Mohawk:

(8) a. *I sat the baby for the deOrio's last week.

b. *We need to shop the groceries tomorrow.

Related to this difference is a clear difference between the referential value of the noun root in the English compounds and that of the noun root in true cases of Noun Incorporation. In English cases such as (6) or (7),

the noun root is nonreferential: no house or set of houses is referred to in (6a); neither is a specific man or set of men referred to in (6d). The situation can be quite different in the case of true Noun Incorporation. An incorporated noun may refer to a generic or unspecific class, giving a reading rather similar to that of the English compound. However, they can also be used to refer to a very specific object which happens not to be focused in the discourse in languages like Mohawk and Nahuatl (see Merlan 1976, Mithun 1984). The difference is clearly illustrated in the following segment of a Mohawk discourse from Mithun (1984):

(9) Nó:nv akwé: yo-státhv nó-:nvhst-e sok nú:wa v-tsaka-nvhst-arú:ko
when all 3N-dry pre-corn-suf then now fut-1pS-corn-takeoff
'When the corn was completely dry, it was time to shell it (the corn)'

Here the incorporated N root 'corn' in the second clause refers specifically to the same ears of corn specified by the NP 'corn' in the preceeding clause. This type of example is common in true noun incorporating languages. Another example, from Nahautl, is given in (10) (Merlan 1976):

(10) person A:
Kanke eltok kočillo? Na' ni'neki amanci.
where 3sS-be knife I 1sS-3sO-want now
'Where is the knife? I want it now.'

person B:
Ya' ki-kočillo-tete'ki panci
he 3sS/3sO-knife-cut bread
'He cut the bread with it (the knife)'

Again, the incoporated 'knife' in B's response refers to the same specific piece of steel as that mentioned by A. Other languages such as Southern Tiwa and perhaps Onondaga (Chafe 1970) take this even farther, such that it is unmarked to incorporate the noun root even in the first use, with no

implication of indefiniteness (Allen, Gardiner, and Frantz 1984). English compounds are very different in these ways:

(11) person A:
Why did the doctor buy that house?

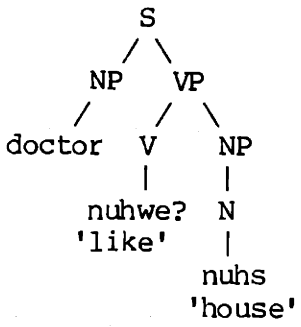
person B:
Because he is a house-liker.

It is absolutely clear that, unlike the Nahuatl case, B's response can only mean that the doctor likes houses in general, not that he liked the particular house he bought. Thus, incorporated nouns in these Indian languages are fully referential in a way that 'compounded nouns' in English are not. Complex verbs in Mohawk and Nahuatl can truly do the work of two words in that they both predicate and refer, whereas English compounds cannot. The English facts are familiar, and are often related to the fact that English compounds are words formed in the lexicon, together with some principle to the effect that words are 'islands' with respect to referential properties (see Williams (in preparation), Sproat (to appear)). Something different must be happening with Noun Incorporation, however.

The great productivity and the referential transparency of Noun Incorporation suggests that it is a syntactic process, rather than (just) a lexical one. In fact, the guiding assumptions set down in Chapter 1 point in exactly this direction. As a concrete example, let us focus on sentence (1a). Here, it is the house that is being appreciated, and the doctor that is doing the appreciating. Thus, the same theta assignments are present in (1a) as in (3a). The Uniformity of Theta Assignment Hypothesis therefore implies that (1a) and (3a) have parallel D-structures, where these same theta assignments are represented in the same way. This suggests a

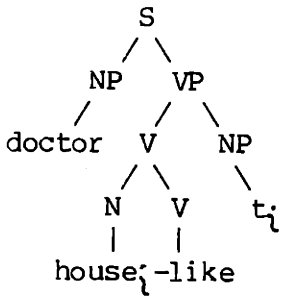
D-structure such as (12) (details omitted):

(12)



In (3a), all that happens to this structure is that inflectional morphology is added. In (1a), however, the verb 'like' and the noun root 'house' combine into a single word at some stage. This will be accomplished Noun Incorporation involves syntactically moving the structurally lower lexical item (the noun) in order to combine with the higher lexical item. Finally, by the Projection Principle, this movement is not allowed to destroy thematically relevant structure. Thus, the moved noun root must leave a trace in order to head a direct object phrase that will receive a theta role from the verb and satisfy the verb's subcategorization requirements. Therefore, the S-structure of (1a) must be approximately:

(13)



Notice that this structure begins to explain the difference in referential status between nouns in N-V combinations in Mohawk and those in English: only in Mohawk is the noun root associated with an external NP

position. This NP position can then be the locus of the referential behavior of the internal argument, rather than the noun root directly. Thus, we keep the idea that words are 'referential islands' in and of themselves essentially intact, accounting for the English facts, and still explain how the Mohawk facts can be different. I will take (12) and (13) to be the prototypical Noun Incorporation structures. This chapter will be devoted to developing this syntactic analysis of Noun Incorporation, defending it against alternatives, and drawing out its implications for linguistic theory.

2.1 Syntactic Incorporation and the Distribution of NI

One of the most salient descriptive aspects of the Noun Incorporation process is that it has a limited distribution. This is noted in some manner or another by virtually all who have investigated Noun Incorporation in a particular language. We may take as our starting point the following generalization from Mithun (1984:875), based on her comprehensive survey of Noun Incorporation in languages of the world:

> Verb-internally, incorporated nouns bear a limited number of possible semantic relationships to their host verbs, as already noted. If a language incorporates nouns of only one semantic case, they will be patients of transitive verbs, whether the language is basically ergative, accusative, or agent-patient... If a language incorporates only two types of arguments, they will be patients of transitive and intransitive verbs—again, regardless of the basic case structure of the language. The majority of incorporating languages follow this pattern. Many languages additionally incorporate instruments and/or locations....

The question then arises, what is the nature of this restriction on the class of possible incorporates? How can the distribution characterized

above be explained? I will argue that the restriction is fundamentally syntactic, thereby concluding that Noun Incorporation is a syntactic process. Thus, in the first subsection, I will show how this distribution can be made to follow from the Head Movement Constraint corollary of the Empty Category Principle (cf. section 1.4.3). In the second subsection, I will argue against the most commonly stated alternative: that Noun Incorporation is purely lexical and its distribution is to be captured in semantic rather than in syntactic terms.

2.1.1 NI and the ECP

The core fact about the distribution of Noun Incorporation is that in ordinary transitive clauses, the direct object may be incorporated, but the subject may not be. This is the case in Mohawk (based on Postal (1962)):

(14) a. yoa-wir-a?a ye-nuhwe?-s ne ka-nuhs-a?
pre-baby-suf 3F/3N-like pre-house-suf
'The baby likes the house'

b. yoa-wir-a?a ye-nuhs-nuhwe?-s
pre-baby-suf 3F/3M-house-like
'The baby house-likes'

c. *ye-wir-nuhwe?-s ne ka-nuhs-a?
3F/3N-baby-like pre-house-suf
'baby-likes the house'

A similar situation holds in Southern Tiwa (Allen, et. al. (1984)):

(15) a. Seuan-ide ti-mũ-ban
man-suf 1s:A-see-past
'I saw the man'

b. Ti-seuan-mũ-ban
1s:A-man-see-past
'I saw the man'

(16) a. Hliawra-de Ø-k'ar-hi yede
lady-suf A:A-eat-fut that

'The lady will eat that'

b. *0-hliawra-k'ar-hi yede
A:A-lady-eat-fut that
'The lady will eat that'

Likewise, the Oceanic language Niuean (based on Seiter (1980)):

(17) a. Volu nakai he tau fānau e fua niu?
grate Q erg-pl-children abs-fruit coconut
'Are the children grating (the fruit of the) coconut?'

b. Volu niu nakai e tau fānau?
grate-coconut Q abs-pl-children
'Are the children grating coconut?'

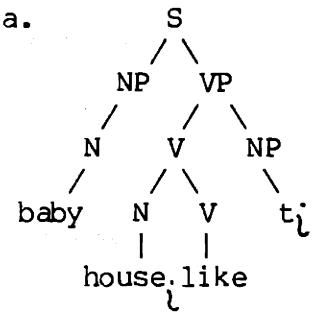
(18) a. Fa totou he tau faiaoga e tau tohi
Hab-read erg-pl-teacher abs-pl-book
'(The) teachers often read books'

b. *Fa totou faiaoga e tau tohi
Hab-read-teacher Abs-pl-book
'Teachers often read books'

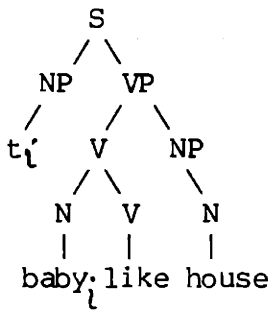
This pattern can be repeated for language after language: including Tuscarora (Iroquoian, Williams (1976)); Onondaga (Iroquoian, Chafe (1970)); Eskimo (Sadock (1980)); and so on. This is also implied by Mithun's generalization stated above, given that in transitive verbs agents are cannonically subjects and patients are cannonically objects.

This subject-object asymmetry in Noun Incorporation is immediately understood if we assume that NI is a syntactic process; in particular, that it is derived by adjoining the noun root to the verb in question by 'Move-alpha'. For object incorporation, this will yield a structure such as (19a), while subject incorporation will yield (19b):[3]

(19) a.



b.



Movement of the noun root necessarily leaves a trace in both cases, by the Projection Principle. Furthermore, this trace, like all traces, is subject to the ECP and must be properly governed. As discussed in section 1.4.3, the assumption that theta roles are assigned only to maximal projections implies that traces of X-o's can never be lexically governed. Therefore, they must be governed by their antecedent. This condition is met in object incorporation structures like (19a), since the antecedent is a part of the verb which governs and theta markes the embedded NP. The condition is not met in subject incorporation structures such as (19b), however. C-commands is a condition on government, and the noun root in (19b) has moved lower in the tree such that it does not c-command its trace; in particular, the VP is a maximal projection which contains the noun root but not the trace. Therefore, incorporation of a subject violates the ECP, while incorporation of an object does not. In this way we explain the incorporation asymmetry in terms of familiar principles of grammar (for technical details, see 1.4.3).

At this point, I observe that there is a construction closer to home which seems to be related to Noun Incorporation in these respects: namely cliticization of the partitive clitic ne in Italian (similarly en in French). Here I follow the data and (most of) the analysis of Belletti and Rizzi (1981). In the relevant structure, an argument of the verb is

expressed as a bare quantifier, while the clitic ne appears attached phonologically to the verb. Belletti and Rizzi claim that the clitic is a nonmaximal nominal item which heads the NP containing the quantifier at D-structure. Then ne syntactically moves to attach to the verb, leaving a trace. Interestingly, exactly the same subject-object asymmetry that we have seen in Noun Incorporation appears in ne-cliticization as well:

(20) a. Gianni trascorrerá tre settimane a Milano
'Gianni will spend three weeks in Milan'

b. Gianni ne trascorrerá tre t a Milano
Gianni of-them will-spend three in Milan

(21) a. Alcuni persone trascorreranno tre settimane a Milano
'Some people will spend three weeks in Milan'

b. *Alcuni t ne trascorreranno tre settimane a Milano
'Some of them will spend three weeks in Milan'

There are some fairly clear differences between Italian ne-cliticization and Noun Incorporation. From the morphological point of view, ne is only superficially phonologically dependent on its host verb, while the noun root of NI characteristically forms a full-fledged compound with the verb. Furthermore, ne may categorially be an intermediate nominal projection, rather than a pure N-o. Nevertheless, as long as it is not an NP, it will not in itself receive a theta role, so it cannot be lexically governed. Thus, when it moves, its trace must be antecedent governed, just as the trace of a Mohawk or Southern Tiwa noun root must be. Thus, we explain the fact that the two processes have the same distribution in these respects.

This account extends naturally to explain other aspects of the distribution of Noun Incorporation. For example, Noun Incorporation never takes a noun root out of a prepositional phrase contained in the verb phrase. Seiter (1980) is explicit about this for Niuean:

(22) a. Ne tutala a au ke he tau tagata
past-talk abs-I to pl-person
'I was talking to (the) people'

b. *Ne tutala tagata a au (ke he)
pst-talk-person abs-I (to)
'I was talking to people'

(23) a. Fano a ia ke he tapu he aho tapu
go abs-he to church on day Sunday
'He goes to church on Sundays'

b. *Fano tapu a ia (ke he) he aho tapu
go-church abs-he (to) on day Sunday
'He goes to church on Sundays'

(24) a. Nofo a ia he tau ana
live abs-he in pl-cave
'He lives in caves'

b. *Nofo ana a ia (he)
live-cave abs-he (in)
'He lives in caves'

What is explicit in Seiter (1980) seems to be just as true in the other Noun Incorporating languages, as implied by the generalizations made by researchers (although ungrammatical sentences are not given). Thus, in 50 pages of Mohawk text (Hewitt 1903) there is not a single example of incorporation from a preposition phrase onto the verb. An example would have the form:

(25) *John [3M-lake-ran [along t] (near home)]
='John ran along the lake near home'
(compare (47) below)

Partitive ne-cliticization in Italian follows Noun Incorporation in this respect as well, according to Belletti and Rizzi (1981):

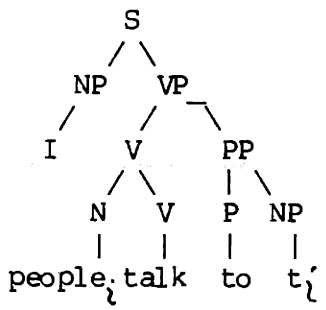
(26) *Me ne sono concentrato su alcuni t
I of-them have concentrated on some
'I concentrated on some of them'

(27) *Gianni ne ha telefonato a tre t

Gianni of-them have telephoned to three
'Gianni telephoned three of them'

This can be explained in the same terms as above. The structure of these examples is given in (28):

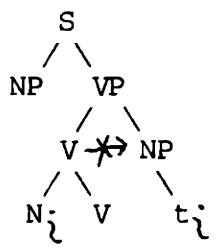
(28)



As usual, the trace of the noun root must be governed by its antecedent in order to satisfy ECP. However, in the structure in (28), the category PP will block government of the trace by the root 'people', since PP contains a closer lexical governor, namely the prepostion to. Technically, the resulting verb complex is theta indexed with the PP but not the NP, and this creates a barrier to government. In this way, we do not merely describe but also explain the fact that nouns can never be incorporated out of a prepositional phrase.

The ECP account of the distribution of Noun Incorporation makes a further prediction: Noun Incorporation should never be able to take a noun root out of an NP adjunct that appears in the VP. Such an incorporation would give the structure in (29):

(29)



In terms of dominance relations, this structure is similar to that of object incorporation illustrated in (19a). The crucial difference is that in (19a) the NP is theta marked by the V and thus is theta indexed with it, whereas in (29) the NP has no direct relationship to the V. This implies that the NP node will be a barrier to government in (29), even though it is not in (19a). Hence, the antecedent will not govern its trace in these structures, so that Noun Incorporation out of an adjunct NP should never be possible. This prediction is confirmed for ne-cliticization in Italian (Belletti and Rizzi 1981):[4]

(30) a. Gianni è rimasto [tre settimane] a Milano
Gianni has spent three weeks in Milan

b. *Gianni ne è rimasto [tre t] a Milano
Gianni of-them has spent three in Milan
'Gianni spent three of them in Milan'
(compare (20) above)

The prediction seems to be quite true for cases of full-fledged Noun Incorporation as well, although my data is unfortunately fragmentary. Seiter (1980) gives incorporations such as the one in (30) as bad for Niuean:

(31) a. Gahua a ia he pō, ka e mohe he aho
work abs-he at night but sleep at day
'He works nights, but sleeps days'

b. *Gahua pō a ia, ka e mohe aho
work-night abs-he but sleep-day
'He works nights, but sleeps days'

However, in this language the impossibility of incorporation in (31b) might not be a new fact, but rather reducible to the impossibility of incorporation out of a prepositional phrase. In 50 pages of Mohawk text

(Hewitt 1903), I discovered no examples of the relevant type for that language:

(32) *The baby [agr-time-laugh [five t]]
='The baby laughed five times'

Thus, I conclude tentatively that this prediction of the syntactic analysis of Noun Incorporation is true, giving support to the syntactic approach.

Finally, we consider the case of subjects of intransitive verbs. Here there is some variation, both across languages and across lexical items in a language. Some such subjects can clearly incorporate in the Iroquoian languages and in Southern Tiwa:

MOHAWK: (Postal (1962))
(33) a. ka-hur-? ka-hu?syi
pre-gun-suf 3N-black
'The gun is black'

b. ka-hur-hu?syi
3N-gun-black
'The gun is black'

ONONDAGA: (Chafe (1970))
(34) wa?-o-nohs-ateka?
aor-3N-house-burn
'The house burned'

TUSCARORA: (Williams (1976))
(35) ka-hehn-akwahat
3N-field-good
'The field is good'

SOUTHERN TIWA: (Allen, Gardiner, and Frantz (1984))
(36) a. I-k'uru-k'euwe-m
B-dipper-old-pres
'The dipper is old'

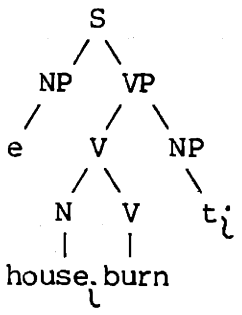
b. We-gan-lur-mi
C/neg-snow-fall-pres/neg
'Snow isn't falling' (='It is not snowing')

Recall that it is systematically impossible to incorporate the subject of a

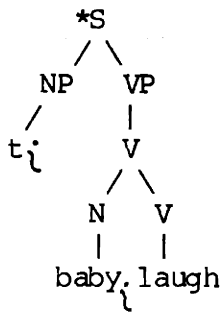
transitive verb in all these languages, as discussed above. This we accounted for in terms of the ECP, observing that a noun root will not govern its trace if it moves downward, into the VP. This account, however, has nothing to do with the transitivity of the verb per se, and the same analysis should make the incorporation of intransitive subjects impossible as well--if they are indeed subjects, that is.

Perlmutter (1978) has argued for what he terms the Unaccusative Hypothesis, which claims that there are not one but two classes of verbs which take only a single argument (see also Perlmutter and Postal 1984, Burzio 1981, etc.). One class, called the 'unergatives', take a true subject, external argument at D-structure, as usual. The other class, called the 'unaccusatives', differ in that they do not theta mark an external argument; rather, their sole argument is an internal one, appearing in the direct object position at D-structure. This difference is generally neutralized on the surface, since the internal argument of an unaccusative verb usually moves to the subject position by S-structure. Nevertheless, there is strong evidence for the distinction in many languages. Furthermore, there is a strong correlation to the effect that unergative verbs take an agentive (or experiencer) argument, while unaccusative verbs take a patient/theme argument.[5] Now note that all of the predicates which incorporate their subject in (33)-(36) do in fact take clearly nonagentive arguments. Suppose that they are unaccusative. Then the NP in question will appear inside the verb phrase at D-structure, and from this position it can legitimately incorporate into the verb, instead of moving to the subject position:

(37) a.



b.



The structure in (37a) satisfies the ECP and is grammatical, being identical in all relevant respects to (19a). This account explains why only intransitive verbs can incorporate their 'subjects': only with intransitive verbs can the S-structure subject in general be analyzed as a D-structure object, since transitive verbs have the object position filled independently--namely with the S-structure object.[6] Furthermore, this analysis based on the Unaccusative Hypothesis predicts that there should be a second class of intransitive verbs: unergative verbs with agentive sole arguments. These arguments will be subjects at all levels of representation; hence incorporating them into the verb necessarily gives a structure like (37b). This structure violates the ECP, being identical in all relevant respects to (19b). Thus, the argument of agentive intransitive verbs should never be incorporated. This appears to be true in Southern Tiwa (Allen et. al. (1984)):[7]

(38) a. Khwien-ide 0-teurawe-we
dog-suf A-run-pres
'The dog is running'

b. *0-khwien-teurawe-we
A-dog-run-pres
'The dog is running'

The prediction is also confirmed in the Iroquoian languages, where researchers agree that only theme subjects can incorporate; never agent

subjects, even in intransitives (Mohawk, Mithun (personal communication); Tuscarora, Williams (1976); Onondaga, Chafe (1970)). Moreover, in Hewitt's (1903) Mohawk text, there are no examples of the form:

(39) *agr-baby-laughed (*-ran, *-swam, *-danced, etc.)
='The baby laughed'

Finally, ne-cliticization in Italian illustrates the same pattern. In Italian, there is rich independent evidence for the Unaccusative Hypothesis. Verbs known to be unaccusative by other tests, such as auxiliary selection, allow ne to move and cliticize onto the verb (Belletti and Rizzi 1981):

(40) a. Sono passate tre settimane
have elapsed three weeks

b. Ne sono passate tre t
of-them have elapsed three

However, verbs known to be unergative do not allow ne to move and cliticize onto the verb:

(41) a. Hanno parlato tre persone
have spoken three people

b. *Ne hanno parlato tre t
of-them have spoken three

In this way, a syntactic account of Noun Incorporation interacts with the Unaccusative Hypothesis to explain its distribution with intransitive verbs.[8]

In conclusion, we have seen that the major aspects of the distribution of Noun Incorporation can be naturally explained in terms of the Empty Category Principle, a principle known independently to restrict syntactic

movement. Indeed, this same principle is used to explain the fact that, in moving wh-phrases position positions where there scope is directly represented, movement of direct objects is generally freer than the movement of subjects, adjuncts (see Huang 1982, Lasnik and Saito 1984), and objects of prepositions.[9] Now, notice that we have found much the same distribution in Noun Incorporation: the movement is free from direct objects, but ungrammatical from subjects, adjuncts, and objects of prepositions. I assume that this similarity of distribution is not accidental; in fact it is explained on this account, since both movements are governed by the same principle. Yet, in order for the ECP to be relevant in determining the distribution of Noun Incorporation, there must be a trace in Noun Incorporation structures whose distribution ECP can govern. This implies (i) that Noun Incorporation involves syntactic movement of the Noun root and (ii) that the Projection Principle requires that a trace be left in this movement. This is exactly the nature of the analysis of Noun Incorporation that is sketched out in the introduction to this chapter and that accords with the principles of Chapter 1. Thus, this theory of Noun Incorporation is strongly supported by the fact that it accounts for the distribution of Noun Incorporation and reveals a significant parallelism between Noun Incorporation and the movement of wh-phrases.[10]

2.1.2 Against a lexical analysis of NI

In the last section, I claimed that NI is a syntactic process because syntactic principles explain what can and cannot be incorporated. There is however, a competing generalization: namely that the class of incorporable

nouns should be characterized in semantic/thematic terms. In these terms, the generalization is that only nouns which are patients can be incorporated. This statement is particularly common in the Iroquoian literature (see Chafe (1970), Williams (1976), Mithun (1984) as quoted above). Now semantic/thematic notions generally play little role in GB theory per se, except in as much as they canonically project into certain D-structure positions (e.g. agents tend to be external to the VP). Therefore, if the correct generalization concerning Noun Incorporation is in fact to be given in thematic terms, it will suggest strongly that Noun-incorporations are formed in the lexicon, where thematic information is clearly available and relevant. Then, from the point of view of the syntax, Noun Incorporation structures will simply be base-generated.

The thematic analysis of NI is at first sight very reasonable. In the last section we saw that the two types of nouns which can incorporate are objects of transitive verbs and nonagentive 'subjects' (sole arguments) of intransitive verbs. These are, in fact, the cannonical positions of NPs bearing theme and/or patient semantic roles. Furthermore, there is at least one fact which seems to support the thematic account against the syntactic account. Tryadic, 'dative'-type verbs in incorporating languages normally have their dative/goal argument as the direct object rather than their theme argument--at least on the surface. Thus, the goal but not the theme triggers object verb agreement and becomes the subject of a passive sentence. Nevertheless, the goal can never incorporate, while the theme can. This is illustrated in Southern Tiwa (Allen, et. al. (1984)):

(42) a. Ta-'u'u-wia-ban hliawra-de
1s:A/A-baby-give-past woman
'I gave the woman the baby

b. Ka-'u'u-wia-ban
1s:2s/A-baby-give-past
'I gave you the baby'

(43) *Ta-hliawra-('u'u)-wia-ban
1s:A/A-woman-(baby)-give-past
'I gave the woman him (the baby)'

(42a,b) clearly show that it is the goal argument that determines verbal agreement in the manner of a direct object. Nevertheless, the theme argument can (in fact, must) incorporate, while the goal cannot (43), whether or not the theme is incorporated as well. The same situation holds in the Iroquoian languages (e.g. Tuscarora, Williams (1976:19)). This appears to be conclusive evidence for the 'patient/theme' theory over the 'object' theory. Nevertheless, I claim that there is a syntactic explanation for the ungrammaticality of sentences like (43), but one that will have to wait till Chapter 4 and its understanding of dative shiftt verbs. In the meantime, I will argue that the 'object' theory is correct after all. My focus will be on the Iroquoian languages, where the 'patient' theory is advocated most consistently.

The lexical analysis claims that only patients/themes can incorporate. My syntactic analysis, on the other hand, predicts that incorporated roots can bear exactly the same range of thematic roles as can be assigned by the verb to an [NP, VP] at D-structure. Obviously, these two generalizations are very different conceptually. Can an empirical difference be found between the two, given that languages very generally tend to assign patient/theme roles to the underlying direct object position? Clearly, in order to answer this question, we must have independent notions of 'patient' and of 'theme' which are purely semantic, and not semi-structural. This is a notoriously murky issue. However, suppose that we take straightforward definitions, such as those in (44) and allow only

relatively clear extensions of these notions into abstract domains along lines such as Jackendoff (1976, 1983):

(44) a. The THEME of a given predication is the argument which moves or is located in that predication. (cf. Gruber 1965)

b. The PATIENT of a given predication is the argument which is affected (i.e. its nature changed) by the action of the predication.

Now we can ask if all incorporated noun roots can be grouped into one or the other of these semantic categories. An inspection of the first fifty pages of the Mohawk text in Hewitt (1903) shows that many of the cases do in fact fall within this general sphere. This is expected either way, since these classes describe the majority of direct objects in English as well. Not, surprisingly, there are a number of unclear cases. There are, however, a handful of examples in this corpus which fairly clearly do not fall into these categories under any natural extension:

(45) a. Hakare' nen' ia'-e'-hent-ara'ne' ka-'hent-owane'
after now tl-3F-field-reached pre-field-large
'Then, after a while, she reached a grassy clearing that was large' (Hewitt 1903:270)

b. O' nakarontote' nene' karonto' ne dji teieita-'hia-tha'
what part-pre-tree-suf pre-tree-suf where imp-stream-cross-instr
'What kind of tree is used to cross the stream there?'

In (45a) it is the subject, not the incorporated N root, which is changing position, while the N-root is semantically an ordinary goal or locative, as in the English sentences 'She went to the field' or 'She arrived at the field.' (45b) is similar, except that this time the incorporated N root 'stream' is a 'via'-type path in the sense of Jackendoff (1983). These examples raise serious questions about the adequacy of giving a purely thematic/semantic condition for Noun Incorporation. It is significant,

however, that English has an class of verbs exactly parallel to those in (45) which take direct objects rather than PPs:

(46) a. She reached a large field at midday

b. How did you cross the stream?

Thus, the generalization that the class of thematic roles which can be expressed by incorporated nouns is the same as the class of thematic roles that can in general be assigned to an [NP, VP] at D-structure seems neither too broad nor too narrow, but just right. The generalization that only themes and/or patients can incorporate, on the other hand incorrectly excludes sentences like (45). Thus, we have found support for the syntactic analysis that singles out objects over the lexical analysis that singles out patients.

There is another type of incorporation structure in the Iroquoian languages which distinguishes the structurally based theory from the lexical/semantic based theory: nouns may incorporate into governing prepositions as well as into governing verbs. Consider Mohawk sentences such as the following (from Hewitt (1903)):[11]

(47) a. ...ia'tionte'shennia'te' o-'hont-ako ia-honwa-ia't-onti'
she-used-her-whole-strength pre-bush-in t1-3F/3M-body-threw
'...and with all her might she cast him into the bushes'

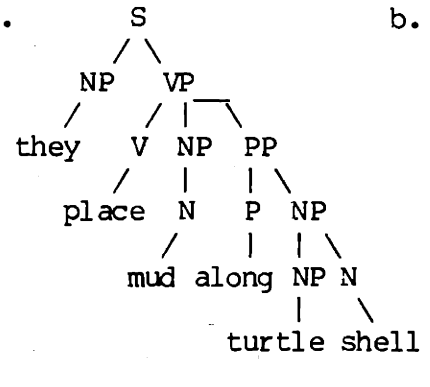
b. ...o'k tcinowe' e' t-on-tke'tote o-ner-a'toko'
just mouse there du-3N-peeked pre-leaf-among
'A mouse peeked up there among the leaves'

c. Wa'-hati-nawatst-a'rho' ka'-nowa-ktatie ne Rania'te'kowa'
aor-3Mpl-mud-placed pre-carapice-along Great Turtle
'They placed mud along (the edge of) the Great Turtle's carapice'

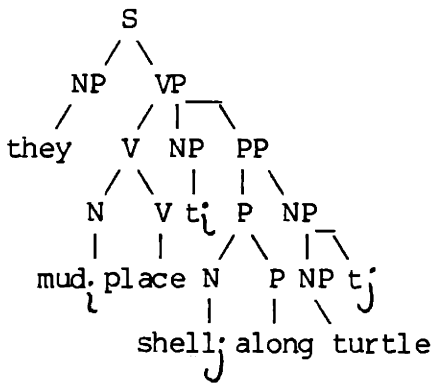
Each of these examples has a root with a prepostional meaning which has

incorporated a noun root, in a way which has by now become familiar. This process is productive and works for a range of prepositional elements, incoluding at least: -ke', on; -ako, in; -akta', beside; -akesho', along; -ktatie, along the edge of; -toko, among. Thus, I claim that elements of this class are true prepositions,[12] and that the D- and S-structures of a sentence like (47c) are (48a) and (48b) respectively:

(48) a.



b.



Here the Iroquoian languages have D-structures, subcategorizations, and theta assignments parallel to those of English, in accordance with the Uniformity of Theta Assignment Hypothesis. Then, in the syntactic derivation from D-structure to S-structure, the head noun of the object of the preposition adjoins to the preposition by 'Move Alpha'. From this position, the N antecedent governs its trace, thereby satisfying the ECP, as in the parallel case of incorporation into a verb. In fact, this type of incorporation is governed by the same principles applying in the same way that they do in the case of incorporation into a verb.

Now, this incorporation into a preposition is unexpected on a lexical/semantic approach to incorporation phenomena. Moreover, the existance of preposition incorporation dooms to failure any simple generalization about the class of possible incorporates in terms of

semantic roles. In particular, one certainly cannot claim that only themes and patients incorporate, since the the incorporates of these prepositional items systematically have locative and path roles of various kinds instead. Essentially, this is the same problem as the first one discussed above in a different guise; the generalizations in terms of semantic types are simply not true in detail. On the other hand, preposition incorporation is entirely normal and expected under the syntactic analysis I have been developing. The relationship between a verb and its object is the same as the relationship between a preposition and its object in relevant structural ways: both govern and assign theta roles to their objects. Thus, if NI is a structurally dependent process, we expect it to be equally possible (and to have the same properties) in both cases. Again, the syntactic analysis is shown to be superior to the lexical-semantic alternative.[13, 14]

2.2 Incorporation, Stranding, and Government

In the last section, I argued in favor of analyzing Noun Incorporation as a case of syntactic movement by showing that the process is governed by known syntactic principles. In this section, we will consider another type of argument for syntactic movement, based on the fact that Noun Incorporation movement can 'strand' certain kinds of NP material. Furthermore, the properties of some of this stranded material give insight into the nature of Government; in particular by giving empirical support for the Government Transparency Corollary of section 1.1.4.

2.2.1 Determiner stranding

One classical arguments for movement transformations from the early days of generative grammar is that they can simply account for what is sometimes called 'discontinuous dependencies'. For example, consider the following English sentences:

(49) a. The time has come [for my departure].

b. The man doesn't exist [that can reconcile these feuding factions].

c. The claim was disproved [that pigs have wings].

In each of these cases, the phrase in brackets modifies the subject noun phrase of the sentence. Nevertheless, the phrase in brackets is separated from that subject by the verb and potentially other material. This is a discontinous dependency; there is a semantic dependency between two phrases which are not adjacent at all, as is standardly required for these kinds of modification relationships (at least in English). Clearly, the relationship between the subject NP and the bracketed phrase must be expressed in some manner, since it is part of a native speaker's knowledge of English. A standard way of making this relationship is to assume that the bracketed phrases do in fact form a constituent with the subject NP at D-structure, and that they are then moved to the right-peripheral position by PF. In this way, the discontinuous dependency is explicated in terms of a normal, continuous dependency, plus a movement transformation. This is the motivation behind the old 'extraposition' transformation. The existence of such a transformation is supported by the fact that the bracketed phrases may also appear in their presumed D-structure position, as part of the NP that they modify:

(50) a. [The time [for my departure]] has come.

b. [The man [that can reconcile these feuding factions]] doesn't exist.

c. [The claim [that pigs have wings]] was disproved.

Another type of example of discontinuous dependencies appears in (51):

(51) a. Little heed seems to have been paid to my warning

b. Some headway finally appears to have been made on this problem.

These sentences contain noun like heed and headway which have a highly restricted distribution: normally the former only appears as the object of the verb pay, and the latter as the object of the verb make. These items combine with their immediately governing verbs to form a kind of idiom. Now, idiomatic interpretation is generally strictly local, between a verb and its directly governed object. In (51), however, the idiomatic object is far away from its licensing verb, with a matrix verb intervening between the two. This type of discontinuous dependency is also accounted for by movement. Specifically, the idiomatic NP appears as the object of its licensing verb at D-structure, and is moved to its final position by passive and raising 'transformations'.

In some languages, Noun Incorporation can create similar discontinuous dependencies. In particular, the incorporated noun root can be modified or specified by a nonadjacent word or phrase that remains morphologically outside of the verb complex. For example, the external specifier can be a demonstrative element:

(52) MOHAWK (Postal (1962:395))
a. ka-nuhs-rakv thikv
3N-house-white that
'That house is white'

ONONDAGA (Chafe (1970:32))
b. neke o-nohs-akayoh
this 3N-house-old
'This house is old'

SOUTHERN TIWA (Allen et. al., (1884:295))
c. Yede a-seuan-mũ-ban
that 2sS:A-man-see-past
'You saw that man'

Sentences of this type frequently correspond to sentences in which the noun root is not incorporated, but rather forms a phrase with the demonstrative in the usual way:

(53) MOHAWK
a. ka-hu?syi [thikv ka-hyatuhsr-a?]
3N-black that pre-book-suf
'That book is black'

SOUTHERN TIWA
b. [Yede seuan-ide] a-mũ-ban
that man-suf 2sS-see-past
'You saw that man'

Similarly way, relative clauses and modifier phrases can appear outside the verb but be interpreted as modifying a noun root inside the verb:

(54) MOHAWK (Postal (1962:395))
a. ka-nuhs-rakv [nehneh a-ak-ahninu?]
3N-house-white that indef-3F-buy
'The house that she would buy is white'

ONONDAGA (Chafe (1970))
b. wa?-k-hwist-acheni? [Harry ha-hwist-ahto?tihna?]
aor-1sS-money-find Harry 3M-money-lost/past
'I found the money that Harry lost'

SOUTHERN TIWA (Allen et. al. (1984:297))
c. Te-pan-tuwi-ban [ku-kha-ba-'i]
1sS:C-bread-buy-past 2sS:C-bake-past-subord
'I bought the bread you baked'

GREEENLANDIC ESKIMO (Sadock (1980))
d. Kusanartu-mik sapangar-si-voq
beautiful-instr bead-get-indic/3sS
'He bought a beautiful bead'

Again, parallel sentences exist in which the noun is not incorporated but forms a phrase together with the relative clause or modifier:[15]

(55) MOHAWK
a. ka-hu?syi [ne ka-hyatuhsr-a? nehneh k-nuhwe?s]
3N-black pre-book-suf that 1sS-like
'The book that I like is black'

GREENLANDIC ESKIMO
b. [Sapannga-mik kusanartu-mik] pi-si-voq
bead-instr beautiful-instr 0-get-indic/3s
'He bought a beautiful bead'

Finally, quantifiers and numeral phrases may also appear in this sort of construction:

(56) MOHAWK (Postal (1962))
a. ka-nuhs-rakv [ne wisk ni-ka-wa]
3N-house-white five part-3N-pl
'Five houses are white'

SOUTHERN TIWA (Allen et. al. (1984:295))
b. Wisi bi-seuan-mu-ban
two 1sS:B-man-see-past
'I saw two men'

And, as usual, the noun root may optionally appear outside of the verb root, forming a phrase with the quantifier:[16]

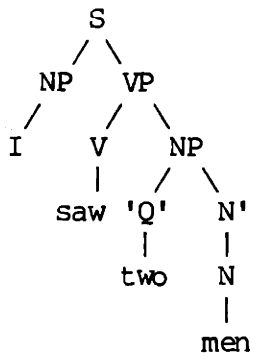
(57) MOHAWK
a. ka-hu?syi [ne wisk ni-ka-wa ne ka-hyatuhsr-a?]
3N-black five part-3N-pl pre-book-suf
'Five books are black'

SOUTHERN TIWA
b. [Wisi seuan-in] bi-mũ-ban
two man-pl 1sS-see-past
'I saw two men'

Quantifiers are also discontinuously related to the clitic element on the verb in Italian ne-cliticization structures such as those in the previous section.

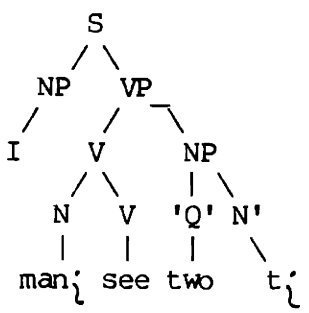
The possibility of this kind of discontinuous dependency is explained and even expected given the analysis of Noun Incorporation as the syntactic movement of a subphrasal category. On this account the noun root to be incorporated is separate from the governing verb at D-structure, where it heads the noun phrase that is assigned the verb's direct internal theta role. A specifier or modifier can then be a part of this NP in the usual way. Thus the D-structure of (for example) (56b) would have the form:

(58)



Perhaps nothing happens to this structure, in which case it surfaces essentially 'as is', yielding a sentence like (57b). However, it is also possible for 'Move alpha' to apply, creating a Noun Incorporation structure. We are assuming that there is a morphological principle to the effect that only a lexical category can adjoin to a lexical category (see 1.4.5). Thus, only the N-o projection 'man' can be moved, necessarily stranding the specifier. This gives an S-structure for (56b) like (59):

(59)



Here, the trace of the N-o is in a local configuration with the specifier or modifier, and thus provides the link between the incorporated N root and the external phrase which is needed so that they will be interpreted together by the LF component. Furthermore, this set of structures for the incorporation cases explains straightforwardly why they are (thematically) equivalent to their unincorporated counterparts. In this way, the discontinuous dependencies laid out above are accounted for. Moreover, in the same way that discontinuous interpretive dependencies such as those in (49) and (51) provide evidence for syntactic movement analyses of extraposition, passive, and raising, the similar dependencies discussed here provide evidence for a syntactic movement analysis of Noun Incorporation. If N-V combinations were always generated in the lexicon and NI structures like (56b) were base generated, then some special stipulation will have to be added to express the fact that the quantifier may and must be interpreted as modifying the incorporated N root.[17]

2.2.2 Possessor Raising

Related to the determiner stranding examples of the last subsection are the following slightly more complex examples:

(60) MOHAWK:
a. hrao-nuhs-rakv ne sawatis (Postal 1962:319)
3M-house-white John
'John's house is white'

b. Kvtsu v-kuwa-nya't-o:'ase (Mithun 1984)
fish fut-3pS/3F-throat-slit
'They will slit the fish's throat'

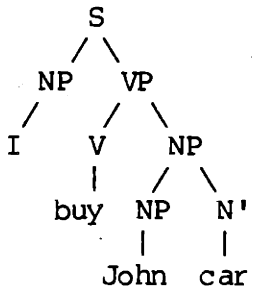
(61) ONEIDA: (M. Doxtator via Michaelson, personal communication)
wa-hi-nuhs-ahni:nu: John
aor-1sS/3M-nuhs-buy John

'I bought John's house'

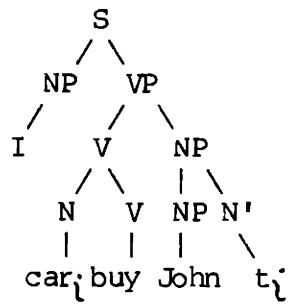
(62) GREENLANDIC ESKIMO: (Sadock 1980)
Tuttu-p neq-itor-punga
reindeer-erg meat-eat-indic/1sS
'I ate reindeer's meet'

In these sentences, there is both an incorporated noun root, and an independent noun phrase outside the verbal complex. The external noun phrase is interpreted as being the possessor of the incorporated root. Following the cases discussed above, the obvious account is to assume that the external NP is the possessor of the noun root at D-structure in the normal way. Then, the noun root incorporates, stranding the possessor, just as it strands other NP material:

(63) a.



b.



Also as in the other cases of stranding, the noun root may fail to incorporate, yielding a synonymous sentence in which the noun forms a phrase with its possessor:[18]

(64) MOHAWK
a. ka-rakv ne [sawatis hrao-nuhs-a?]
3N-white John 3M-house-suf
'John's house is white'

ONEIDA
b. wa?-k-nuhs-ahni:nu: [John lao-nuhs-a?]
aor-1sS-house-buy John 3M-house-suf
'I bought John's house'

GREENLANDIC ESKIMO
c. [Tuttu-p neqaa-nik] neri-vunga

reindeer-erg meat-instr eat-indic/1sS
'I ate reindeer's meet'

In fact, given that Noun Incorporation consists simply of moving a N-o out of a normal NP, all things being equal, we expect cases of 'possessor stranding' to arise. Thus these structures fit very naturally into the framework being developed.

There is a complication with these possessor stranding structures, however. This can be seen most clearly by comparing the two Mohawk possessive examples carefully. Notice in particular the shift in agreement marking on the verb in (66):

(65) a. ka-rakv thikv ka-nuhs-a?
3N-white that pre-house-suf
'That house is white'

b. ka-nuhs-rakv thikv
3N-house-white that
'That house is white'

(66) a. ka-rakv ne sawatis hrao-nuhs-a?
3N-white John 3M-house-suf
'John's house is white'

b. hrao-nuhs-rakv ne sawatis
3M-house-white John
'John's house is white'

When the noun head of the verb's internal argument is not incorporated, the verb shows object agreement with that head, as one would expect. Hence in examples (65a), (66a) the verb is 3rd person neuter, matching the person and gender of the external noun 'house'. Normally, when the noun root is incorporated into the verb, the agreement on the verb is unchanged; it still references the features of its object, which now come from the incorporated noun root, as in (65b) (Postal (1962:285); also Allen et. al. (1984) for Southern Tiwa). When a possessor is stranded, however, the

verbal agreement shifts, so that it agrees with the possessor rather than with the incorporated noun. Thus, in (66b) the verb is 3rd person masculine, reflecting the features of 'John', rather than 3rd person neuter, reflecting the features of 'house' (compare also the Oneida examples (61) and (64b)). In fact, this verbal agreement with the possessor suffices to license 'pro-drop' of the possessor—i.e. the possessor can be a phonologically null pronoun whose features are identified by this verbal agreement. This is illustrated below in Mohawk and Southern Tiwa:

(67) MOHAWK (Mithun (1984))
Wa-hi-'sereht-anvhsko
past-3MS/1sO-car-steal
'He stole my car'

(68) SOUTHERN TIWA (Allen et. al. (1984))
a. Im-musa-'i-hi
1sS|B-cat-come-fut
'My cats are coming'

b. Ka-shut-seur-a
2sS|A-shirt-fall:sg-pres
'Your shirt is falling'

c. Kam-kuchi-thã-ban
1sS/2s|B-pig-find-past
'I found your pigs'

Triggering verbal agreement and being able to 'pro-drop' are normally characteristic properties of the direct object in these languages. For this reason, Allen, Gardiner, and Frantz (1984) call this process 'possessor ascension' to direct object, and state that incorporation of the possessed noun is necessary for possessor ascension to take place.

In order to understand this shift of agreement, we must consider two questions: (i) why may the verb agree with the possessor when the possessed noun root is incorporated; and (ii) why must the verb agree with the

possessor in this situation. Taking the second question first, note that there is an intrinsic difference between possessor stranding and specifier/modifier stranding in the GB framework; the possessor is a full NP which (I assume) receives a possessional thematic role from the head noun. Therefore, the possessor, unlike other specifiers and modifiers, will need to receive Case in order to pass the Case filter. In ordinary possessive structures in the Mohawk, a possessor NP has no special morphological case ending of any kind. The possessor does, however, trigger agreement morphology on the possessed head noun. For example, in (66a), 'house' appears not with its usual inflectional prefix (ka-), but rather with the prefix hrao-, which indicates that its possessor is 3rd person masculine. We may assume that it is this agreement process which causes the possessor 'John' to pass the Case Filter (see 2.3.2 for a development of the formal mechanisms at work here). Now, when the head noun is incorporated into the verb form, it no longer is in a position to directly assign Case to the possessor via the agreement relation. Furthermore, I assume that traces of X-o's never either assign Case to NPs which they govern, or transmit Case to such NPs from their antecedents (see section 2.3.3). Thus, stranded possessor NPs in Noun Incorporation structures must receive Case from some other source, or the structures will be ungrammatical. The main verb complex is the only likely candidate; therefore, it must assign Case to the possessor, a relation which again is morphologically expressed by agreement in Mohawk and Southern Tiwa. Thus verbal agreement with the possessor is obligatory.

Now, we return to the question of why the verb is permitted to agree with the possessor at all. Given that this kind of verb agreement is the morphological reflection of an abstract Case assignment relation, we

conclude that the verb must govern the possessor NP in this configuration, since government is a necessary precondition for Case Assignment. This is confirmed by the fact that null pronouns can appear as possessors in this construction by virtue of the verbal agreement, since most theories of licensing null pronouns require those pronouns to be governed by the element that identifies their features (see Rizzi (1985) and references cited there).

This not withstanding, it does not seem that the verb governs the possessor of its object in general, at least in these languages. For example, the verb can never show object agreement with the possessor if the head noun of the possessor is not incoporated; nor can it saction its 'pro-drop':[19]

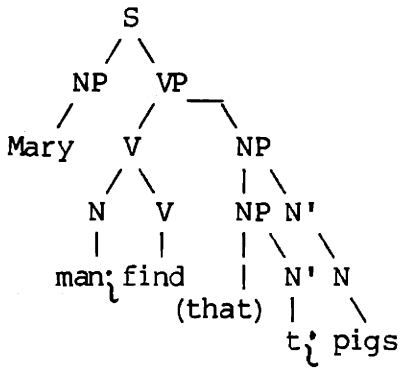
(69) MOHAWK: (Postal 1962:319)
a. *hrao-rakv ne sawatis hrao-nuhs-a?
3M-white John 3M-house-suf
'John's house is white'

SOUTHERN TIWA: (Allen et al. 1984:307)
b. *Kuchi-n Kam-thã-ban
pig-suf 1sS/2s|B-find-past
'I found your pigs'

The same conclusion is strongly supported by considering the distribution of Noun Incorporation. Thus, it is impossible to bypass the head noun of the object NP and incorporate the head noun of the possessor of the object instead; structures such as the one illustrated in (70) never occur in natural language (as far as I know):

(70) a. *Mary [agr-man-found] (that) pigs
='Mary found (that) man's pigs'
(OK as 'Mary found that pig's man'!)

b.



If we assume that the verb governs the possessor in this structure, then the noun root 'man' will likewise govern its trace within the possessor NP, satisfying the ECP. Thus, we would predict that the structure in (70) should be good. Therefore, the fact that such structures are actually ungrammatical indicates that the verb does not govern the possessor in this structure. Based on this range of data, we must say that the verb governs the possessor of its object if and only if the verb has incorporated the head noun of that object. In fact, this is exactly what follows theoretically from the assumptions concerning government laid out in Chapter 1 (section 1.4.3), which result in the Government Transparency Corollary (section 1.4.4). Technically, the verb 'white' does not govern the possessor 'John' in a structure like (69a) because it is not thematically indexed with 'John', and hence this category is a barrier to government between the verb and it itself. Informally, we say that 'John' has a closer governor, namely the noun 'house' which it is theta indexed with; hence government fails. However, when the head noun of the object moves out of its NP and is incorporated into the verb, the resulting verbal complex will inherit the theta indexes of the incorporated noun; thus, it

will be coindexed with 'John' in the derived structure. Thus, this time 'John' is not a barrier to government between the verb complex and itself. Nor is the larger object NP a barrier (as before), since the complex verb is theta indexed with this category, having inherited this index from the verb root. Hence government holds between the verb and the possessor--when and only when the head noun has been incorporated. Intuitively, we can say that the trace of the N does not count as 'closer governor' of the possessor. In other words, because of general properties of Government theory, incorporation has the side-effect of making the projection of the moved category 'transparent' to government from the outside; in particular, the category to which the moved category adjoins will govern into this projection. This result holds in general, and is the content of the Government Transparency Corollary. Thus, we account for why the verb can govern the possessor of its object in noun incorporation structures, thereby agreeing with it and allowing it to 'pro-drop', in (67) and (68) but not in (69). These sentences (together with (70)) are the empirical evidence that the GTC, previously developed in the abstract, is a true principle of grammar. In a way, these structures turn out to be similar to Exceptional Case Marking structures, in which a verb comes to govern a NP which it does not theta mark or subcategorize for because of a special process. The only difference is the nature of the special process that brings about this extension of the government domain: in ECM verbs it has been claimed to be S'-deletion; in NI structures it is a result of Incorporation.[20] Thus, we have accounted for the peculiar properties of possessor stranding in NI languages, and found new evidence about the nature of government along the way.

Independent evidence that the government properties of a configuration change when a head X-o is incorporated comes from the Binding theory. Note that in English, a pronoun can be coreferent with the subject of the clause if it is the possessor of the direct object, but it cannot be coreferent with the subject if it is the direct object itself:

(71) a. Mr. and Mrs. Cuyler washed [their car] yesterday.

b. *Mr. and Mrs. Cuyler washed them yesterday.

Chomsky (1981) explains this difference in terms which crucially involve government, claiming that a pronoun may not be coreferent with an NP which is in its 'governing category': the smallest category that contains the pronoun, a governor of the pronoun, and a subject (in the X' theory sense). In (71a), the governing category of the pronoun is thus the object NP itself, and does not include the matrix subject; whereas in (71b) the pronoun is governed by the matrix verb and hence the governing category does include the matrix subject. Hence, a coreference interpretation is acceptable in the first case but not in the second. In the light of this, consider the following paradigm from Mohawk (cf. Postal 1962:332):[21]

(72) a. I?i k-ohres ne i?i wak-nuhs-a?.
I 1sS/3NO-wash I 1s-house-suf
'I washed my house.'

b. *I?i k-nuhs-ohres ne [i?i t].
I 1sS-house-wash I
'I washed my house.'

c. I?i k-atat-nuhs-ohres.
I 1sS-refl-house-wash
'I washed my own house.'

(72a) is exactly parallel to (71a); in Mohawk as in English a pronoun in the possessor position of the direct object can be coreferent with the

matrix subject. If, however, the head N of the direct object is incorporated into the verb, as in (72b), the facts change. Now, the possessor can no longer be coreferent with the matrix subject, even though its phrase structure configuration with respect to the subject position is completely unchanged, given the Projection Principle. In fact, it behaves like an object (cf. (71b)), with the entire sentence as its governing category. What has changed? Surely the thematic object NP still contains the pronoun and a subject (the pronoun itself), so the only possible explanation is that the pronoun is now governed from outside the object NP, by the matrix verb. Again, this is exactly what the GTC predicts: the complex verb governs the possessor after incorporation, in this case with the effect of expanding the pronouns governing category. On the other hand, the possessor in (72a) does not have the same expanded governing category, implying that the matrix verb does not govern it, in accordance with my definition of government which includes a kind of 'minimal governor' condition. The contrast between (72a) and (72b) thus provides a kind of minimal pair, clearly showing that incorporation changes government relations in exactly the way predicted by the GTC.[22] The only grammatical way to express referential identity between the matrix subject and the thematic possessor of the incorporated object is to use a special anaphoric construction with a reflexive form of the verb, as shown in (72c).

Finally, there is one more type of NP internal constituent we might consider: namely, noun complements that are generated under the N' node as sisters of the N-o. Can Noun Incorporation strand this type of phrase, as it can the others? According to the theory developed so far, we expect that it should. In fact, the structures should behave just like possessor

stranding structures, since the complement will, like the possessor, need Case, and it is governed and theta-marked by the head noun. Thus, when the head noun is not incorporated into the verb, the verb will not govern the complement, since the N is a closer governor. Therefore, it will be impossible to incorporate the head of the complement directly into the verb:

(73) *[Mary [agr-cat$_i$-saw] [NP a picture [(of) (that) t$_i$]]]
='Mary saw a picture of (that) cat'

On the other hand, if the head noun does incorporate, it will no longer be a closer governor, and the verb will govern and assign Case to the stranded complement. This should yield grammatical structures such as:

(74) [Mary [agr-picture$_i$-saw] [$_{NP}$ t$_i$[John]]]
='Mary saw a picture of John'

where the 'agr' on the verb includes object agreement with the complement 'John'. Unfortunately, the issue is not clear empirically. The literature does not mention a 'complement raising' construction of this kind, parallel to the attested 'possessor raising' construction. However, there is an interfering factor: it is not clear which if any NPs in (say) the Iroquoian languages have this N-complement structure in the first place. These languages lack derived nominals corresponding to items like 'destruction' in English; kinship terms are verbal expressions rather than nominal ones; and 'picture nouns' are English-influenced items which generally cannot incorporate even if there is no complement to strand (Mithun, personal communication). Hence, many imaginable instances of structures like (73) and (74) will never arise, for better of for worse. Possible examples of complement stranding are the following, from the Mohawk text of Hewitt

(1903):

(75) a. ne Oterontonni'a' o-'hwendji-a' es wa'-tha'-tcan-akwe'...
Sapling pre-earth-suf prt aor-3M-handful-pick
'Sapling would customarily take up a handful of dirt'
(Hewitt p. 302)

b. e' io'hiano'kote' ta'hno' e' ke-tho'kw-a'here' tci'ten'a'
prt it-bush-stood and prt 3N-flock-rested birds
'There stood a clump of bushes, where a flock of birds rested'
(Hewitt p. 298)

In these sentences, the incorporated noun root is semantically interpreted together with a full noun outside the verb; hence these qualify as cases of stranding. The only question is: what is the structure of the noun phrases such 'handful of dirt' and 'flock of birds' when the head noun does not incorporate? I have no direct evidence to settle this question, but theory internal reasons imply that 'handful' and 'flock' must have been the head of the original NP--otherwise they would not be able to incorporate. This in turn implies that 'dirt' and 'birds' are not the head of the NP; thus assuming that they are indeed complements of the head seems the most likely. Therefore, I conclude tentatively that structures such as (74) are possible in languages of the world. In contrast, I know of nothing with the form of (73). Thus, N complements appear to fit into the same general framework developed here.

In summary, we have seen in this section that Noun Incorporation can strand a variety of nonhead NP material. The existence of discontiuous semantic dependencies formed in this way gives strong classical evidence for a movement analysis of Noun Incorporation. Furthermore, assuming this approach, certain particular facts about the Case marking and agreement with stranded possessor NPs in Southern Tiwa and the Iroquoian languages give evidence into the nature of the government relation itself, strongly

supporting the theory of government developed in Chapter 1. In particular, we have found empirical support for the Government Transparency Corollary, which implies that Incorporation automatically creates 'Exceptional Case Marking'-like structures. This Corollary will play a central role in accounting for the GF changing properties of a wide variety of constructions involving X-o movement throughout this work.

2.3 Noun Incorporation and Case Theory

In the last section, we studied Noun Incorporation data both for its own sake, but also to refine and confirm aspects of the theory of Government. In this section, I will use the same strategy as a way of studying the theory of (abstract) Case. In particular, it will be shown that a noun phrase whose head noun is incorporated does not need to receive Case in order to pass the Case Filter, even though it is phonologically overt. Attempting to see why this should be a natural exemption to the Case Filter will then lead to a rethinking of why NPs must have Case; I will argue that the Case Filter is only a special case of a more general requirement of 'visibility' for interpretation at the level of LF (cf. Chomsky 1984).

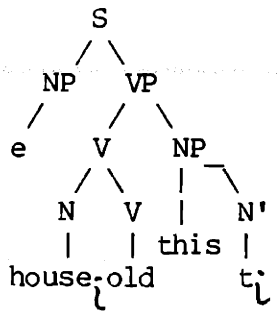
2.3.1 Incorporates do not need Case

In section 2.1, we saw that the sole arguments of some, but not all intransitive verbs can incorporate in the Iroquoian languages and in Southern Tiwa. I argued that this was a reflex of the Unaccusative Hypothesis of Perlmutter (1978), and that these transitive verbs take an object argument rather than a subject argument at D-structure. Then the

head noun of this argument can incorporate into the verb from this VP internal position and still govern its trace, satisfying the ECP. These sentences will then have S-structures like the following:

(76) a. [neke t] o-nohs-akayoh (ONONDAGA)
this 3N-house-old
'This house is old'

b.



This is all very well, except that it is a general property accross languages that unaccusative type verbs do not have accusative Case to assign to their structural object—the so-called 'Burzio's Generalization' (Burzio (1981); see also B. Levin (1985), J. Levin and Massam (1984), etc.). How then does the object NP in (75) pass the Case filter, if it cannot receive Case from the verb? The most usual way for this argument to get Case is by moving to the subject position, where it can receive nominative Case from the INFL node. In cases of Noun Incorporation, however the NP node cannot move to the subject position; if it did, the incorporated noun root would no longer c-command or govern its trace, creating an ECP violation. This is confirmed in Italian by the following contrast (from Belletti and Rizzi 1981):

(77) a. Sono passate tre settimane
have elapsed three weeks

b. Ne sono passate tre t
of-them have elapsed three

(78) a. Tre settimane sono passate
Three weeks have elapsed

b. *Tre ne sono passate
Three of-them have elapsed

Italian has strict enough word order that we may conclude that a preverbal NP is a structural subject, while a postverbal NP may be a structural object. Then, the ungrammaticality of (78b) implies that a derivation in which the ne clitic moves out of the object NP, followed by the remainder of the NP moving to the subject position must be ruled out; presumably in the manner already sketched. Hence, when the head of the object NP of an unaccusative verb has been incorporated, this NP cannot get Case either directly from the verb or by moving to the subject position. Nevertheless, the NI structures are grammatical. This suggests that the NP does not need to have Case at all.

There is a weakness in the above argument, however; namely, it seems to be possible in some languages for objects to pick up nominative Case from the INFL while remaining in the object position (see Burzio (1981) for Italian; cf. also Belletti (1985) and section 5.2.2 below). Thus, NPs whose head has been incorporated could still be receiving Case in this way. This gap can be filled by considering a particular construction in Southern Tiwa, which B. Allen (1978) calls the 'Goal Advancement' construction. The basic fact about this construction is that certain intransitive verbs of motion, including -wan 'to come' and -mi 'to go', can appear in two related syntactic frames:

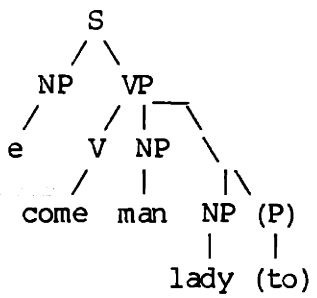
(79) a. seuan-ide 0-wan-ban liora-de-'ay
man-suf 3s-come-past lady-suf-to
'The man came to the lady'

b. liora-n am-seuan-wan-ban
lady-pl 3p-man-come-past

'The man came to the ladies'

These sentences are essentially synonymous; nevertheless, their surface structures are quite different. In the first the theme 'man' is the subject and the goal 'lady' appears in a postpositional phrase; in the second the theme 'man' is incorporated into the verb and the goal 'ladies' is the subject, as shown by the verbal agreement paradigm (see Allen (ibid.) for details). Given my general assumptions, and in particular the Uniformity of Theta Assignment Hypothesis, these verbs must uniformly have both their arguments internal to the VP at D-structure:

(80)



The verb is unaccusative, assigning no theta role to the subject position; thus we expect it to be unable to assign accusative case. Indeed, in neither sentence form does the verb have a straightforward direct object. Now, both agruments of the verb must find a way to receive case. One possibility is that the goal is generated together with an appropriate postposition, which will assign it Case,[23] while the theme moves into the subject position in order to receive the nominative Case from INFL. This yields (79a). The other possibility is that the goal NP moves to the subject position, thereby claiming the available structural Case. Meanwhile the head of the theme NP incorporates into the governing verb (79b). This incorporation must enable the theme NP to either pass or avoid

the Case filter in some way: the theme cannot receive accusative case, because (as before) the verb has none to assign. Moreover, his time it is not possible to suppose that the theme somehow inherits nominative Case from the INFL in place, because this case is independently assigned to the goal NP. Therefore, the conclusion is again that an NP whose head N has incorporated into the verb simply does not need Case in order to be grammatical. This accounts for why the theme obligatorilly incorporates in the 'goal advancement' structure when the goal NP has become the subject.[24]

This conclusion is reinforced by slightly different data from Niuean (Austronesian), as described by Seiter (1980). In section 2.1.1, we saw that in Niuean, as in other languages, direct object NPs can undergo incorporation, but NPs which are arguments of prepostions cannot. Nevertheless, there seems to be an exception to this usually reliable generalization. A certain class of affective verbs and perception verbs which take an experiencer subject also take an internal argument marked by the preposition ke he 'to':

(81) a. Ne fanogonogo a lautolu ke he tau lologo
past listen abs they to pl song
ke he tau tūlā ne ua.
to pl clock nft two
'They were listening to songs for a couple of hours.'

b. Manako nakai a koe ke he tau manu?
like Q abs you to pl animal
'Do you like animals?'

c. Vihiatia lahi a au he fakatali ke he tau tagata
hate greatly abs I comp wait to pl person
'I really hate waiting for people'

With this particular class of verbs, the noun which appears in the prepositional phrase may incorporate into the verb complex after all:

(82) a. Ne fanogonogo lologo a lautolu ke he tau tula ne ua
past listen song abs they to pl clock nft two
'They were listening to songs for a couple of hours'

b. Na manako manu nakai a koe?
past like animal Q abs you
'Do you like animals?'

c. Vihiatia lahi a au he fakatali tagata
hate greatly abs I comp wait person
'I really hate waiting for people'

Seiter calls these nominals 'middle objects'. These structures contrast minimally with others in which the verb which selects the very same preposition (with a simple goal semantic role), in which the object of the preposition may never incorporate. For example:

(83) a. Fano a ia ke he tapu he aho tapu
go abs he to church on day Sunday
'He goes to church on Sundays'

b. *Fano tapu a ia he aho tapu
go church abs he on day Sunday
'He goes to church on Sundays'

In order to preserve our explanation of the ungrammaticality of (83b) and similar examples in other languages, we must say that the 'middle objects' in (81) are not true prepositional phrases; rather they are 'pure' arguments of the verb, receiving their theta role from it directly. If this is the case, the preposition ke he does not need to appear at D-structure in these sentences. Then middle objects are like 'normal' direct objects in this way, which accounts for the fact that they can incorporate into the verb. Nevertheless, unlike direct objects, if they do not incorporate, they must be preceded by the preposition ke he. This can be explained if we assume that the verbs that take middle objects are not Case assigners; then, in order for the NP to receive Case, a special process must apply to insert ke he in these structures as a Case

assigner.[25] This account covers the facts. Additionally, it implies that no verb will take both a direct object and a middle object, since the middle object is in effect the direct object--of a slightly deficient verb. This generalization appears true. Now, returning to the incorporation structures in (82), we observe that they are grammatical even though there is no inserted Case marker and we know (from (81)) that the verbs themselves do not assign Case. As with goal advancement in Southern Tiwa, we cannot suppose that the incorporate is somehow picking up Case from the INFL, because this Case is needed for the subject of the sentence. Again, we are forced to conclude that NPs with incorporated heads do not need to receive Case.

To this point, I have argued that NPs which are incorporated do not need Case by showing that they are allowed as objects of verbs which do not assign (accusative) Case at all. There is another way to make the same point: by showing that when the object of a verb that does assign accusative case is incorporated, the verb's Case assigning potential is not exhausted; rather the verb becomes free to assign accusative Case to some other NP. In fact, this seems to be possible. Consider the following paradigm from Southern Tiwa (Allen et. al. (1984)):

(84) a. Ti-'u'u-wia-ban T-ay
1sS:A-baby-give-past 2s-to
'I gave the baby to you'

b. *'U'u-de ka-wia-ban
baby-suf 1sS:2sO|A-give-past
'I gave you the baby'

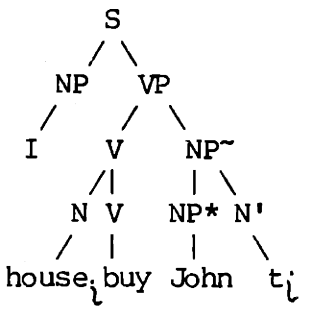
c. Ka-'u'u-wia-ban
1sS:2sO|A-baby-give-past
'I gave you the baby'

Here, -wia 'give' is a tryadic verb, taking a theme and a goal as well as an agent. In (84a), the goal appears as the object of a postposition, from which it may receive Case. The goal cannot appear as a direct object, without the postposition, if the theme argument in not incorporated into the verb, however, as shown in (84b). (The goal argument here is 'pro-dropped', its content being identified by the verbal agreement, as is normally possible for objects in Southern Tiwa.) In this way, Southern Tiwa contrasts with English. A plausable account of this restriction is in terms of Case theory; Southern Tiwa verbs can assign only one accusative Case, but both the theme and the goal need to get a Case in this structure. There are not enough Case assigners to go around, and one or the other of the NPs ends up violating the Case filter. If, however, the theme noun root is incorporated into the verb, the goal can appear without its postposition, as a full object which can trigger agreement and be 'pro-dropped' (84c). This is accounted for given the assumption that the incorporated NP does not need to receive Case at all. Then there will be no competition, and the verb is free to assign the Case which would normally go to the theme NP to the goal NP instead, giving a grammatical structure.

This same conclusion can be reached on the basis of the 'possessor-stranding' structures of Southern Tiwa and Iroquoian, discussed in the last section. In these constructions, the head noun of a verb's internal argument is incorporated, leaving behind its possessor. The noun can then no longer directly assign Case to this NP, so the verb complex is required to do so in order to avoid a Case Filter violation. A typical example of this structure is:

(85) a. ONEIDA (=(61))
wa-hi-nuhs-ahni:nu: John
aor-1sS/3M-house-buy John
'I bought John's house'

b.



Here the verb assigns Case to the possessor 'John', as represented by the fact that the verb agrees with its features rather than those of the thematic object 'house' (hi-, instead of k- for a 1s subject / 3 neuter object). In the last section, we considered the implications of this for the theory of government, given that the verb governs the possessor here. Yet there is an implication for Case theory proper as well: even when the verb governs the possessor, it is free to assign its case to the possessor NP* only if it does not have to assign that Case to the object as a whole NP~. Since it does Case mark NP*, we conclude that NP~ does not need Case in this construction. Again, the NP whose head is incorporated can afford to let the Case which would normally be its pass on to another NP in need.

To summarize, a rich variety of facts drawn from a number of typologically different languages all point together to the conclusion that a noun phrase simply need not be Case marked if its head noun is incorporated into the governing verb.

2.3.2 Morphological Identification and the Case filter

Why should this fact about Noun Incorporation from the preceding subsection be so? Given our current understanding of Case theory, and in particular of the Case filter, there is no reason to expect this result. Nevertheless, it seems reasonably consistent across languages that have Noun Incorporation. This is true in spite of the fact Noun Incorporation itself seems to be a marked grammatical process,[26] and that the explicit evidence supporting the result is rather subtle, coming from different and somewhat unusual constructions in each particular language. This suggests that the fact that NPs whose heads have incorporated into the governing verb do not need Case is not a marked, peripheral exception to Case theory which the child must learn on the basis of exposure to rich and/or obvious data. Instead, it must reflect some deep property of Case theory itself. On this basis, I will reconsider Case theory, seeking a perspective from which it will be obvious rather than odd that Noun Incorporation releases an NP from the Case Filter.

I begin by asking another question. In the Case theory of Chomsky (1984), the Case filter is reduced to the Visibility Condition, which says that the head position of an (A-)chain must be Case marked in order for the chain to be 'visible' (i.e. available) for theta role assignment at LF (more generally, for LF interpretation). Since overt NPs are canonically arguments which get theta roles, they must be visible in this sense, and therefore they must receive Case; thus the core of the Case filter from Rouveret and Vergnaud (1980), Chomsky (1980, 1981) follows from this formulation. Moreover, the newer formulation is superior in certain ways, in that it correctly explains both why some overt NPs do not need Case (e.g. those in which are not arguments, such as topics and predicate

nominals) and why other elements which are not overt NPs do need Case (e.g. variables, Ss or PPs in subject position). Now, however, we can try going a step further by asking the next question: why should an element need to get Case in order to be visible for theta role assignment at LF?

In a language with a rich system of morphological case and fairly free word order, such as Latin, Walpiri, Estonian, or Basque, case plays an obvious functional role: it tells which NP argument is which. Thus, the NP with the dative case ending is the goal argument of the verb, the NP with the ablative case ending is the source argument, and the NP with the accusative or absolutive case ending is (generally) the theme argument. In fact, these morphological markings can in some cases be the only cue for recovering the correct semantic (thematic) relations of the sentence. Now suppose that the Visibility Hypothesis is a grammaticalization of this general situation; it is a formal condition on representations at LF which ensures that inferences like those above will be reliable strategies for working out the semantic roles of a sentence. Thus, intuitively, an NP can receive a thematic role from the verb only if that thematic role assignment is 'visible' because the NP has gotten Case from the verb. This idea can be developed in the following way. Consider the following abstract representation which would schematize the VP of a sentence like 'John stole an apple from me' in a rich case language:

(86)

VERB	NP-ablative	NP-accusative
[[θ-1 θ-2] θ-3]	'abla$_j$'	'acc$_i$'
theme source agent	[θ-2]	[θ-1]
(|) (|)		
acc$_i$ abla$_j$		

In this structure, the following things are given. We know that, as an

inherent lexical property, a verb like 'steal' is associated with a theta grid, which is intimately related to the meaning of the word and which represents the thematic roles the verb can assign. This is simply represented in the diagram by the indexed θ-positions associated with rough semantic labels, although it is likely that the theta grid has more structure than this (cf. the notion of lexical structure in the work of K. Hale (1983, etc.)). Furthermore, the verb as a lexical property also specifies which morphological cases it appears with, as represented in the diagram by the abreviations 'acc' (=accusative) and 'abla' (=ablative). Finally, the verb associates its case features with its theta roles in a biunique fashion, as represented in (86) by the vertical lines linking the the two.[27] Meanwhile, the two NPs each appear in a morphological form characteristic of a particular case declension; on this basis we can say that one is ablative and the other accusative. Now, two types of assocations between these NPs and the verb must be made by the syntax: the case features of the NPs must be associated with those of the verb, and the theta roles of the verb must be associated with the NPs. The first of these is the 'process' of Case-marking (or 'Case licensing', or 'Case checking'), and is represented by coindexing the corresponding case features with small letter subscripts; the second is the 'process' of theta role assignment, represented by coindexing with Arabic numbers (= the theta indexing of chapter 1). The Visibility Condition can then simply be interpreted as claiming that the second coindexing is necessarily contingent on the first.

In this regard, it is probably useful to distinguish among several different kinds of case, each of which fits into this conceptual framework

naturally but in a slightly different way. Thus, we can state a series of closely related but slightly different 'Visibity Conditions' for the various types. In rich case marking languages, there are case endings which are semantic, in the sense that a lexical item that appears in that particular morphological form will always have a particular, definable thematic role which is associated with that form. For example, Estonian has an ablative case which appears on sources, an allative case which appears on goals, an adessive case which appears on locations meaning 'on', and several others. In fact, this type of case marking allows the recovery of semantic relations from morphological shape in the purest and most obvious way. The properties of this type of case can be captured in the in a condition of the following form:

(87) If A assigns semantic case X, then
B receives theta(X) from A if and only if B receives semantic case X from A.

Here 'theta(X)' refers to the specific thematic role which is associated with semantic case X. The biconditional guarentees that the relationship between morphological form and thematic role characteristic of semantic cases will hold true.

Not all case and theta role associations are this tight however. Consider, for example, the genitive case in English, which I will assume is assigned to a specifier of N by the head N itself under government. This case, unlike allatives and adessives, can mark a variety of different thematic roles:

(88) a. The tyrant's destruction of the city (agent)

b. The city's destruction (patient)

c. John's backpack (possessor)

Genitive case in a language like Latin is similar in this regard. Nevertheless, the head noun cannot assign genitive case to an NP which it does not assign a theta role to at all (cf. Chomsky 1984):

(89) a. The belief [that John is intelligent]

b. *John's belief [t to be intelligent]

Hence there is still a strong link between theta role assignment and case assignment in this situation, albeit not as strong a one as there is with semantic case. Cases like genitive in English I call inherent case. They are subject to the following Visibility Condition:

(90) If A assigns inherent case, then
B receives a theta role from A if and only if B receives case from A.

This condition is exactly the 'Uniformity Condition' of Chomsky (1984). It is very similar to (87), except that the explicit link between the particular theta role and the particular case form is broken. Hence, if (87) is satisfied, so is (90), although not necessarily vice versa. Nevertheless, including this condition in Universal Grammar still helps fulfill the functional purpose of making thematic relationships recoverable from surface form, because when one sees an argument with inherent case one knows it must be thematically dependent on the nearest case assigner. Possible confusion will be limited at most to when the case assigner can assign more than one thematic role. Thus, in this conceptual context, we see why Chomsky's Uniformity Condition should be true.

Finally, there is a third type of case which is even looser than

inherent case: namely the structural cases of nominative and accusative.[28] These can be assigned by a lexical item to any NP, whether it is thematically related to the case assigner or not, as long as the case assigner governs the case recipient. Thus, a 'raised' NP can appear in nominative case or accusative case, although it cannot appear in adessive or genitive (cf. (86)). Nevertheless, even here we may naturally suppose that a weakened visibility condition related to (87) and (90) holds. This condition would be:

(91) The Visibility Condition (preliminary)

B receives a theta role only if it receives case.

This is similar to (90) except with the further weaking that the theta assigner and the case assigner need not be the same. This is the most general Visibility Condition, satisfied by all types of Case, and the one which Case filter is derived from. By its relationship to (87) and (90), we can now see why Universal Grammar includes such a condition: it is a particular formal grammaticalization related to the a priori necessity of being able to recover semantic relationships from surface forms.

Now, a look at other languages suggests that this perspective should be generalized somewhat. We have had in mind languages with rich case systems, which represent argument relations by morphology on the NPs. However, other systems of overtly representing argument relations are certainly possible. For example, consider the following sentences from Tuscarora (Iroquoian, Williams (1976)):

(92) a. wi:rv:n wa-hra-kv-? tsi:r.
William aor-3MS/3NO-see-punc dog
'William saw a dog.'

b. wa-hra-kv-? wi:rv:n tsi:r.
aor-3MS/3NO-see-punc William dog
'William saw a dog.'

c. tsi:r wi:rv:n wa-hra-kv-?.
dog William aor-3MS/3NO-see-punc
'William saw a dog.'

All of these sentences mean the same thing, yet the word order varies and there is no morphological case marking on the NPs. Where then is the information encoded as to which NP bears which theta role? The answer is clearly that it is encoded in the agreement morphology on the verb. In particular, the prefix hra- occurs only when the subject is masculine third person and the object is nonhuman (neuter) third person. In this way and in this way only the perceiver of the (92) sentences knows who saw whom.[29] Thus, verbal agreement morphology seems to perform the same function for Tuscarora which nominal case morphology performs for Latin and Estonian. In fact, there is a kind of symmetry here: in the one case the relation between the argument and the predicate is represented by morphology determined by lexical properties of the predicate appearing on the argument (morphological case); in the other it is represented by morphology determined by lexical properties of the argument appearing on the predicate (agreement). This symmetry can be captured by representing the agreement relationships with essentially the same formalism which we used to represent the case assigning relationships in (86) above: we coindex the morphologically represented agreement features of the verb with the inherent features of the noun which determine them:

(93)

VERB		NP	NP
[[θ-1]	θ-2]	3s/masc$_j$	3s/neut$_i$
theme	agent	[θ-2]	[θ-1]
3sNO$_i$	3sMS$_j$		

This agreement indexing relation then counts as the same type of relation as the case indexing relation: we can generalize and say that both are particular instances of morphological indexing, because both are morphological spell outs of a grammatical relation. Now, we simply rephrase the Visibility Condition in terms which are not prejudiced toward either morphological case oriented systems or agreement systems in the following way:

(94) The Condition of Morphological Identification:

If B is the NP position at the head of a chain, B bears a theta index at LF only if it bears a morphological index.

This condition is named so as to be neutral between case and agreement and to recall the functional reason behind the existence of such a condition in Universal Grammar. It supercedes the Visibility Condition (91) and the Case filter, although at various points in what follows I will still use the more familiar terms when there is no danger of confusion. When the condition is satisfied, I will say that B is 'm(orphologically)-identified' (by A). The other Visibility Conditions can easily be recast in these somewhat more general terms as well, if necessary. Furthermore, I assume as a basic principle of 'Case' theory that the government relation must always hold between two items which are morphologically coindexed (or 'm-indexed'), regardless of what type of m-indexing it is.

In this regard, we might add the English system to the list of ways in which items can be morphologically identified. In English, semantic relationships are primarily represented not by morphology on the theta role assigner or by morphology on the argument, but rather by a relation of adjacency holding between the two. Hence in (95a) and (95b) the verb shape and the NP shapes are identical, but the interpreted thematic relationships are different because the adjacency (and directionality) relationships are different:

(95) a. William saw the dog.

b. The dog saw William.

We can subsume this representational system into our framework by immagining that English and similar languages have an indexing process such as (96) in lieu of agreement or morphological case processes:

(96) Morphologically index A and B if A is lexically designated as a 'Case' assigning element and B is adjacent to A (on the right in English).

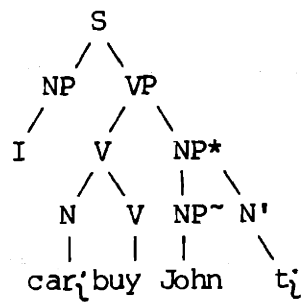
This reconstructs in slightly more neutral terms the important notion that adjacency is a (the) requirement on Case assignment—i.e. on morphological identification—in highly configurational languages such as English: see Chomsky (1981), Stowell (1981), Koopman (1983), Travis (1984) for developments of the implications of a language having this type of m-identification system.

At last, we return to the question of Noun Incorporation. A typical instance of NI has a structure like the following:

(97) ONEIDA

a. Wa-hi-nuhs-ahni:nu: John.
aor-1sS/3M-house-buy John
'I bought John's house.'

b.



Here, NP* is clearly coindexed with the complex verb N+V, by virtue of the fact that its head has moved into this category. Just as clearly, this relationship between NP* and the complex V is a morphologically visible one—part of NP* actually appear inside of the V. In this sense, it is just as visible as at PF as morphological case, agreement, or adjacency requirements are. Thus, we can naturally take the coindexing induced by incorporation to count as a morphological indexing in the sense relevant for (94). Note that the complex verb must govern the NP whose head has been incorporated in order for the X-o movement to be licit at all. Therefore, the formal requirement on instances of morphological coindexing is automatically met in this case. Furthermore, since it is (at least in the core case) only thematic objects which incorporate into the verb (see section 2.1), one can reliably infer the semantic relationship of an incorporated noun purely by virtue of the fact that it is incorporated. Thus, Incorporation meets the functional characterization of the morphological identification requirement as well as the formal one. I therefore take it to be a fourth type of morphological indexing in good standing. The ultimate result of this is that incorporation automatically satisfies the Case filter requirements (expressed in (94)) of the NP whose

head is incorporated. Hence, any other m-indexing, while possible, is theoretically superfluous. Thus, we account for the facts in the previous subsection that NPs whose heads have incorporated are grammatical as the objects of verbs even when those verbs are not 'case assigners'—i.e. when they cannot be indexed with an NP in a case or agreement relation. In the same way, we account for the fact that when the verb is a case assigner in this sense, it can m-index some other NP, such as the possessor NP~ in (97) without causing a violation of the m-identification condition.

In conclusion, the basic result of this section is that the 'Case filter' is broader than it has sometimes been taken to be. This is expressed by replacing the Case filter with the Condition on Morphological Identification, which can be satisfied in ways other than case assignment in the narrow sense. The specific ways available vary from language to language, and include morphological case, verbal agreement, and adjacency, as well as combinations of these. Incorporation finds its place as a fourth type of m-identification, crucially independent of the other three. This explains various aspects of NI structures. In fact, the alternative of satisfying the Case filter requirements of an NP by incorporation rather than traditional case marking will play a significant role in the chapters to come as well (see 4.2.4, 5.4.1).[30]

2.3.3 Extensions of M-Identification

In the last subsection, I argued that the proper way to view the Case filter is as a kind of condition to the effect that thematic relationships between lexical items must (in general) be overtly represented in some way. This was formalized in terms of the Condition of Morphological

Identification, which says intuitively that an argument can stand in a semantic relationship to a theta assigner only if it stands in a 'morphological' relationship to an appropriate item--in the core case the theta assigner itself. Thus, this condition in a certain sense links together the levels of LF were semantic relationships are represented and PF were phonologically overt things are represented. As such, the Condition is presumably one on S-structure, since this is the structure which stands between LF and PF and which must be appropriately mappable onto both (cf. 1.3.1). Since the Case filter is the most important condition of Case theory, if it is recast in terms of morphological identification, it is reasonable to expect that the rest of Case theory will be as well. In this section, I will make this extension by discussing several minor conditions that significantly affect incorporation structures; we will see that they are easily understood in terms of Case theory when it is viewed as morphological identification.

One condition we have already seen in section 2.2.2: the condition that traces cannot assign case to an NP which they govern. This assumption is necessary to account for paradigms like the following from Mohawk (Postal 1962):

(98) a. Ka-rakv ne [sawatis hrao-nuhs-a?].
3N-white John 3M-house-suf
'John's house is white.'

b. Hrao-nuhs-rakv [ne sawatis t].
3M-house-white John
'John's house is white.'

c. *Ka-nuhs-rakv [ne sawatis t].
3N-house-white John
'John's house is white.'

In (98a), the possessor 'John' is m-identified by its governing head

'house' through the agreement relation, as represented by the morpheme hrao- appearing on this noun. In (98b), 'John' is m-identified by the complex verb 'house-white', again represented by the morpheme hrao- appearing on the latter item. We may, however, ask why (98c) is not acceptable parallel to (98a), with the possessor being m-identified by the trace of the moved N-o 'house'. In fact, by the Projection Principle we know that such a trace is present, so (98c) is structurally parallel to (98a) in this respect; nevertheless, it is bad. Hence, the trace, unlike the noun root, must not be able to m-identify an NP that it governs, either on its own or by virtue of forming a chain with the N-root itself, which we know to be a case assigner. Intuitively, there is a clear reason why this difference should exist: the trace cannot have the agreement morpheme that would represent an m-indexing relationship between it and the NP it governs. Moving to the general case, as soon as 'Case' is viewed in terms of overt morphological identification, it is very natural to claim that a phonologically null element cannot be a Case assigner. This can be expressed in terms of the following formal principle of grammar:[31]

(99) An argument B cannot be morphologically indexed with A if A is phonologically null (e.g. a trace) in the syntax.

Thus, obligatoriness of the agreement between the complex verb and the stranded possessor now follows formally from (99) plus the fact that the possessor must be morphologically identified.

The notion of morphological identification also makes understandable the well-known descriptive generalization that INFLs can assign only one nominative case, and verbs in the unmarked situation only assign one accusative case. There are two reasons for this. Suppose that a verb had

multiple arguments, but assigned all of them same morphological case. Then the spirit, if not the letter, of the Condition of Morphological Identification is broken, because it will not be possible to recover which NP stands in which thematic relationship to the verb except by semilinguistic pragmatic strategies. Even apart from this, it is true that the structural cases nominative and accusative entail by far the least tight relationship between thematic relationship and morphological relationship, since they are subject only to the loosest of the Visibility Conditions (cf. the discussion in 2.3.2 above). Again, in order for the functional purpose of the Condition on Morphological Indentification not to break down, the use of structural case must be limited in some way. The natural way to is to allow only one structural case assignment per Case assigner. Then, all of the arguments of an item but one must have semantic case (or possibly inherent case), and these semantic cases will directly reveal their thematic roles by (87). The last argument will then be able to have structural case. This case will not identify its thematic role directly, but it will be recoverable by 'process of elimination': its thematic role will be the only one associated with the verb in the lexicon which does not show up in a semantic case. Hence, from both of these angles, it is reasonable for a given language to limit its verbs to assigning only one accusative case (more generally, one structural case) each. This, however, is a comparitively loose implication, following from functional considerations rather than from formal principles, so some language variation could be tolerated here. In fact, we will find evidence in later sections that a handful of languages differ from the more usual situation crucially in that their verbs can assign two structural accusative cases (see in particular sections 3.3 and 4.2.4.1). The

Morphological Indentification perspective shows why this is a 'marked' case, however.

The remarks of the last paragraph were made primarily with morphological case marking, agreement, and adjacency in mind. The same situation will presumably hold in the case of Noun Incorporation as well, however, since this too is a type of morphological identification. In fact, the Incorporation of more than one Noun root into a single verb stem is generally impossible. Mithun (1984) makes this observation on the basis of her extensive survey of NI constructions in languages of the world.[32] Seiter (1980) shows that this indeed must be an explicit condition of some kind in Niuean (Austronesian), based on paradigms like the following:

(100) a. Kua fā fakahū tuai he magafaoa e tau tohi he vakalele.
perf-hab-send-perf erg-family abs-pl-letter on airplane
'The family used to send the letters on an airplane.'

b. Kua fā fakahū vakalele tuai he magafaoa e tau tohi.
perf-hab-send-airplane-perf erg-family abs-pl-letter
'The family used to send the letters by airplane.'

c. *Kua fā fakahū tohi vakalele tuai e magafaoa.
perf-hab-send-letter-airplane-perf abs-family
'The family used to send the letters by airplane.'

We have already seen (section 2.1,1) that incoporation of patient objects is possible and in fact productive in Niuean. Sentence (100b) shows that under certain circumstances the incorporation of an instrumental or 'means' nominal is possible as well.[33] Sentence (100c), however, shows that the instrument and the patient cannot both incorporate into the verb at the same time. This is true in spite of the fact that either incorporation is acceptable in its own right. Allen, Gardiner, and Frantz (1984) make a similar point for Southern Tiwa, showing that double N incorporations into

a morphologically simple verb are impossible:

(101) a. Ta-'u'u-wia-ban hliawra-de.
1sS:A/A-baby-give-past woman-suf
'I gave the woman the baby.'

b. *Ta-hliawra-'u'u-wia-ban.
1sS:A/A-woman-baby-give-past
'I gave the woman the baby.'

In (101a), the theme NP has already been incorporated; (101b) shows that incorporating the goal as well gives an unacceptable result.[34] In fact, the restriction at work here seems very similar to that of which usually blocks a verb from assigning two accusative cases discussed above: when two Ns are incorporated the information as to which one is associated with which thematic role begins to be lost. The two superficially very different cases can then be unified with the following descriptive generalization:

(102) A single item cannot morphologically identify two NPs in the same way.

Thus, it is rare for two NPs to have structural case in the same VP, for two NPs to trigger object agreement on the same verb, and for two N roots to be incorporated into the same verb; all of these generalization are subsumed under (102). Note, however, that it certainly is possible for a single verb to morphologically identify two NPs if different techniques are used for each. For example, in (101a) the Southern Tiwa verb 'give' m-identifies both the theme 'baby' and the goal 'woman'--the former via incorporation and the latter via agreement. The cases of 'possessor raising' with NI are also examples of this: the verb m-identifies the entire direct object by incorporation, and the possessor of the direct object by agreement. What is generally blocked is two identical

identifications.

One further principle of Case theory which arises naturally in the light of morphological identification involves how complex categories derived by incorporation assign Case. X-o categories listed in the lexicon have their case assignment properties explicitly represented there, but this is not so for X-o's formed in the syntax. Rather, these X-o's can only be Case assigners by virtue of being formed out of X-o's which are lexically specified as being Case assigners. I will assume, however, that this kind of inheritance of the ability to assign case is strictly limited by the following principle:

(103) A complex X-o of category A in a given language can have at most the maximal case assigning properties allowed to a morphologically simple item of category A in that language.

This principle is related to the idea of morphological identification in a simple way: in an incorporation structure, the overt morphological unit is the whole derived complex item, not the individual stems that it is made up of. Hence, the only valid morphological identifier should be this complex. In this way, (103) is conceptually similar to (99). On the other hand, there are strict limits--formal reflections of functional constraints--on how many arguments any single item can identify, regardless of its internal structure. In this way, (103) is conceptually similar to (102). (103) then merely states naturally enough that the (to some degree language particular) limits tolerated on a complex category are the same as those tolerated on a simple one. To see what this comes to, consider an abstract example of NI such as the following (cf. (97)):

(104) a. I agr_j-buy [NP_j $John_i$ agr_i-house]

b. I agr_i-house-buy [NP $John_i$ t]

From (104a), we know that the noun root 'house' is a case assigner; suppose that it, as in English, assigns genitive (inherent) case. Then, in (104b) it is conceivable that the complex verb assigns genitive case to the possessor, by virtue of the fact that it contains a genitive case assigner 'house'. I will assume that this is impossible, however, blocked by the fact that 'house-buy' is categorially a verb and that verbs do not (usually) assign genitive case. Then, the complex verb will not be able to inherit genitive case from the noun root by (103), and will only be able to assign the accusative case that it inherits from the V root which it contains. Thus, (103) implies that the possessor in configurations such as (104b) must be accusative rather than genitive; this is at least consistent with the morphology of such constructions in Southern Tiwa and the Iroquoian languages. Furthermore, suppose that by (102) verbs in these languages can only assign structural case to one NP. Then, (103) implies that the incorporation of a N-root will never increase the case assigning ability of the verb above this limit, even if the N is a (structural) case assigner. Thus, I predict that sentences such as (105) will be impossible in languages whose properties match these assumptions, in spite of that fact that if either of the post-verbal NPs is omitted the structure is known to be possible (cf (84) and (85) above):

(105) *I [agr-house-sell John [Peter t]]

In a structure like this, either 'house-sell' would have to assign case to both 'John' and 'Peter', or 'sell' would have to incorporate a second NP in order for everything to be morphologically identified properly. However,

both of these options is impossible, given (102) and (103). Unfortunately, I have not been able to check this prediction, but it seems reasonable.[35] Thus, the empirical evidence in favor of (103) is not overwhelming at this point, but it is natural and reasonable given the m-identification approach to Case theory. The evidence in favor of (103) will, in fact, be very strong by the end of this work.

To conclude, I have shown how the notion of morphological identification can be extended to make natural a certain collection of secondary constraints of Case theory which crucially arise in structures formed by Incorporation. These in turn have clarified the nature of NI sentences, explaining why certain a priori possible alternatives to grammatical NI sentences do not occur. In this way, the configuration of assumptions is supported.

2.3.4 Variation in NI Constructions

In the preceding parts of this section, I have argued that an incorporated noun and the NP that it heads need not be assigned Case; the incorporation relation itself is adequate to allow them to bear the necessary theta role at LF. But of course it is quite a different thing to say that this nominal <u>cannot</u> be assigned case. Indeed, there is no good theoretical reason why such a thing should be impossible. In fact, I will assume that it is possible, and even necessary in some cases. This then will provide a low-level parameter of variation accounting for certain crosslinguistic differences in the syntax of NI constructions.

Greenlandic Eskimo is a language which has NI structures (see Sadock

(1980, to appear)). Some simple examples are:

(106) a. Qimme-qar-poq.
dog-have-3sS
'He has a dog.'

b. Sapangar-si-voq.
bead-get-3sS
'He bought beads.'

c. Nerrivi-lior-poq.
table-make-3sS
'He set the table.'

In each of these cases, the thematic direct object has been incorporated into the verb, consistent with the Head Movement Constraint. In this way, Eskimo is like Mohawk and Southern Tiwa. Yet, there is a significant difference as well; Sadock (1980, to appear) states that subjects are never incorporable in Greenlandic Eskimo. This contrasts with Mohawk and Southern Tiwa, which can fairly generally incorporate the 'subject' (=sole argument) of intransitive verbs of the unaccusative class (section 2.1.1). Why should this difference be?

Correlated with the difference identified above is a morphological difference. Notice that the verb forms in (106) all have agreement suffixes which are drawn from the intransitive agreement paradigms of Eskimo. This is true in spite of the fact that the verbs are dyadic, with a direct object overtly expressed in the form of the incorporate. In contrast, the sentences in (107) have unincorporated objects and show the transitive agreement paradigms:

(107) a. Arnap meeraq taku-vaa. (*taku-voq)
woman-erg child(abs) see-3sS/3sO
'The woman saw the child.'

b. Neqi neriv-ara. (*neriv-unga)
meat(abs) eat-1sS/3sO

'I ate the meat.'

In this respect also, Eskimo differs from Southern Tiwa and Mohawk. Verbs in the latter two languages show the transitive agreement when their direct object is incorporated as well when it is not; this agreement will reference the features of the incorporated object if is not needed to morphologically identify some other NP such as the possessor. Postal (1962:285) shows this for Mohawk:[36]

(108) a. I?i khe-nuhwe?-s ne yoa-wir-a?a.
I 1sS/3FO-like-asp pre-baby-suf
'I like the baby.'

b. I?i khe-wir-nuhwe?-s
I 1sS/3FO-baby-like-asp
'I like the baby.'

c. *I?i k-wir-nuhwe?-s
I 1sS-baby-like-asp
'I like the baby.'

(109) a. I?i hrai-nuhwe?-s ne yao-?nihhsra-?
I 1sS/3MO-like-asp pre-father-suf
'I like the father.'

b. I?i hrai-?nihhsra-nuhwe?-s
I 1sS/3MO-father-like-asp
'I like the father.'

c. *I?i k-?nihhsra-nuhwe?-s
I 1sS-father-like-asp
'I like the father.'

Usually in Mohawk incorporated nouns are inanimate and neuter, so that the object agreement which they show is null. If, however, the noun root is masculine or feminine as in (108), (109), the characteristic transitive agreement form which it triggers is preserved when it is incorporated, as the examples show. Similar facts hold in Southern Tiwa (Allen, Gardiner, and Frantz (1984)):

(110) a. 'U'u-de ti-mũ-ban.
child-suf 1sS:A-see-past
'I saw the child.'

b. Ti-'u'u-mũ-ban.
1sS:A-child-see-past
'I saw the child.'

c. Te-pan-tuwi-ban.
1sS:C-bread-buy-past
'I bought the bread.'

In (110a) and (110b) we see that the agreement is the same whether or not the object is incorporated; in (110c) we see that the agreement indeed changes if a noun root of a different conjugation class is incorporated. Hence, we can say that verbs with incorporated objects in Mohawk and Southern Tiwa continue to be morphologically transitive, whereas those of Eskimo are morphologically (although not logically or syntactically) intransitive. The morphological intransitivity of Eskimo incorporation structures is confirmed by case marking facts as well: when the head noun of the object is incorporated, the subject NP is marked with absolutive case, rather than with ergative case as it is when there is an unincorporated direct object (cf. (107a)):

(111) Suulut timmisartu-lior-poq.
Soren(abs) airplane-make-3sS
'Soren made an airplane.'

These facts reveal another difference between Eskimo and the other NI languages which we have focused on.

I suggest that these two differences can be related to one another in the following way. Incorporated noun roots and the NPs which they move from never need to be assigned case purely by virtue of the Condition of Morphological Identification. Nevertheless, in individual languages incorporated noun roots can be stipulated to need case, as an idiosyncratic

lexical property of the roots themselves. Suppose then that incorporable Noun roots in Eskimo have this property, but the incorporable noun roots in Mohawk and Southern Tiwa do not. Then, the Eskimo noun roots must be assigned case by verb root, presumably under government and adjacency within the complex X-o itself. We may then posit the following principle:

(112) If an X-o root assigns case within a complex lexical category Y-o, Y-o cannot inherit case assigning features from X-o.

For example, the verb root 'make' in (111) assigns case to 'airplane' within the complex verb 'airplane-make'; thus, 'make's case assigning properties are used up, and the entire verb 'airplane-make' gets no case feature which it can assign itself. I assume that this causes it to take intransitive agreement morphology, and to determine intransitive case morphology on the unincorporated NP arguments. We may say that Noun roots in Eskimo 'absorb' case. These same assumptions then explain why Eskimo never incorporates the N from the argument of unaccusative verbs. As explained in section 2.3.1, it is usual for unaccusatives crosslinguistically not to be able to assign case (Burzio 1981); thus there would be no case for such a verb to assign to the incorporated noun root. This does not violate m-identification per se, but it does mean that the lexical properties of the noun root will not be satisfied, causing the structure to be ungrammatical. In Mohawk and Southern Tiwa, noun roots do not have this property, and as long as m-identification is satisfied, the structure is acceptable. Hence the sole argument of unaccusatives can be incorporated in these languages. Moreover, even if the verb is a case assigner, it need not assign Case to the incorporated noun root; thus the complex verb can inherent its property of being a Case assigner from the

verb root, and will continue to take transitive agreement markers. In this way, the differences between the two types of languages are accounted for in terms of a low level variation in the properties of lexical items.

Finally, I observe that Niuean (Austronesian) seems to be a hybrid case, standing somewhere between Eskimo and Mohawk in these respects. Like Eskimo, when the head of the direct object incorporates in a simple sentence, the morphology of the result is intransitive (from Seiter 1980):

(113) a. Kua tā he tama e tau fakatino.
perf-draw erg-child abs-pl-picture
'The child has been drawing pictures.'

b. Kua tā fakatino e tama.
perf-draw-picture abs-child
'The child has been drawing pictures.'

(114) a. Volu nakai he tau fānau e fua niu?
grate-Q erg-pl-children abs-fruit coconut
'Are the children grating coconut?'

b. Volu niu nakai e tau fānau?
grate-coconut-Q abs-pl-children
'Are the children grating coconut?'

Niuean has no verbal agreement, but it does have an ergative case marking system like Eskimo. Like Eskimo, when the direct object is incorporated the case on the subject switches from ergative to absolutive, the form it has in intransitive sentences. On the other hand, we saw strong evidence in section 2.3.1 that Niuean verbs can incorporate nouns which they cannot assign case to: namely the so-called 'middle objects' of affective and perception verbs (see (81), (82)). Moreover, Niuean is like Mohawk and Southern Tiwa in that when it incorporates its object, the objective case which the verb would normally give to that NP can be assigned to another NP instead (Seiter 1980):

(115) a. Kua tā he tama e tau fakatino aki e malala.
perf-draw erg-child abs-pl-picture with abs charcoal
'The child has been drawing pictures with a charcoal.'

b. Kua tā fakatino e tama aki e malala.
perf-draw-picture abs-child with abs charcoal
'The child has been drawing pictures with a charcoal.'

c. Kua tā fakatino he tama e malala.
perf-draw-picture erg-child abs charcoal
'The child has been drawing pictures with a charcoal.'

Here, (115c) is the key sentence, in which the instrument appears marked as the direct object; this cannot happen unless the object is incorporated. Note that the case marking on the subject goes back to ergative in this structure. Finally, there is at least one intransitive verb in Niuean which, like those of Mohawk and Southern Tiwa, can incorporate its sole argument, the verb fai 'exist' (Seiter 1980):

(116) Fai gata nakai i Niuē?
Exist-snake-Q in Niue
'Are there snakes in Niue?'

To account for this 'middle ground' type of Noun Incorporation, we can simply say that Noun roots in Niuean preferentially receive case from the verb root when they can, but they do not absolutely need it. Thus, the morphology becomes intransitive as in Eskimo in the standard cases (113) and (114), but when there is no case to be had ((81), (116)) or another NP needs the case (115), the structures are still grammatical, as in Mohawk and other languages.

We are left with the following situation: universally Noun Incorporation NPs do not need to have case at all. This shows up in its purest form in the Iroquoian languages and in Southern Tiwa. However, as a language specific or a morpheme specific property, incorporated nouns may receive case after all, leading to a case absorption effect. This can happen in

(at least) two strengths: preferential absorption as in Niuean, or obligatory absorption as in Eskimo. In this way, both variations in the surface morphology of incorporation structures and minor differences in its distribution are accounted for. This approach will receive further confirmation in later sections, when we see that the same variation in Case receiving properties shows up in antipassive constructions (section 2.4) and passive constructions (section 5.2.1).

2.4 The Antipassive Construction

In the final section of this chapter, I will turn attention to what is known as the 'antipassive' construction. Descriptively, this construction has been characterized as one in which a morpheme is added to a transitive verb, such that the verb is made intransitive, with its thematic direct object appearing as an oblique phrase instead of as a surface direct object (see 1.1.2). I will endeavor to show that in fact antipassive is a special type of Noun Incorporation, thereby subsuming this traditional case of a GF changing process to a case of free X-o movement. Examples of this in a variety of languages are:

MAM: (Mayan, England (1983))

(117) a. ma 0-tzaj t-tzyu-7n Cheep ch'it
rec 3sA-aux 3sE-grab-ds Jose bird
'Jose grabbed the bird'

b. ma 0-tzyuu-n Cheep t-i7j ch'it
rec 3sA-grab-Apass Jose 3s-'of' bird
'Jose grabbed a/the bird'

ESKIMO: (Greenlandic, Sadock (1980))

(118) a. angut-ip arnaq unatar-paa
man-erg woman(abs) beat-indic:3sS/3sO
'The man beat the woman'

b. angut arna-mik unata-a-voq
man(abs) woman-instr beat-Apass-indic:3sS
'The man beat a woman'

CHAMORRO: (Austronesian, Gibson 1980)
(119) a. In li'i' i gima'-miyu
1pex-see the house-your
'We saw your house'

b. Man-li'i' häm guma'
Apass-see we(abs) house
'We saw a house'

(120) Man-man-bisita i famagu'un gi as Juan
plur-Apass-visit the children obl Juan
'The children visited Juan'

Note that throughout the case marking and agreement patterns of the antipassive sentences are those of an intransitive sentence,[37] contrasting with the corresponding nonantipassives in this way.

Relational Grammarians analyze the antipassive as a straightforward Grammatical Function changing rule that maps the underlying direct object into an inactive oblique phrase (to be technical and specific, a 'chomeur').[38] Marantz (1984) develops this type of conception in a framework with assumptions closer to those of the present work. He analyzes the antipassive morpheme as an affix which is attached to the verb in the lexicon, absorbing its Case assigning features. In this way, the antipassive is partially similar to the passive under Chomsky's (1981) analysis (see also Marantz (1984)), in that both involve morphemes that take away the (accusative) case marking potential of the verb. They are dissimilar, however, in that the antipassive does not take away the verb's ability to have a thematic subject as the passive morpheme does. Thus, the D-structure object of an antipassive verb will not be able to receive Case as it is, nor will it be able to get Case by moving to the subject

position, since this place is already occupied. Therefore, it receives Case by the insertion of a preposition or oblique Case marker--a special provision allowed by this construction (cf. of insertion in English nominals in Chomsky (1981)). In contrast to these types of approaches, I will analyze antipassive phenomena as cases of Noun Incorporation.

2.4.1 Antipassive as Noun Incorporation

There is an important sign that an approach like Marantz's is on the wrong track: the obliquely marked thematic object of an antipassive sentence is generally optional, and can simply be omitted. When it does not appear, there is still assumed to be a theme/patient of the action, and it is interpreted as being indefinite, unknown or simply not specified. This is possible in all of the languages illustrated above:

MAM:

(121) a. ma 0-kub' w-aq'na-7n-a (t-uk' asdoon)
rec 3sA-dir 3sE-grab-ds 3s-with hoe
'I worked it (with a hoe)'

b. ma chin aq'naa-n-a
rec 1sA work-Apass-1s
'I worked [something]'

(122) toons n-chi yoola-n xjaal
then prog-3pA talk-Apass person
'Then the people were talking'

ESKIMO:

(123) Angut unata-a-voq (cf. (118b))
man(abs) beat-Apass-indic:3sS
'The man beat someone'

CHAMORRO:

(124) Man-man-li'i' i lalahi (cf. (119b))
plur-Apass-see the males
'The boys see something'

These verbs are normally transitive, and are not 'object-deletion verbs';

apart from the antipassive construction, the thematic object argument must appear by the Projection Principle.[39] This situation is problematic for an account like Marantz's, in which the oblique patient NP is the actual argument of the verb, from which it receives its thematic role. Given this, it should be just as obligatory as the corresponding direct object of a nonantipassive sentence, both being equally required by the Projection Principle. Yet, this is not the case. The situation is made worse in that some languages have a morpheme that functions just like the antipassives in (121)-(124), but where no overt theme can be expressed even optionally. The Mayan language Tzotzil has such a morpheme, according to the description of Aissen (1983). Aissen speaks of a suffix -van, which attaches regularly and productively to transitive verbs. She says (p. 291):

> Verbs suffixed with -van have a reading like 'to do x to y, or with respect to y' where y must be human, either a nonspecific human or a discourse referent. In either case, verbs suffixed with -van never occur with an overt object.

This description makes it very clear both that there is a patient argument 'around' somewhere semantically, and that it cannot be expressed syntactically. Aissen gives the following examples (from Laughlin 1975):

(125) a. Muk' bu š-i-mil-van.
never asp-1sA-kill-Apass
'I never killed anyone.'

b. ...š-k'ot sibtas-van-uk-Ø.
asp-come frighten-Apass-uk-3sA
...he came to frighten [people].'

c. ?Ak'-b-at-Ø s-ve?el, ?i-Ø-ve? lek. Ta ša la
give-appl-pass-3sA his-meal asp-3sA-eat well asp now pt
š-Ø-mey-van, ta sa la š-Ø-buč'-van
asp-3A-embrace-Apass asp now pt asp-3A-kiss-Apass
ti kriarailetike.
the maids

'He was given his meal, he ate well. The maids embraced [him] and kissed [him].

In order to extend Marantz's account of the antipassive to cover these cases, one would have to claim that the antipassive morpheme can sometimes absorb the object theta role of the verb as well as the object case of the verb--optionally in Mam, Chamorro, and Eskimo; obligatorily in Tzotzil. Yet, this is precisely something that one cannot do in Marantz's framework; he posits that (productive) affixes can never change the argument structure of the roots to which they attach (Marantz 1984, section 5.2). Thus, the antipassive is problematic on this type of analysis.

This puzzle can be avoided if one assumes that the oblique theme is never an argument even when it appears; rather it is an adjunct phrase of some kind, similar to the agent phrase of a passive sentence.[40] Then, its optionality is expected, and examples such as (121)-(125) can easily be unified with those in (117)-(120). We must, however, face the question of what happens to the object theta role of the verb root. The examples given above make it seem unlikely that this theta role is deleted or suppressed lexically; for example, (124) corresponds more closely to English 'The boys see something' than to English 'The boys (can) see (well).' Given the assumptions of this work, the solution is clear: the object theta role is assigned directly to the antipassive morpheme itself. Thus, consider the following sentences again, this time in a realigned paradigm:

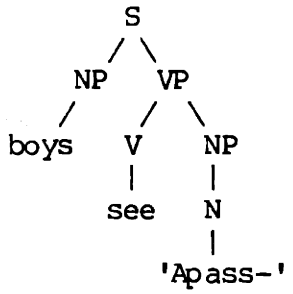
(126) a. In li'i' i gima'-miyu (Chamorro, =(119a))
lpex-see the house-your
'We saw your house'

b. Man-man-li'i' i lalahi (Chamorro, =(124))
plur-Apass-see the males
'The boys see something'

c. The boys see <u>something</u>

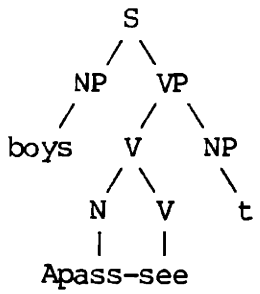
In (126b) there is a morphologically complex word which corresponds to two morphologically simple words in languages such as English (126c), as well as in other structures in the same language (126a). Just as in cases of Noun Incorporation, the antipassive verb 'stands for' both the semantic predicate and its direct object argument. The Uniformity of Theta Assignment Hypothesis then points toward parallel D-structures for all of the sentences in (126). This is done by generating the antipassive morpheme in the direct object position at D-structure, where it is assigned the object theta role:

(127)



Then the antipassive morpheme undergoes X-o movement, adjoining to the governing verb, yielding the S-structure:

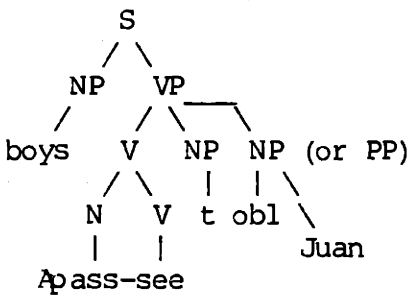
(128)



Thus, on this analysis, antipassive is simply a special case of Noun Incorporation, in which a single, designated lexical item incorporates.

Finally, sentences with an overt oblique patient phrase will have the exact same structure, with the patient phrase as an adjunct, 'doubling' the theta role of the antipassive morpheme:[41]

(129)



I will assume that the antipassive morpheme is coindexed with the oblique theme phrase and that it thereby transmits to it the theta role which it receives from the verb. This will only be possible if the antipassive morpheme has a certain idiosyncratic lexical feature, which then distinguishes Mam _-n_ and Chamorro _man-_ from Tzotzil _-van_. I will not, however, try to develop the mechanisms involved in this sharing of theta roles in any detail.

This analysis of the antipassive has one striking explanatory virtue: it accounts for the distribution and scope of the antipassive process with no additional stipulation. Explicit rules of antipassive, whether conceived as syntactic as in Relational Grammar (e.g. Gibson 1980) or as lexical in a framework like Lexical-Functional Grammar (Bresnan 1982), invariably must stipulate that antipassive is a process that effects direct objects and no other grammatical function. Nothing of the sort is necessary in the Incorporation theory, however; all that needs to be stated is that the antipassive morpheme is a noun and an affix. The first property will imply that it heads nominal projections, which can receive a theta role; the

second will require that it move and adjoin to a lexical verb root (see 1.4.5 and 3.2). The fact that the antipassive is only associated with the object position then follows from the Head Movement Condition subcase of the ECP: if it were generated anywhere other than in the direct object position it would in general be unable to adjoin to the verb (thereby fulfilling its role as an affix) and still properly govern its trace. Thus, it is impossible for such a morpheme to express a time adverbial or an indefinite object of a preposition:

(130) a. John run [PP around [NP the lake]]

b. *John run-morph$_i$ [PP around [NP t_i]]
='John ran around something'

c. *John run-morph around of lake
='John ran around a lake'

(131) a. The baby cry [NP several times]

b. *The baby cry-morph$_i$ [NP t_i] of times
='The baby cries sometimes'

In these ways, the antipassive is directly parallel to Noun Incorporation. Similarly, the antipassive morpheme cannot be generated in the subject position and subsequently attached to the verb of the clause, because it would not c-command its trace:[42]

(132) a. The boys [VP fed meat to the cat]

b. *[NP t_i] [VP feed-Apass$_i$ meat to the cat] (of boys)
='Someone (some boys) fed meat to the cat'

Thus, we derive the descriptive generalization that antipassives 'affect' only the (thematic) direct object argument from general syntactic principles, without having to stipulate the relationship explicitly in the

grammar. Furthermore, we explain why languages never seem to have 'anti-dative' or 'anti-instrumental' processes, in which an affix appears on the verb and an expected dative or instrumental NP is either suppressed or appears with an atypically case marking.

This account of antipassive makes a further prediction of interest. I have claimed that the antipassive is categorially a normal noun, which implies that it can be base generated in any position. In particular, it could be generated in the subject position in a perfectly valid D-structure. The problem arises only afterwards, when the antipassive is moved onto the verb of the clause in order to attach to a morphological host: this is a downward movement, violating the ECP. According to the principles I have laid out, however, there is no reason why an antipassive morpheme in the subject position could not be moved up, to attach to a verb in a higher clause. This would satisfy the morpheme's need to attach to a verb, while still allowing it to c-command its trace. Of course, in order to satisfy the ECP this will only be possible when the verb in the higher clause governs the antipassive in the subject position of the lower clause--in other words, it will be possible only in an Exceptional Case Marking structure. The prediction, then, is that the antipassive can affect the thematic subject of a verb when (and only when) it appears attached to another verb which is independently known to be an Exceptional Case Marker.

This prediction seems to be confirmed in Chamorro (Gibson 1980). The verb ekspecta 'expect' is an Exceptional Case Marking verb, appearing in two syntactic frames:

(133) a. Si Lucy ha ekspekta na si Miguel para u konni'
PN Lucy 3s-expect that PN Miguel irreal-3sS-take
i famagu'un para eskuela
the children to school
'Lucy expects that Miguel will take the children to school'

b. Hu ekspekta hao para un na'-funhayan i che'cho'-mu
1sS-expect you-abs irreal-2sS-cause-finish the work-your
'I expect you to finish your work'

In (133a) there is an overt complementizer (na) intervening between the matrix verb and the embedded subject NP, and there is no evidence that this NP has any relationship to the matrix clause. In contrast, in (133b) there is no complementizer, and the embedded subject NP is governed and case marked by the matrix verb. Evidence for this is the fact that the pronoun hao 'you' appears in its absolutive case form, rather than in ergative case form, as would be expected if it were Case marked as the subject of the lower verb. Gibson goes on to show that the lower subject can become the subject of the matrix if the matrix verb is passivized:

(134) In-ekspekta si Miguel as Lucy para u konni' i famagu'un
pass-expect PN Miguel obl Lucy irreal-3sS-take the children
para eskuela.
to school
'Miguel is expected by Lucy to pick up the children at school.'

Thus, ekspekta is an Exceptional Case Marking verb in this construction. Now consider the following structure (Gibson 1980:102):

(135) Kao man-ekspekta hao para un ma'-ayuda?
? Apass-expect you irreal-2s-pass-help
'Do you expect someone to help you?'

In this example, the antipassive morpheme man- appears on the matrix verb ekspekta, and semantically it expresses the thematic agent of the lower verb. This is exactly the predicted situation, in which the antipassive is generated in subject position and moves up to the higher verb rather than

down to the verb that (indirectly) theta-marks it.[43] This type of example shows that it is not only undesirable but wrong to explicitly associate the antipassive with structural direct objects. Furthermore, this type of example is highly problematic for a lexical theory of antipassive (e.g. Grimshaw and Mester 1985). In this type of theory, the antipassive relationship is defined over the lexical subcategorization/selection frames of lexical items. The subject of the clausal complement of ekspekta will not be represented in the lexical frame of ekspekta, however, since there is no semantic or selectional relationship between the two. Thus, an antipassive like that in (135) would be unexpected and difficult to account for in such a theory.[44] I have claimed that antipassive is simply a special case of Noun Incorporation; it is then expected that it should be subject to all the same restrictions as is Noun Incorporation. This holds true for those restrictions that have not yet been explained, as well as for those that have. In section 2.1.2, it was mentioned that, in 'dative' type tryadic verbs, the dative argument can never incorporate. This is true in spite of the fact that it appears to be the direct object of the verb, as shown by verbal agreement (and passivization). On the other hand, the theme argument may incorporate freely with these verbs. This was illustrated from Southern Tiwa (Allen et. al. (1984)):

(136) a. Ta-'u'u-wia-ban hliawra-de.
1s:A/A-baby-give-past woman-suf
'I gave the woman the baby.'

b. Ka-'u'u-wia-ban.
1s:2s/A-baby-give-past
'I gave you the baby.'

(137) a. *Ta-hliawra-wia-ban
1s:A/A-woman-give-past
'I gave the woman him'

b. *Ta-hliawra-'u'u-wia-ban
1s:A/A-woman-baby-give-past
'I gave the woman the baby'

This curious pattern was left unexplained. It is nevertheless striking that antipassive shows exactly the same pattern. Thus, Eskimo has dative shift verbs, in which either the theme or the goal argument may appear as the direct object, thereby having absolutive case and triggering verbal agreement (Central Arctic dialect, Johnson (1980), Johns (1984)):

(138) a. anguti-up titiraut nutarar-mut tuni-vaa
man-erg pencil(abs) child-all give-3sS/3sO
'The man gave the pencil to the child'

b. anguti-up titirauti-mik nutaraq tuni-vaa
man-erg pencil-instr child(abs) give-3sS/3sO
'The man gave the child the pencil'

Based on the structure (138a) in which it is the direct object, the theme 'pencil' can be made oblique by antipassive with no difficulty:

(139) angut titirauti-mik nutarar-mut tuni-si-vuq
man(abs) pencil-instr child-all give-Apass-3sS
'The man gave the pencil to the child'

However, antipassive cannot cause the goal NP 'child' to become oblique, in spite of the fact that it is the object of the verb in (128b):

(140) *angut titirauti-mik nutarar-mik tuni-si-vuq
man(abs) pencil-instr child-instr give-Apass-3sS
'The man gave the child the pencil'

A similar situation holds in Chamorro (Gibson 1980). In that language, the goal argument can appear as the direct object of verbs like na'i 'give':

(141) Ha nä'i yu' si Antonio nu i floris
3sS-give me PN Antonio obl the flower
'Antonio gave me the flowers'

Nevertheless, the antipassive cannot have the goal appear in the oblique case:

(142) *Man-man-nä'i häm ni i gima' yu'us ni salappi'
plur-Apass-give we(ex) obl the church obl money
'We gave the church money'

In contrast, the antipassive can correspond to an oblique theme argument:[45]

(143) Man-man-nä'i häm salappi' pära i gima' yu'us
plur-Apass-give we(ex) money to the church
'We gave the money to the church'

Thus, in these regards, antipassive seems to behave exactly like Noun Incorporation. This is strong confirmation for the analysis in which Antipassive is essentially identical to Noun Incorporation. The explanation for this patterns of facts will be given in chapter 4. Further support for this hypothesis will be seen in later chapters, where it will be shown that NI and Antipassive interact in the same way with causative (section 3.5.1) and applicative (section 4.4.2).

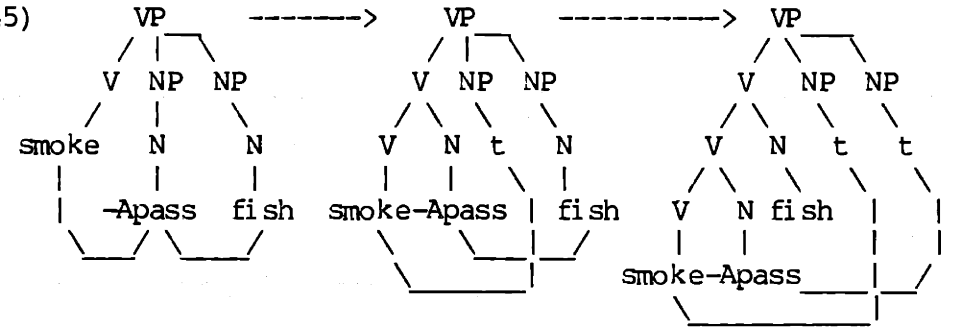
There is a further kind of evidence that antipassive and Noun Incorporation are processes which are closely related by the grammar. It is reported that in Mayan languages the antipassive morpheme rather systematically has another use: it acts as a kind of linking morpheme that appears when a the object noun root is incorporated into the verb (England (1983) and references cited therein). The antipassive apparently plays a similar role (with definable semantic consequences) in Nisgha, a Tsimshian language of British Columbia (Mithun 1984). Examples from this latter language are:

(144) a. simiyeeni-sgu-m-hoon
smoke-Apass-adj-fish
'to smoke fish'

b. lits'il-sgu-m-daala
count-up-Apass-adj-money
'to keep track of money (donations)'

Unfortunately, my knowledge about these structures and their properties is sparse. If the relationship proves to be sufficiently productive,[46] however, we might think of these examples in the following terms. The antipassive marker is generated as the object of the verb (root) at D-structure, and the patient noun root is generated as an adjunct related to the this antipassive in the usual way. The antipassive morpheme then undergoes X-o movement, affixing to the verb. This creates a structure in which the patient noun phrase gets a thematic role by virtue of being coindexed with the governing verb—via the antipassive morpheme which transmits a theta role to it. Thus, the complex verb is a structural sister of the theme root and is thematically indexed with it. Therefore, the theme root may incorporate into the verb. We then associate the following set of structures with a phrase like (144a), where the linkings represent thematic dependencies (either theta role assignment or theta role transmission) and hence government relationships:

(145)



Thus, the antipassive acts like a linking morpheme between the verb and the

noun in more than just a descriptive morphological sense; it provides the theta role link necessary for Noun Incorporation to take place. In this way, my analysis of antipassive captures the close relationship between antipassive and Noun Incorporation implied by these examples.[47]

2.4.2 Apparent differences between antipassive and NI

Throughout this section, I have emphasized the similarities between antipassive and Noun Incorporation which are explained by my analysis. There are, nonetheless, some rather superficial (I claim) differences between the two, which mask these similarities on a casual glance.

The primary difference is a morphological one: the antipassive morpheme is generally a derivational affix, whereas incorporated nouns are generally roots. Thus the antipassive is morphologically affixation, while 'full' Noun Incorporation in Mohawk and Southern Tiwa is morphologically compounding. This implies that the antipassive will often appear in a different place in the derived word structure than an incorporated noun would, and it may trigger somewhat different phonological rules, according the principles of Morphology theory. Syntactically, this difference implies that while incorporation of a noun root is often optional, incorporation of the antipassive morpheme will always be obligatory (see section 1.4.5). Thus, one will never see alternations between incorporated and unincorporated antipassive morphemes of the kind that make a movement analysis more immediately obvious in the case of Noun Incorporation.

Perhaps related to this in a functional way is the fact that the antipassive has a much more general meaning than most incorporated noun

roots; it has approximately the semantic force of 'something', rather than that of (say) 'dog' or 'house'. For this reason, antipassive morphemes resist modification, and do not appear with restrictive relatives or possessors. This in turn means that antipassives will not generally strand anything when they incorporate, although (in some languages) this is possible when ordinary noun roots incorporate. Nevertheless, it seems correct to take antipassive morphemes to be nouns that can be lexically associated with nounlike meanings, since the antipassive morpheme does not have the same meaning in all languages: for example, in Tzotzil it is human and animate (Aissen 1983), while the corresponding morpheme in Chamorro has a more general meaning.

Also functionally related to the fact that the antipassive is an affix is the fact that it essentially always makes the verb it attaches to morphologically intransitive, in terms of agreement and Case morphology. Thus, it apparently needs to receive case, like the Noun roots of Eskimo, but unlike those of Mohawk or Southern Tiwa (section 2.3.4). This correlates with the fact that, in the languages I have checked, the antipassive never represents the only argument of an unaccusative verb:

(146) a. (?There) fell a book off the table

b. *(there) fall-Apass off the table
='Something fell off the table'

c. *(there) fall-Apass of a book off the table
='A book fell off the table'

We have seen that such sentences are impossible in general if the incorporation makes the verb morphologically intransitive as in Eskimo, but are acceptable if it does not (the Iroquoian languages, Southern Tiwa).

Finally, it is common for the antipassive morpheme to transmit its thematic role to an external adjunct which 'doubles' it. This also tends to mask the true nature of the antipassive, in that it tempts one to take the external phrase to be the verb's true grammatical argument, rather than the antipassive morpheme itself (see the discussion above). This is probably related in a loose, functional way to the fact the antipassive is more general in meaning than are most incorporated full noun roots; hence it is pragmatically favored to allow an adjunct, as a way of saying more. It is clear that there is no tight theoretical reason for this tendency, however, because languages differ at this point. Thus, we have seen (125) that Tzotzil has an antipassive morpheme which is clearly a derivational affix and which has by in large the same type of meaning and distribution as other antipassive morphemes; yet it does not transmit its theta role to an external adjunct. On the other hand, in the Iroquoian languages, even incorporated 'full' noun roots can transmit their theta role to an external phrase that 'doubles' them. This is illustrated in the following examples:

(147) a. wa-k-nvhs-v:ti: [he:ni:kv: o:-nvhs-eh]
aor-1sS/3N-house-make/perf that pre-house-suf
'I have made that house'
(Tuscarora, Williams (1976:63))

b. wa?-k-nuhs-ahni:nu: [John lao-nuhs-a?]
aor-1sS/3N-house-bought John 3M-house-suf
'I bought John's house'
(Oneida, Doxtator via Michaelson (personal communication))

c. ka-nuhs-rakv ne [wisk ni-ka-wa ne ka-nuhs-a?]
3N-house-white five part-3N-pl pre-house-suf
'Five houses are white'
(Mohawk, Postal (1962))

d. ...ca'onta'hai a'ke'ne' [a-ka-nor-a' o-nesta-kenra']
thence-3M-came-again it-pre-onora pre-corn-white
a-ha-nor-e'hawi'
ind-3M/3N-onora-brought
'He then came out bearing an onora (string of ears) of (white) corn.'

(Mohawk, Hewitt (1903:217))

In each of these examples, there is an incorporated noun root in the verb which is doubled by an external phrase headed by the same noun root, and this the external phrase has the function of supplying more information about the object discussed. Of course, in the case of antipassive the incorporated noun and the head of the external phrase doubling it are not the same lexical item; rather the latter is more specific than the former, although consistent with it in grammatical features. This type of (limited) lexical mismatch is also possible in full noun incorporation structures in the Iroquoian languages:

(148) a. ne-hra-taskw-ahk-hwa? ha? tsi:r
du-3M-domestic-animal-pickup-asp prt dog
'He regularly picks up dogs' =he is a dog-catcher
(Tuscarora, Williams (1976))

b. hati-hnek-aets o-e:ta:k-i?
3Mpl-liquid-gather pre-syrup-suf
'They gather maple syrup'
(Onondaga, H. Woodbury (1975:11))

c. Tohka niyohsera:ke tsi nahe' [sha'te:ku niku:ti
several so-it-year-numbers so it-goes eight of-them
rabahot] wa-hu-tsy-ahni:nu ki rake'niha
bullhead aor-3M-fish-bought this my-father
'Several years ago, my father bought eight bullheads'
(Mohawk, Mithun (1984))

Of course, not just any noun phrase can double an incorporated root; the two must share all specified semantic features in order to be related to the same thematic role, and pragmatically the external NP must be more specific than the incorporated N root (otherwise it will be omitted). This gives the effect of 'classifier incorporation', in which a grammatical classifier of given noun is incorporated into the verb (cf. Chafe (1970), Mithun (1984)). The analysis of these structures is that the 'classifier' receives the true object theta role from the verb at D-structure and then

incorporates into the verb; it may then transmit its theta role to an adjunct NP as long as it has consistent semantic features. Thus, the same theta role transmission process that is at work in my analysis of antipassive also takes place in full Noun Incorporation in some languages.[48] Thus, we have turned up yet another similarity between Noun Incorporation and antipassive after all.

In conclusion, I have shown that the distribution (and to some extent the function) of antipassive is directly parallel to that of Noun Incorporation over a wide range of constructions. This has been accounted for by making antipassive essentially a special case of Noun Incorporation, thereby claiming that it is subject to exactly the same distribution-determining principles. Superficial differences between antipassive and Noun Incorporation simply follow from the fact that the former is canonically an affix morphologically, while the latter is a compounding root, along with the a cluster of loosely related functional correlates of this distinction. This analysis essentially obviates the need for any kind of specific rule of antipassive in the grammar of a language. The difference between languages with a process of antipassivization and those without such a process is not the presence or absence of such a rule, but rather the simple existence or nonexistence of a lexical item with particular lexical features in the language--namely an item that is specified as both a Noun and a an affix. Everything else follows from the general principles governing X-o movement.

CHAPTER TWO: FOOTNOTES

1. Data from Postal (1962) must be used with some care, since it contains some inaccuracies, according to Iroquoianists. In general, therefore, I will only cite his examples and generalizations when equivalent statements are implied in the work of other researchers in Iroquoian languages, except where I clearly state to the contrary. There is value in giving Postal's examples in uncontroversial cases, since he lays out paradigms neatly and completely.

2. Of Mithun's (1984) four types of Noun Incorporation languages, types III and IV (and perhaps some of type II) qualify as Noun Incorporation in the sense that I will use, sketched out directly below.

3. Note that I am assuming that these languages all have a syntactic VP node, at least at the relevant level of grammar. If there are true flat structure languages in the world, my system predicts that subject incorporation should be possible in them. See section 6.1.

4. My account of the distribution of ne-cliticization is identical to that of Belletti and Rizzi (1981), in that it seeks to derive the distribution from general properties of movement. There is, however, a difference in the source of the blame for sentences like (30b). For Belletti and Rizzi, subjacency is violated, whereas in my system ECP (alone) is violated. The ECP account is slightly simpler, in that it avoids B&R's rather particular assumptions about subjacency (which are not fully compatible with, say, Chomsky 1985). Furthermore, ECP violations usually give stronger and more consistent intuitions of ungrammaticality than subjacency violations do. Sentences like (30b) have more the flavor of ECP violations in this regard

(Rizzi, personal communication).

5. For discussion of the strength and nature of this correlation, see Rosen (1983).

6. In this context, it is worth discussing one case in which it is claimed that agent subjects of transitive verbs are incorporated into the verb, contrary to our predictions. The language is Koyukon Athabaskan (Axelrod 1982), and typical examples are:

(i) a. tohabitaaltaanh
water-carried-them-off
='They floated away'

b. kk'osots'eeyhyeeltaayh
happiness-carried-him-around
='He was very happy'

Note that these 'subjects' are patently nonagentive. Axelrod acknowledges this, stating that these incorporates are generally inanimate, abstract, and not in control of the action. In fact, they seem all to be either metereological forces of nature or psychological states. Furthermore, these nominals cannot be unincorporated subjects. For these reasons, it seems correct to extend the 'unaccusative analysis' to these cases. Both the final object and the 'cause' phrase are generated in the VP, and the 'cause' phrase is incorporated into the verb from there. These sentences are very similar semantically to those which have 'quirky case' subjects in Russian and Icelandic, where the quirky case implies that the nominal was generated in the VP.

7. (38b) may be ruled out independently in Southern Tiwa by an animateness constraint, which says that animate subjects never incorporate (although animate objects do: see Allen et. al. (1984) for details). There is much

overlap between animateness and agentivity in the subject position, but some residue of this animacy condition may have to be stipulated.

8. Eskimo and Niuean appear to differ from the Iroquoian languages, Southern Tiwa, and Italian, in that incorporation of the 'subject' of an intransitive verb is claimed never to be possible, whether the verb is agentive or not. See section 2.3.4 for a possible explanation of this gap, in terms of Case theory.

9. If, that is, Kayne (1983) is right in analyzing the impossibility of preposition stranding in most languages in terms of ECP.

10. There is somewhat more to be said about Noun Incorporation with respect to more peripheral and idiosyncratic aspects of its distribution with certain oblique phrases such as instruments and benefactives. These will be addressed briefly in section 4.3.

11. In (47c), the incorporation of the head noun strands other material from the noun phrase--in this case, its possessor. This is typical of NI in general in Iroquoian; see section 2.2 for discussion.

12. Williams (1976) and Chafe (1970) say that there are no prepositions in the Iroquoian languages at all, and that the stems in (47) are actually verbs. This would account for why they incorporate their objects straightforwardly. Nevertheless, I take them to be Ps since their syntactic functions are just like those of Ps in English. Still, in section 6.3 I will suggest that there is something right about this idea: that Ps in Iroquoian assign case like Vs and this properties allows them to incorporate nouns.

13. Of course, the arguments of this section are not conclusive against all versions of a lexical analysis of Noun Incorporation; only against particular ones in terms of semantic notions like 'theme'. Better would be a lexical account in terms of some notion such as 'direct' or 'innermost' argument of a predicate, which might capture all the examples in this section. Such an account would involve developing notions of the lexical structure of an item and postulating some kind of new constraint on what can be done to such a structure; the syntactic account makes use of independently needed sytactic principles, thereby relating NI to other phenomena.

14. 'Exceptional Case Marking' constructions are also relevant these issues. In such structures, there is an NP directly governed by a verb, but that NP plausibly is not represented in the verb's lexical structure (i.e. thematic grid) at all. My syntactic analysis predicts that Ns from such NPs will be able to incorporate, while a lexical analysis should predict that it will not be able to incorporate. This will even distinguish a syntactic theory from the more syntactic lexical theory pointed to in note 13. I have no evidence concerning this in Mohawk, but facts about antipassive and Noun Incorporation in causatives again suggest that the syntactic approach is correct (see sections 2.4.1, 3.5.1).

15. The particular form in (55a) is attested only in Postal (1962). The more common case is to have an internally headed relative clause--with the internal head possibly incorporated into the lower verb. This is possible in Southern Tiwa as well (Allen et. al. (1984)).

16. Other works on Iroquoian languages which I have consulted say nothing about numeral phrases, so structures like (56a), (57a) depend entirely on

Postal (1962).

17. In some languages, Noun Incorporation apparently cannot strand nonhead NP material in this way, even though the structures seem otherwise quite similar. This is the case in Niuean (except the verb 'have': Seiter 1980) and Jemez (Hale, personal communication). It is possible that this shows that N+V formation is purely lexical in these languages, unlike in Iroquoian and Southern Tiwa.

18. The Oneida example (64b) is actually an instance of 'noun-stem doubling', in which the noun root appears both as part of a full NP and incorporated into the verb. This construction in the Iroquoian languages will be discussed briefly below in section 2.4.2.

19. This consideration is not conclusive by itself, because the sentences in (69) may be bad for another reason: namely that the verb must assign Case to the object NP as a whole in order for it to pass the Case filter. Therefore it must agree with this NP instead of the possessor (cf. Chomsky 1985).

20. In section 6.3 I will propose that these to processes can be unified by deriving Exceptional Case Marking from the Government Transparency Corollary as well.

21. Here I depend solely on Postal's data, although all of the Iroquoian sentences which I seen are consistent with his paradigm. (72a) is not the exact form of Postal's example. Postal states that (72b) is ungrammatical with any type of verbal agreement.

22. Thanks to L. Rizzi, who pointed out the significance of these possessor

binding facts to me.

23. Or, equivalently for current purposes, we could say that the postposition is inserted after D-structure for the purpose of assigning Case.

24. One might ask here why the goal NP of one of these verbs cannot incorporate, allowing the theme NP to move to the subject position. This problem is related to the more general question of why goal NPs never incorporate, mentioned in regard to (43) above and to be explained in Chapter 4.

25. Alternatively, we can say that verbs of this class assign oblique case to the middle object, and this oblique case is 'realized' as the preposition ke he, assuming a Case theory like that of Chomsky (1984). This approach might be preferred if a uniform semantic characterization of middle objects can be given. In this case, the NP is indeed assigned Case, but there is still a puzzle for the Case filter, since now Case need not be realized if and only if the head of the NP incorporates.

26. Compare Mithun (1984), who claims that NI is learned very late by children, and that it is rather easily lost in the course of language change.

27. I assume that all or most of this linking does not need to be lexically stipulated, but follows from more general principles, but this is not crucial for the present discussion. See below for some comments, and Ostler (1979) for extensive discussion.

28. Presumably ergative and absolutive case are classified as structural

cases as well in languages with ergative case marking systems.

29. In fact, Tuscarora has a 'back-up' strategy for situations in which both NPs have the same agreement triggering features; in this case, semantic roles are interpreted on the basis of word order (following an SVO pattern, Williams (1976)). This is by no means necessary, however; in Winnebago when this case arises, the sentence is truly ambiguous (J. Whiteeagle (personal communication)). Here thematic roles are purely represented by agreement.

30. Note that the range of types of Morphological Identification essentially cover the range of plausible possibilities for representing relationships overtly, given that language is a spoken, acoustical medium. Sometimes I will use the term 'Case' as a cover term for morphological case, agreement, and adjacency identification when it is important to distinguish these as a class from 'Incorporation identification'.

31. Two comments are in order about the specific formulation of (99). First, the Case assigner is required to be phonologically overt but the Case receiver is not because variables (traces of operator movement) and pro may (in fact, must) be m-identified; hence they must be able to bear an m-index even though they are null. This asymmetry is natural given the corresponding asymmetry of (94), which stipulates that arguments must be m-indexed but does not put a similar requirement on theta role assigners.

Second, the statement that 'A' must not be morphologically null in the syntax is intended to cover ordinary traces, while still allowing for the (limited) possibility that a Case assigner can be deleted at PF, as is the complementizer <u>for</u> in the Chomsky and Lasnik (1977) analysis of sentences

like 'I would prefer (for) John to win.' (99) probably holds of the lexically null P and complementizer of Kayne (1983), however, forcing these elements to incorporate--see sections 4.2.5.2 and 6.3.

32. Mithun does cite two exceptions, where two N-roots appear within a single V. Both are possibly lexicalized, at least in part.

33. See section 4.3 for some of the implications of the existence of this type of NI.

34. (98b) is (redundantly) ruled out for another reason as well--see section 4.4.2.

35. This prediction will be verified for cases of 'abstract NI' in section 4.4.

36. Here I depend primarily on Postal's discussion.

37. In Chamorro, oblique case indefinites standardly do not have an (overt) case particle; hence 'house' is unmarked in (119b). Agreement and case patterns clearly show that it has ceased to be the direct object, however: the verb no longer agrees as it does with a transitive subject, and the subject pronoun appears in its absolutive form. In (120), where the thematic object is definite, oblique case marking is visible.

38. One particular Relational Grammar analysis--that of Postal (1977)--takes antipassive to be more complex than this. Postal claim that antipassive clauses arise when the subject becomes the object, pushing the thematic object into an oblique function. Finally, the original subject becomes the subject again. Regardless of the merits of this particular view, the point remains that antipassive is an explicit GF changing rule of

the type that I am eliminating in this framework.

39. The thematic object argument need not be phonologically overt, of course; in Mam and Eskimo it may be a 'pro-dropped' null pronoun. However, this construction is clearly distinguished from the antipassive by the fact that the null object triggers verbal agreement and receives a definite, specific interpretation.

40. It should be pointed out that Marantz (1984) has two analyses of 'antipassive'; one which I have focused on in this discussion (his section 4.2), and another in which antipassive simply reduces to passive in a 'True Ergative' language (his section 6.1). (A True Ergative language is one in which theme roles are canonically assigned to the subject position and agents are assigned to the object position at underlying structure.) In the latter analysis, the oblique theme will indeed behave like a passive by-phrase, because it actually is one. However, none of the languages discussed in this section show signs of being True Ergative in Marantz's sense. On the existence of True Ergative languages in general, see section 6.1.

41. Here there is an obvious parallelism between antipassives and the clitic-doubling structures familiar from Romance and other languages (see Jaeggli (1982), Borer (1983), Hurtado (1984), etc.):

RIVER PLATE SPANISH:
(i) a. vimos a Juan
saw-1pS (to) Juan
'We saw Juan'

b. lo vimos
him saw-1sS
'We saw him'

c. lo vimos a Juan

him saw-1sS (to) Juan
'We saw Juan'

This is not to claim that Spanish clitic doubling is a kind of antipassive. In spite of certain similarities, both the distribution and the interpretation of these kinds of clitics is somewhat different from that of antipassives as described. Thus it is probably not correct to completely identify the two processes. Nevertheless, it is possible that the 'doubling' mechanism is the same if an analysis like Hurtado's (1984) is correct.

42. (132) is conceptually rather different than the cases in (130) and (131). In (130) and (131) the claim is strongly that no morpheme could exist in any language with the properties illustrated. In (132) there are morphemes that appear in exactly these kinds of structures—namely passive morphemes. Here the claim is simply that the same antipassive morpheme cannot also perform the passive function in (132b). The passive morpheme will crucially have different properties from those associated with the antipassive (see Chapter 5).

43. There are residual questions about (135). Thus, according to Gibson (1980), when antipassive applies between an embedded subject and an ECM verb, the lower clause must then passivize. It is not clear either why this is possible, or why it is necessary. Verbs in sentences under ECM verbs still show agreement with their subjects (cf. (133b)), unlike in English, and I speculate that passivization might apply to avoid having the lower verb agree with the trace of 'Apass-'. I will, however, leave this unresolved.

44. Other examples of this type—where the antipassive is generated in the

embedded clause and moves upward--occur in causative constructions. See section 3.5.1.

45. Recall that in Chamorro, the oblique case can be morphologically null with indefinite NPs such as 'money' in (143). Both the case form of the subject pronoun and the appearance of intransitive agreement make it clear that this NP is not an object.

46. These particular examples from Nisgha (at least) may well be lexicalized.

47. A similar situation arises with passive and Noun Incorporation: see section 5.1.4.

48. The existence of this theta role transmission process in a particular language is the parameter that distinguishes type III Noun Incorporation from type IV Noun Incorporation in the typology of Mithun (1984); languages of type III lack such a process, while languages of type IV include it. This factor seems to be independent of any other differences in Noun Incorporation structures (Mithun 1984).

Chapter 3

VERB INCORPORATION

In the last chapter we considered in some detail constructions in which a single morphologically complex word does the work of two words in English: noun-verb compounds which count as both the verb and the (head of the) direct object of their clauses. I argued that these resulted from a process of Noun Incorporation, which adjoins the head noun of a noun phrase to the verb between D-structure and S-structure. This adjunction is simultaneously morphological and syntactic: syntactic in that its distribution and its consequences for the rest of the structure are determined by syntactic principles involving government, X' theory, and Case theory; morphological in that the resulting [N-V] structure is morphologically and phonologically indistinguishable from normal compounds or derived verbs in the language.

In this chapter, we turn to another construction in which a single, morphologically complex word corresponds to two words in its English counterpart. Consider the following causative paradigms:

(1) a. Bill made his sister leave before the movie started.

b. The goat made me break my mother's favorite vase.

CHICHEWA:

(2) a. mtsikana anachititsa kuti mtsuko unagwe.
girl 'make' that waterpot fall
'The girl made the waterpot fall'

b. Aphunzitsi athu anachititsa kuti mbuzi zidye udzu.
teachers our 'make' that goats eat grass
'Our teachers made the goats eat the grass'

(3) a. mtsikana anau-gw-ets-a mtsuko.
girl agr-fall-made waterpot
'The girl made the waterpot fall'

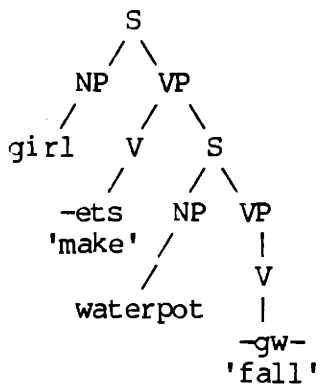
b. Catherine ana-kolol-ets-a mwana wake chimanga.
Catherine agr-harvest-made child her corn
'Catherine made her child harvest corn' (from Trithart (1977))

The English sentences in (1) are biclausal in all relevant respects. They are biclausal in meaning, with the embedded clause occurring as an argument of the causative verb in the main clause. Along with the two clauses are two morphological verbs, as one would expect. The Chichewa (Bantu, spoken in Malawi) sentences in (2) are similar, corresponding to their English glosses lexical item for lexical item and phrase for phrase. However, Chichewa has another way of expressing these notions, illustrated in (3). Each of these sentences contains only one verb, which happens to be morphologically complex. This not withstanding, sentences like those in (2) and (3) can be good paraphrases of one another. In particular, the same thematic roles relate the same verbs (or verb roots) to the same noun phrases in (2a) and (3a). Furthermore, the sentences in (3) are as biclausal in meaning as their English glosses, even though they appear monoclausal morphologically. In this sense, we say that the verb forms in (3) 'do the work' of two verbs in a language like English, presenting another case of apparent mismatch between morphology and syntax. This is the morphological causative construction, the most famous of these mismatches. Unlike Noun Incorporation, there has been long and complex discussion of this topic in the generative linguistics literature.[1]

The guiding assumptions set down in Chapter One determine the heart of

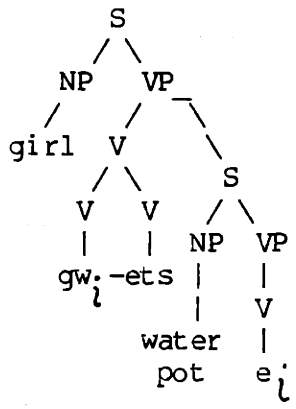
the analysis of this construction. For concreteness, we focus on sentence (3a). Here it is the waterpot that breaks, and the girl which is responsible for that event taking place. Thus, the same theta assignments occur in (3a) as in (2a). The Uniformity of Theta Assignment Hypothesis (section 1.4.1) therefore implies that (3a) and (2a) should have parallel D-structures. This implies a D-structure approximately like (4) (details omitted):

(4)



Next, we know that the causative affix -ets and the verb root -gw- must combine into a single word at some stage. Thus we are led to give an analysis of morphological causatives where a lexical item undergoes syntactic movement to combine with another lexical item in the structure. Then, by the Projection Principle, this movement is not allowed to destroy thematically relevant structure. In particular, the moved verb root must leave a trace to allow theta assignment to the 'stranded' subject, and to head the embedded clausal complement which the causative morpheme lexically selects for. Hence, the S-structure of (3a) must be approximately:

(5)



Thus, I claim that morphological causatives are (at this level of abstraction) exactly like Noun Incorporation, except for the category of the word being moved. Morphological causatives are 'Verb Incorporation'.

The idea that morphological causatives are derived from a source containing two verbs and two clauses is certainly not orginal. On the contrary, it has a long history in the generative tradition, showing up in different ways in different particular frameworks: 'Verb Raising' in transformational terms (Aissen (1974)), 'Predicate Raising' in Generative Semantics, 'Clause Union' in Relational Grammar, 'Merger' in the theory of Marantz (1984), to name a few. In this literature, a wide variety of evidence and arguments is presented to support both the biclausal underlying structure, and the (somehow) combined surface structure. Without giving an extensive review, I will assume that much of this work can be straightforwardly absorbed into my similar 'Verb Incorporation' proposal. The difference will be that the 'Verb Incorporation' proposal is embedded in a (different) restrictive set of theoretical assumptions, which determine properties of the derived structure. This will make possible new and insightful explanations of properties of morphological causatives and related constructions. This chapter will be devoted to defending,

developing, and drawing out the implications of this analysis.

3.1 Syntactic Verb Incorporation and the ECP

A key to the case for Noun Incorporation being a syntactic process, rather than merely a lexical or a phonological process, was that facts about its distribution could be explained in terms of known syntactic principles. Specifically, Noun Incorporation was shown to obey the Head Movement Constraint of Travis (1984):

(6) The Head Movement Constraint

An X-o may only move into the Y-o that properly governs it.

The Head Movement Constraint in turn was shown to be a corollary of the ECP (section 1.4.3), since X-o's when they move necessarily leave traces which must be properly governed by their antecedents. The consequence of this is that only the head noun of the direct object can be incorporated into the verb, because only in this case does the government relation hold between trace and antecedent. Now, if our guiding principles are correct in implying a syntactic analysis of Verb Incorporation, then we expect VI to be subject to syntactic principles as well. In particular, it too should respect the ECP in its 'Head Movement Constraint' form, thereby showing a distribution parallel to that of Noun Incorporation.

In order to give some content to this prediction, I observe that morphological causatives are not unique in languages of the world. Rather, there is reason to think of them as part of a somewhat more general

phenomenon of Verb Incorporation. For instance, in addition to examples like (3) above, Chichewa has other cases in which a single, morphologically complex verb stands in for two separate predicates in a language like English:

CHICHEWA:

(7) Abusa a-na-dy-ets-a mbuzi udzu. (=3b)
goatherds SP-past-eat-cause-asp goats grass
'The goatherds made [the goats eat the grass].'

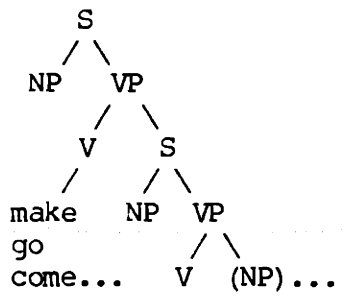
(8) a. Ndi-ka-pemp-a pamanga. (from Watkins 1937)
1sSP-go-beg-asp maize
'I am going [to beg maize].'

b. Kati madzi banu dza-man-e-ni ine.
if water your come-refuse-asp-imper me
'If it is your water, come (and) [refuse me].'
(cf. ku-dza = main verb 'come')

c. Ku kasungu si-ku-nga-chok-er-e bangu woipa.
from Kasungu neg-pres-can-come-appl-asp people bad
'Bad people cannot [come from Kasungu].'

There are some differences between the cases in (8) and the causative in (7). For example, the elements corresponding to the English matrix verb are prefixes in this set, rather than suffixes. Nevertheless, comparing each Chichewa sentence with its English gloss reveals an important similarity: in every case the root verb in the Chichewa verbal complex corresponds to the main verb in a dependent clause of the corresponding English sentence. Furthermore, in every case, that dependent clause is the sentential direct object of the matrix verb, and thus is directly governed by the verb. Assuming for now that V is the X'-system head of S,[2] we see that Chichewa complex verbal formations all obey the Head Movement Constraint:

(9)



In each case, the verb moves to combine with the verb which governs its maximal projection. This structure is isomorphic to that of paradigm cases of Noun Incorporation, such as (10), with V in the place of N, and S in the place of NP under the matrix VP:

SOUTHERN TIWA:
(10) [Yede e] a-seuan-mũ-ban (=2.2.1 (52c))
that 2s:A-man-see-past
'You saw that man'

This pattern of incorporating a verb from a sentential direct object seems to generalize accross languages. As another example, Malayalam (Dravidian, southern India) has a 'desiderative' verb form (12b) and a 'permissive' verb form (13), along with its standard causative verb form (11b) (data from Mohanan (1983)):[3]

MALAYALAM:
(11) a. kuṭṭi aanaye ṇuḷḷ-i
child-nom elephant-acc pinch-past
'The child pinched the elephant'

b. amma kuṭṭiyekkoṇṭe aanaye ṇuḷḷ-icc-u
mother-nom child-acc with elephant-acc pinch-cause-past
'The mother made [the child pinch the elephant]'

(12) a. kuṭṭi uraṇṇ-i
child-nom sleep-past
'The child slept'

b. kuṭṭikke uraṇṇ-anam
child-dat sleep-want

'The child wants [to sleep]'

(13) kuṭikke aanaye nuḷḷ-aam (compare (11a))
child-dat elephant-acc pinch-may
'The child is allowed [to pinch the elephant]'

Thus, the set of predicates which occur in VI constructions in Malayalam is somewhat different from Chichewa's set. Nevertheless, the predicates that allow Verb Incorporation consistently incorporate that verb from a sentential direct object, as can be seen by comparing the Malayalam examples with their English counterparts.

The Eskimo languages have an exceptionally large number of verbal items which allow Verb Incorporation. Smith (1982) gives the following as illustrative cases from Labrador Inuttut:

LABRADOR INUTTUT:
(14) Angutik-p annak taku-guma-vaa.
man-erg woman(abs) see-want-3sS/3sO
'The man wants [to see the woman]'

(15) Angutik anna-mik taku-kqu-ji-juk siitsi-mik.
man(abs) woman-instr see-ask-Apass-3sS squirrel-instr
'The man asks (wants, orders) [the woman to see the squirrel]'

(16) Sittu-ti-vauk.
straight-cause-3sS/3sO
'He made [it (be) straight],' 'He straightened it'

Other examples of Smith's illustrate the verbal affixes -gunna-, 'be able'; -suu(ngu)-, 'be able'; -gasu- 'believe'. In each case, the Eskimo suffix attaches to a verb root which, on semantic and comparative grounds, one would expect to head a clause in the VP of that suffix, were it an independent verb on the surface. MacLean's (1980) dictionary of Alaskan Inupiaq lists 45 to 80 such verbal suffixes (referred to as 'V-V postbases') for that dialect of Eskimo, the exact number depending on how certain elements with adverbial meanings are interpreted. Similar examples

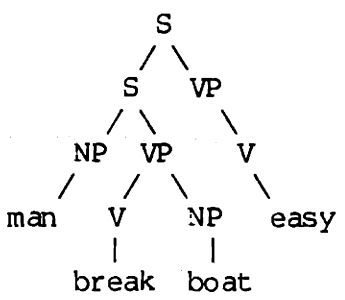
can be given in Sanskrit ('make' and 'want'), Turkish ('make' and 'be able to'), Tuscarora (Iroquoian; 'make', 'go (to)', etc.; Williams (1976)), and many other languages.

This survey of Verb Incorporation cases raises the following question: does Verb Incorporation ever take a verb out of a sentential subject, rather than out of a sentential object? On the basis of the Head Movement Constraint, we expect the answer to be no, and, in fact, the general answer seems to be no. I know of only one explicit claim to the contrary: Smith (1982) gives (17a) an analysis equivalent to the one represented in (17b):[4]

LABRADOR INUTTUT:

(17) a. Angutik muuta-mik siqumi-tsi-sagai-juk.
man(abs) boat-instr break-Apass-easy-3sS
'It was easy for the man to break the boat.'
='The man broke the boat easily (quickly)'

b.



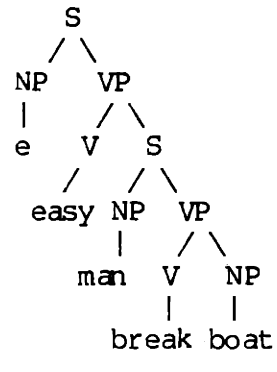
As a solitary exception to a ban on Verb Incorporation from subject position, this example is suspicious for two reasons: first, the hypothesized matrix predicate takes only one argument; and, second, the predicate is nonagentive. In fact, this recalls the one case in which it is claimed that Noun Incorporation happens from subject position—the case of intransitive predicates taking 'theme' subjects. In section 2.1.1, I argued that this was the proverbial exception that proves the rule: the verbs that allow incorporation of their subjects are 'unaccusative' in the

sense of Perlmutter (1978) (='ergative' in Burzio (1981), etc.). The sole argument of these verbs is an object at D-structure, rather than a subject, and (in general) it moves to subject position by S-structure. However, in examples like (18) the noun root can incorporate directly from object position instead, giving a grammatical result:

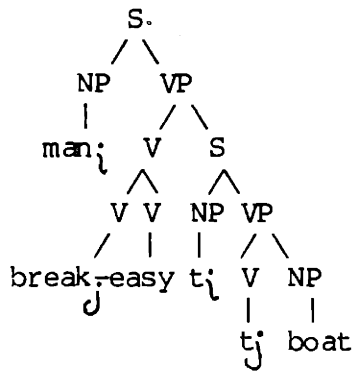
SOUTHERN TIWA:
(18) I-mukhin-k'euwe-m (cf. 2.1.1 (36b))
B-hat-old-stat:pres
'The hat is old'

Clearly, this same line is open in the case of (17a). We can assume that the sentential argument of 'easy' is underlyingly in the VP and the subject position is nonthematic, as in (19a). Then the surface form (17a) can be derived by an unproblematic instance of Verb Incorporation and ordinary subject-to-subject raising, giving the S-structure in (19b):

(19) a.



b.



(19a) is isomorphic to the structure associated with Noun Incorporations like (18), with V in the place of N and S in the place of the NP under the matrix VP.[5]

In order to find a clear instance of Verb Incorporation from the subject position, we must consider subjects of transitive verbs, because in this

case an 'unaccusative' analysis generally is not possible.[6] Instances of this type, however, are conspicuously absent from the literature. Smith (1982:177f), for example, explicitly includes a discussion of 'complementation in subject position' to 'illustrate ... the generality of the [verb raising] analysis,' but all of his examples have matrix verbs which are intransitive and adjectival, as in (17a) above. Verb Incorporation from the subject position is perfectly conceivable, and a priori should be no stranger or more complex than the cases of VI from object position considered above. Hypothetical examples would look like this:

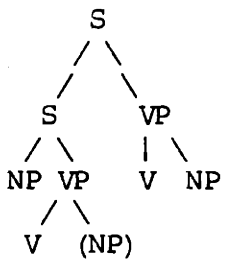
(20) a. *John agr-lie-prove-asp his unreliability
(='[That John lies] proves his unreliabiliy')

b. *Linda agr-laugh-upset-asp her mother
(='[That Linda laughed] upset her mother')

c. *The dogs agr-chase-show-asp the inadequacy of their training (to) the cats
(='[That the dogs chase the cats] shows the inadequacy of their training')

I know of no examples of this form in any language of the world. Taking this to be a true generalization, it implies that Verb Incorporation is impossible from the configuration in (21):

(21)



This is in accordance with the Head Movement Constraint: having the

embedded verb adjoin to the matrix verb would involve moving it to a position that does not c-command its trace, and hence one that does not govern it. The trace will therefore not be properly governed by an antecedent (or a theta marker), and the structure will be ungrammatical by the ECP. Again, this is directly parallel to the case of Noun Incorporation, where subjects of transitive verbs can never be incorporated:

SOUTHERN TIWA:
(22) *0-hliawra-k'ar-hi yede (= 2.1.1 (16b))
A:A-lady-eat-fut that
'The lady will eat that'

Finally, in Chapter 2 the Head Movement Constraint was shown to account for a further aspect of the crosslinguistic distribution of Noun Incorporation: the fact that it never takes the head noun out of an adjunct noun phrase:

(23) *baby agr-time-laugh-past [five e]
(= 'The baby laughed [five times]')

Verb Incorporation shows the same behavior. Thus, I know of no clear cases in which a matrix verb appears as an affix on a verb which would (by semantics and language comparisons) be expected to head an adverbial clause. Hypothetical examples would have the following form:

(24) a. *John agr-insult-left-asp Mary (to) his mother.
(= 'John left [because Mary insulted his mother].')

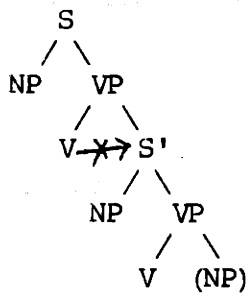
b. *The baby agr-break-cry-asp his toy.
(= 'The baby cried [when his toy broke].')

c. *I agr-hit-throw-asp a snowball (to) my roommate.
(= 'I threw the snowball [(in order) to hit my roommate].')

Again, these impossible examples do not yield surface forms which are a

priori more complex or contorted than the existing cases of VI from direct object. It seems that a theta connection is needed between the matrix verb and its associated S in order for incorporation to be legitimate:

(25)



As in the case of NI, this restriction can be explained in terms of the ECP. I assume (section 1.4.3, cf. Chomsky (1985)) that a category is a barrier to government if it itself is not theta governed, i.e. not assigned a theta role by a lexical item. If it is theta marked by the matrix verb, however, it will not be a barrier relative to that position. Given this, the lower S' will block government between the trace of the lower verb and its antecedent adjoined to the higher verb if and only if it is an adjunct, rather than a theta marked sentential object. Therefore, the lower trace will be ruled out by the ECP if and only if the sentence it is taken from is an adjunct.

The material in this section can be gathered together into the following argument. Consider cases in which one morphologically complex verb form seems to do the work of two independent verb forms in a language like English. Refer to these as 'Verb Incorporations'. When we look at the class of cases of Verb Incorporation across languages and language families, we find that there is a certain variety as to what matrix predicates 'host' verb incorporation.[7] In spite of this, the variation does

not cross certain well defined boundaries. In particular, polyadic verbs may incorporate a verb out of their sentential objects, and some monadic verbs (nonagentive, especially adjectival) may incorporate out of their sole sentential argument. On the other hand, polyadic verbs never incorporate a verb out of a sentential subject, and no verb ever incorporates out of a sentential adjunct. Rather than being an accidental quirk, this distribution should reflect the basic nature of the Verb Incorporation process itself. Finally, we observe that this distribution can be derived from the Empty Category Principle (in particular, its corollary, the Head Movement Constraint), an independently known principle of grammar which plays a central role in explaining the properties of syntactic movement. In fact, again we see objects distinguished from subjects and adjuncts; a hallmark of ECP effects (cf. Huang (1982), Lasnik and Saito (1984)). Therefore, I conclude that Verb Incorporation is a special case of syntactic movement. In GB terms, it is an instance of 'Move-alpha' applying between D-structure and S-structure, leaving a trace. This supports the validity of my assumptions, in particular the Uniformity of Theta Assignment Hypothesis, which, as discussed in the introduction to this chapter, points toward a syntactic analysis of Verb Incorporation.

This argument is strengthened by the direct parallelism between Verb Incorporation and Noun Incorporation in terms of their distributions, as has been emphasized throughout this section. This shows that the principles involved have appropriate generality. In fact, the old Generative Semantics Theory expressed a generalization in this area which is bipassed in most current frameworks. In that theory, Noun Incorporation and Verb Incorporation were both special cases of a single, more general

process--the process of 'Predicate Raising' (for a clear example, see Williams (1976:61ff)). In this section, I have given evidence that this generalization is a true and significant one,[8] in that NI and VI indeed have the same properties. I have also shown that this generalization can be captured in an explanatory way in the Government-Binding framework, when the theory of syntactic X-o movement (Incorporation) is articulated as above.

3.2 Subcategorization: Morphological and Syntactic

In the last section, we considered the question of why verbs can incorporate from certain base positions, as opposed to others. Now, we turn to the question of why they must incorporate under certain circumstances. Here, I will give a new argument for a verb movement analysis of morphological causatives, based on parallelisms between causatives in Chichewa and raising verbs in English. This argument, in turn, will have implications as to what the lexical properties of incorporating predicates are that distinguish them from non-incorporating predicates.

First, we review the familiar analysis of subject-to-subject raising of Chomsky (1981). Raising verbs such as seem systematically appear in two different S-structure configurations:

(26) a. It seems that Sara adores Brussels sprouts.

b. Sara seems to adore Brussels sprouts.

There are some subtle differences in meaning between the (a) sentences and the (b) sentences, presumably having to do with focus and predication structures. Thus, there is an intuition that (26b) says something about Sara in a way which (26a) does not. Nevertheless, abstracting away from these effects, it is clear that the (a) sentences and the (b) sentences are 'near paraphrases' as much as active and passive sentences are. They are 'thematic paraphrases' in the sense of Chapter 1: corresponding NPs get the same theta roles from the same theta assigners in both sentence forms. Thus, it is Sara who likes Brussels sprouts in both (26a) and (26b), and in both it is this entire state of affairs which 'seems' to anyone who happens to be attending. In neither sentence does Sara have a thematic relationship to the verb seems. Similar in these regards are other verbs (e.g. appear) and the 'Raising Adjectives' (e.g. likely, etc.).

Following Chomsky (1981:67f), I assume that the minimal assumption here is that predicates such as seem have a single set of theta marking and subcategorization properties specified in the lexicon. They select a propositional direct complement, and both fail to take any kind of external argument. This can be represented so:

(27) seem, V: [___ proposition]
external theta role: ---

By the Projection Principle, the D-structure of (26) must be a direct projection of these lexical properties. In particular, the D-structures of (26a) and (26b) must be essentially identical, since seem has only one set of lexical properties to project. Therefore, the D-structure of (26a,b) must be essentially:

(28) [S e INFL seem [S' Sara INFL adore Brussels sprouts]]

This common D-structure appropriately represents the fact that (26a) and (26b) are 'thematic paraphrases', as discussed above. Again, this accords with the UTAH.

Next, independent principles of grammar determine how D-structures such as (28) may appear at S-structure and LF. One such principle, from Predication theory (the 'Extended Projection Principle of Chomsky (1981)), states that clauses must have subjects. Now the matrix clause in (28) lacks a subject, and necessarily so, given that the predicate cannot assign a theta role to a subject, together with the characterization of D-structure as a pure representation of thematic structure. Therefore, something must happen to 'fix' the structure by S-structure. Logically, there are two possible ways for a predicate to get a subject if it does not have one at D-structure: (i) it can receive a thematically empty, pleonastic subject, which may be freely inserted, or (ii) it can 'borrow' a '+ argument' subject from somewhere else in the sentence via NP movement. In fact, both of these possibilities are realized. (26a) is derived from (28) by option (i), inserting the pleonastic it as the matrix subject; (26b) is derived from (28) by option (ii), raising the lower subject into the matrix subject position by 'Move Alpha'. Other principles then explain restrictions on the COMP and INFL of the lower clauses in each of these sentences.[9] Thus, this analysis provides a simple account of the two possible surface structures of 'raising' predicates by giving them a single set of lexical properties, but then allowing universal rules to apply to them in more than one way to satisfy universal principles.

This familiar line of reasoning has been reviewed in some detail in order

to demonstrate that the same premises have similar implications for the analysis of morphological causative constructions. In particular, the Chichewa causative morpheme -its/-ets, like English seem, systematically appears in two different S-structure configurations:[10]

(29) a. mtsikana a-na-chit-its-a kuti mtsuko u-na-gw-e
girl SP-pst-do-cause-asp that waterpot SP-pst-fall-asp
'The girl made the waterpot fall'

b. mtstikana a-na-gw-ets-a mtsuko
girl SP-pst-fall-cause-asp waterpot
'The girl made the waterpot fall'

(30) a. Abusa a-na-chit-its-a kuti mbuzi zi-dy-e udzu
goatherds SP-pst-do-cause-asp that goats SP-eat-asp grass
'The goatherds made the goats eat grass'

b. Abusa a-na-dy-ets-a mbuzi udzu
goatherds SP-pst-eat-cause-asp goats grass
'The goatherds made the goats eat grass'

Again, there are some differences in meaning between the (a) sentences and the (b) sentences, presumably having to do with focus and predication structures. Thus, (30b) tends to express a more direct connection between the actions of the goatherds and the goats than does (30a). But again, if we abstract away from these effects, we observe that the (b) sentences are thematic paraphrases of the corresponding (a) sentences. Thus, corresponding NPs appear to get the same theta roles from the same theta assigners in both sentences types. Thus, it is the waterpot that breaks in both (29a) and (29b), and in both it is this entire state of affairs which is caused by an agent, namely the girl.

Since this situation is parallel to that of raising verbs, again the minimal assumption is that -its has a single set of theta marking and subcategorization properties specified in the lexicon. It must take an

'agentive' external argument, the 'causer', and a propositional direct complement which names the event or state that is caused:

(31) -its, V: [___ proposition]
external theta role: 'agent'

At this level of abstraction, Chichewa -its has a lexical entry identical to that of the verb make in English. This expresses the fact that the two morphemes are good translations of one another.

As with the raising predicates, the hypothesis that -its has a single set of lexical properties implies that it will occur in essentially only one D-structure configuration--namely the D-structure which is a projection of its lexical properties. Thus, the D-structures of both (29a) and (29b) must have the following form:

(32) [S girl INFL -its [S' waterpot INFL fall]]

This structure represents explicitly the thematic relationships among the various phrases identified above; the fact that (29a) and (29b) are associated with congruent D-structures represents the fact that they are 'thematic paraphrases' in accordance with the UTAH. The D-structure common to (30a), (30b) is parallel, except that the verb in the embedded clause has a direct object.

Nevertheless, the structure in (32) may not surface just as it is; as with seem, something must happen to (32) before S-structure. This suggests that there is some independent principle of grammar that must be satisfied, parallel to the requirement that clauses must have subjects. Whatever this new requirement is, it too can be met in two distinct ways. (29a) is

derived from (32) by the insertion of a verb root which has no thematic properties--a 'pleonastic verb'--in the matrix sentence. The causative morpheme then suffixes to this verb:

(33) [S girl INFL 'do'+its [S waterpot INFL fall]]

In essence, this is a rule of 'do-support', similar to the familiar one that applies in the English auxiliary system to rescue stranded tense morphemes. Note the conceptual similarity between this and (26a), where the raising predicates fulfill the requirement of having a subject by receiving an empty subject, inserted between D-structure and S-structure.

(29b), on the other hand, is derived from (32) in a different way: here the verb root from the embedded sentence moves out of its theta role assigning position and into the matrix sentence. The causative morpheme then suffixes to this stem:

(34) [S girl INFL fall_i+its [S' waterpot INFL t_i]]

This is our featured case of Verb Incorporation, parallel to Noun Incorporation, as illustrated in the last section. Note the similarity between this and (26b), where the raising predicates fulfill the requirement of having a subject by 'borrowing' the subject of their embedded clause.

By now it is rather obvious what additional requirement D-structures such as (32) must meet: -its must find a verb root to suffix to. As in the case of raising verbs finding a subject, there are two a priori possible ways of meeting this requirement: a new verb root can be inserted for this purpose (which by the Theta Criterion and the Projection Principle will necessarily

be semantically empty); or another verb root from the structure can be moved into position (which by the Projection Principle and the ECP will necessarily come from the sentential direct object). Both of these possibilities are realized. Clearly the requirement is a reflex of the obvious fact that -its in Chichewa is an affix, surely the minimal difference between it and English make.

The theory of morphology of Lieber (1980) develops the idea that bound morphemes (affixes) have the same morphological features and properties as free morphemes (words), except that they must be bound. This difference is captured by associating with bound morphemes a 'morphological subcategorization frame', which states what kind of element the morpheme in question must be the sister of in a morphological structure. Free morphemes need not the sister of anything in morphological structure, and thus have no morphological subcategorization frame. As discussed in section 1.4.5, we are using the notion that (some) affixes have the same properties as free words in the fullest possible sense. Not only do they have morphological properties such as category, number, gender, like those Lieber focused on; they also may have full syntactic properties of free words, including thematic assigning properties, (syntactic) subcategorization frames, and Case assigning properties (cf. Lieber (1983), Marantz (1984)). This is what we claimed when we gave Chichewa -its the lexical entry in (31), parallel to that of English make. Then, following Lieber, let us refine our lexical entry for -its, making it minimally different from that of make in that it contains a morphological subcategorization frame, showing it to be an affix:[11]

(35) -its, V: [___ propostion] (s-subcat)
external theta role: 'agent'
]$_V$___ (m-subcat)

Clearly morphological subcategorization frames are useless if they do not need to be satisfied at some level of the grammar. I claim that the following is the needed principle:

(36) Stray Affix Filter

*X if X is a lexical item whose morphological subcategorization frame is not satisfied at S-structure.

This filter captures the obvious fact that affixes must attach to words. Its only nontrivial aspect is stipulating the crucial level to be S-structure, rather than D-structure, or all levels of syntactic analysis. But, the fact that affixes may assign and receive theta roles implies that this requirement cannot be a requirement on D-structure. If it were, affixes would not be free to occur in the cannonical theta assigning and receiving positions at D-structure as required by the UTAH. Furthermore, it is natural that the Stray Affix Filter should be an S-structure condition, since this is the level which feeds the phonological interpretive component, and the property of being an affix is clearly a morphophonological one. It is this principle, therefore, which forbids (32) from surfacing 'as is', and forces either 'do-support' ((29a), (30a)) or Verb Incorporation ((29b), (30b)) to apply. Comparing Chichewa morphological causatives to English raising verbs bears fruit in two ways. First, it provides a new argument for the Incorporation hypothesis, as compared to a base generation alternative: the optimally simple lexical entry for the morpheme -its, together with an account of the two related structures that it can appear in, is only possible if the general

transformation 'Move Alpha' can apply to take a V-o from its theta assigning position to a new S-structure position. Second, pursuing the parallelism has given further insight into the nature and working of Incorporation: it has yielded evidence about the lexical properties of incorporating elements, as well as examples of how morphological principles (like (36)) and syntactic principles (like the ECP) apply to the same structures to determine the properties of a given construction. This strongly supports the view of Morphology's role in the grammar laid out in section 1.4.5. Some further comments about both implications are in order.

A classic argument for movement is that it can separate expletives and parts of idiom chunks from their usually required positions. In fact, this provides the most important diagnostic for raising verbs:

(37) a. There$_i$ seem [t_i to be books on the table]

b. All hell$_i$ appears [t_i to have broken loose]

c. Unfair advantage$_i$ is likely [t_i to be taken t_i of the orphans]

These sentences contrast with superficially similar control verbs, where the matrix subject is identified with the empty embedded subject not by movement, but by obligatory control:

(38) a. *There$_i$ tried [PRO$_i$ to be books on the table]

b. *All hell$_i$ preferred [PRO$_i$ to break loose]

c. *Unfair advantage$_i$ wanted [PRO$_i$ to be taken t_i of the orphans]

In Chichewa, morphological causatives can be formed based on verb-object

idioms, with the idiomatic reading preserved:

(39) a. (chifukwa sanasamale malamulo a pa msewu...)
because not-he-pst-care regulation of on road
...John tsapano a-ku-nongonez-a bondo
John now SP-pres-whisper knee
'Because he ignored the traffic laws, John is now regretful'
[kunongoneza bondo 'whisper to the knee'=mourn, be regretful]

b. (chifukwa chosiya ufa poyera...)
because-of leaving flour on-open-space
...mbuzi zi-a-mu-nongonez-ets-a bondo Mavuto
goats SP-perf-OP-whisper-cause-asp knee Mavuto
'Because she left the flour out,
the goats made Mavuto regretful'

(40) a. mphunzitsi a-na-uz-a atsikana kuti a-tch-e makutu
teacher SP-pst-tell girls that SP-set-subj ears
'The teacher told the girls to pay close attention'
[kutcha makutu 'set the ears (as a trap)'=pay attention]

b. mphunzitsi a-na-tch-ets-a makutu atsikana
teacher SP-pst-set-cause-asp ears girls
'The teacher had the girls pay close attention'

This argues that these causatives are derived by syntactic movement, the relation that is known to not destroy idiomatic reading. Aissen (1974) gives essentially the same argument, based on similar examples of morphological causatives in Turkish:

(41) a. O adam el aç-ıyordu
The man hand open-prog
'The man is begging'
[el acmak, 'open the hand'=beg]

b. O adam-a el aç-tır-d-ım
The man-dat hand open-cause-past-1sS
'I made the man beg'

In this connection, it is important to recognize that cases of derivational morphology which cannot be analyzed as Incorporation typically do not preserve idiomatic readings:

(42) a. *John's kicking of the bucket (surprised me)
(=John's dying)

b. *The host's breaking of the ice (came not a moment too soon)
(=the host starting comfortable conversation)

c. *Linda and Kim's shooting of the bull (was pleasant for both)
(=their talking with no great purpose)

(43) a. *The bucket is kickable at any moment
(=One could die at any time)

b. *The ice never seems to be breakable before 9:00
(=One cannot start comfortable conversation...)

c. *The bull is most shootable during exam week
(=One has purposeless conversations most...)

In this respect, derivation in the lexicon is similar to control, in that idiomatic relationships cannot be inherited from simpler structures. On the other hand, raising and morphological causatives may inherit idiomatic readings from simpler structures. This is predicted in the current analysis, in which both of the latter (but neither of the former) involve movement of a constituent in the syntax.

The argument for Verb Incorporation in this section turns on the existence of two different structures in which the same morpheme appears: the 'do-support' structure and the Verb Incorporation structure. However, it is by no means universal for a language with a causative affix to have that affix appear in both structures. Many languages, in fact, have only analogues of (29a), (30a) which contain a matrix verb morphologically unrelated to the causative affix. Thus, it might be argued that there is no need to give a single lexical entry for Chichewa's -its that underlies both (29a) and (29b); rather it is a historical accident that Chichewa's periphrastic causative verb happens to end in the same phonemes as its causative verb. This would cut out a "single subcategorization" argument for Verb Incorporation.

Nedyalkov and Silnitsky's (1973) typological study of causative constructions suggests that there is a valid generalization to be captured here, however. They write (p. 6):

> In a number of languages there are transitional cases where the causative morpheme can function both as a causative affix and as an empty causative verb.

By way of illustration, they cite the following forms from Avarian:

(44) Gabi-ze, 'to do' + la-ze, 'to know' --->

a. la-z-abi-ze (synthetic form) 'to cause to know, to teach'

b. la-ze Gabi-ze (analytic form)

This case appears to be slightly different from the Chichewa case in that the Avarian causative apparently does not need to be 'do-supported' if Verb Incorporation does not occur. Rather, it is an affix only optionally, rather than obligatorily. Thus, the same argument for giving the causative a single lexical entry in Chichewa would apply in Avarian, but in Avarian the morphological subcategorization frame would be specified as optional:

(45) Gabi-ze, V: [___ proposition] (s-subcat)
external argument: 'agent'
$(]_V$) ___ (m-subcat)

The fact that this situation arises in 'a number of languages' suggests that the affix-verb homophony is nonaccidental, and thus that it is correct to collapse lexical entries when it occurs. If we assume that both the 'do-support' rule of Chichewa and the property of optionally being an affix are somewhat marked options of grammar, we expect many languages to have neither. In that case, since the causative morpheme cannot be stranded by the Stray Affix Filter, Verb Incorporation will be the only possible way to

get a grammatical structure in such languages, and alternations will not be seen.

This fact brings up an apparent dissimilarity between Verb Incorporation and Noun Incorporation: we see that Verb Incorporation tends to be obligatory, whereas Noun Incorporation is optional, albeit highly favored in some languages. Thus, NI sentences alternate with variants in which the object is an independent phrase, while VI sentences often do not. This is only a minor contrast, however, following from the fact that NI tends to be compounding with respect to Morphology theory, whereas VI tends to be affixation. Thus, the complex words formed by Noun Incorporation in languages like Mohawk and Southern Tiwa show the morphological and phonological behavior of ordinary words formed in the lexicon by compounding (see Mithun (1984), Baker (1984)). Complex words formed by Verb Incorporation in a language like Chichewa, on the other hand, show the morphological and phonological behavior of words formed by affixation. This can be shown independently of the syntactic considerations at hand; for example, the causative suffix undergoes a vowel harmony rule that is characteristic of all suffixes in Chichewa[12]. (For a statement of the rule, see footnote 10.) Examples are:

(46) a. i-ku-thanang-its-a
SP-pres-run-cause-asp

b. zi-ku-lir-its-a
SP-pres-cry-cause-asp

c. a-na-meny-ets-a
SP-pst-hit-cause-asp

d. a-na-on-ets-a
SP-pst-see-cause-asp

Compare this with true compounds in Chichewa, where the two roots do not harmonize with one another:

(47) a. chi-[[ponda]$_V$[mthengo]$_N$]
pref-step-bush, ='a bush-stepper'

b. *chi-ponda-mthingo

Now an affix must attach to a root, but a root need not compound with another root; technically we say that affixes have (nonempty) morphological subcategorization frames while roots do not. Thus, the Stray Affix Filter (36) forces incorporation to take place if and only if the structure contains an affixal element with a morphological subcategorization frame to be satisfied. In this way, we relate the difference in obligatoriness between VI in many languages and NI to independent morphophonological differences between the V+V forms in (for example) Chichewa and the N+V forms in Mohawk and Southern Tiwa.

Nor is this distinction inherently related to the category difference of V Incorporation vs. N Incorporation; rather, it depends simply on the presence or absence of an idiosyncratic morphological feature (the morphological subcategorization frame) of a lexical item which can occur with either category type. Thus, in section 2.4 it was argued that antipassives are a subcase of NI in which the Incorporated element is an affix; in this case Incorporation is obligatory and the morphophonology is that of affixation as well. Another example comes from Noun Incorporation in the Eskimo languages, which also shows the properties of affixation (see Sadock (1980, to appear), A. Woodbury (1981), and references cited there). Here Noun Incorporating Verbal elements (called 'N-V postbases' in the Eskimo literature) form a fairly well defined, finite set: approximately 30

are listed for the Alaskan Inupiaq dialect by MacLean (1980). N-V postbases have the morphophonological properties of affixes. Moreover, in cases where Noun Incorporation is allowed, it is obligatory. Sadock (1980:306-307)) gives the following as illustrative examples from the Greenlandic dialect:

(48) a. Qimme-qarp-oq (cf. qimmeq, 'dog')
dog-have-indic-3sS
'He has a dog'

b. Sapangara-iv-oq (cf. sapangaq, 'bead')
bead-get-indic-3sS
'He bought beads'

If no contentful noun root is incorporated, a semantically empty noun stem (pi-) must be incorporated:

(49) a. (Qimmimik) pe-qarp-oq
dog-instr 0-have-3sS
'He has something (a dog)'

b. (Sapanngamik) pi-siv-oq
bead-instr 0-get-3sS
'He bought something (beads)'

This is directly parallel to the semantically empty verb stem insertion, which applies in Chichewa if no other verb root is incorporated (see (33) and discussion). On the other hand, it should also be possible for syntactic Verb Incorporation to correspond to morphological compounding in some languages. I have less information on which to evaluate this prediction, but the Avarian case cited above is a potential candidate. Instead of saying that it is optionally a suffix, as above, we might say that it is always a root, and that it can undergo compounding. The optionality of the Verb Incorporation would then be explained. If this

approach is correct, we further predict that causative verbs in Avarian will show the phonological properties of compound verbs rather than of verbs formed by derivational morphology, if there are differences between the two in that language.[13]

Thus, consideration of the morphological and syntactic subcategorization frames of causative verbs shows there to be two interacting factors in the characterization of Incorporation structures. First, there is the syntactic (and semantic) factor of whether an incorporating predicate selects for a nominal direct argument or for a sentential direct argument. If the former, then it will incorporate nouns; if the latter, verbs (by the HMC). Second, there is the morphological (and phonological) factor of whether the predicate is an affix or a root. If the former, then incorporation will be obligatory (plus or minus empty stem support rules); if the latter, optional. These factors are largely independent, giving the following four-way typology:

(50)

SYNTAX \ MORPH:	affix	root
NIer	Eskimo -siv, -liorq Antipassives	Iroquoian nuhwe?s S. Tiwa k'ar
VIer	Chichewa -its Turkish -DIr Eskimo -kqu	Avarian Gabi (?)

Thus, we have morphological properties and syntactic properties which are independent of each other, but which conspire together, each according to the general principles relevant to it, to determine the properties of a single structure. This is strong support for the claim that Incorporation

is a single process which is simultaneously considered to be both morphological and syntactic. Thus, it argues in favor of the view about the relationship between morphology and syntax put forward in this work (section 1.4.5).

3.3 Government, Case, and Direct Objects

3.3.1 The problem of two causatives

Thus far, I have argued that morphological causatives in languages of the world can be derived from simple and general properties of Incorporation. Incorporation in this sense is simply an instance of 'Move-alpha' applied to a lexical category rather than a maximal projection, and its behavior is constrained by a few basic principles. Thus, there is in this system no explicit rule of causative formation which will be specific to a particular language or morpheme of a language; indeed there is no place for such a rule. This makes a very strong empirical claim. If languages contain no rule of causative formation per se, then languages cannot contain different rules of causative formation. Thus (it would appear), we are forced to predict that morphological causatives will have essentially the same syntax in all languages.

This claim is entirely false as it stands. Gibson (1980) argues at length that there must be (at least) two types of causative rules in languages of the world, and that the two differ with respect to grammatical function assignments (see also Marantz 1984, Baker 1985). Morphological causative constructions, although biclausal semantically and underlyingly,

appear monoclausal on the surface. Causative constructions then vary as to which of the NPs from the embedded clause appears as the direct object in this single surface clause. In some languages, the embedded subject appears as the direct object if the embedded verb is intransitive, but as an oblique NP (often an indirect object) if the embedded verb is transitive. Gibson's expression of this 'rule' can be translated in this way:

(51) CAUSATIVE RULE 1:

GF in embedded clause	GF in surface clause
ergative	oblique (IO)
absolutive	direct object

In this schema, 'ergative' is a cover term for subject of a transitive clause; 'absolutive' is a similar cover term including object of a transitive clause and subject of an intransitive clause. I illustrate this pattern from Chichewa (data from Mchombo, personal communication):

CHICHEWA:

(52) a. Buluzi a-na-sek-ets-a ana
lizard SP-pst-laugh-cause-asp children
'The lizard made the children laugh'

b. Boma li-ku-sow-ets-a nsomba
government SP-pres-disappear-cause-asp fish
'The government made fish disappear (become unavailable)'

c. Mulungu a-na-yer-ets-a kunja
God SP-pst-clear-cause-asp sky
'God made the sky clear'

(52) shows morphological causatives of a range of intransitive verbs, including an agentive intransitive (52a), a nonagentive intransitive (52b), and a stative verb (52c). In each case, the subject (and sole argument) of

the base verb surfaces as a direct object. Evidence for this is that the NP in question can trigger optional 'object agreement' (53a) and it becomes the subject NP if the verb complex is passivized (53b):

(53) a. Buluzi a-na-wa-sek-ets-a ana
lizard SP-pst-OP-laugh-cause-asp children
'The lizard made the children laugh'

b. Ana a-na-sek-ets-edw-a (ndi buluzi)
children SP-pst-laugh-cause-pass-asp by lizard
'The children were made to laugh by the lizard'

This contrasts with the causatives of transitive verbs:

(54) a. Anyani a-na-meny-ets-a ana kwa buluzi
baboons SP-pst-hit-cause-asp children to lizard
'The baboons made the lizard hit the children'

b. Kambuku a-ku-umb-its-a mtsuko kwa kadzidzi
leopard SP-pres-mold-cause-asp waterpot to owl
'The leopard is having the owl mold a waterpot'

In these sentences, the subject of the base verb (hereafter, the 'causee') systematically surfaces as an oblique in a prepositional phrase, while the object of the base verb acts as the object of the causative verb on the surface. The base object is thus morphologically unmarked, and appears immediately after the verb in unmarked word order. Furthermore, the base object can trigger object agreement on the verb (55a), and becomes the subject when the verb is passivized (55b):

(55) a. Anyani a-na-wa-meny-ets-a ana kwa buluzi
baboons SP-pst-OP-hit-cause-asp children to lizard
'The baboons made the lizard hit the children'

b. Ana a-na-meny-ets-edw-a kwa buluzi (ndi anyani)
children SP-pst-hit-cause-pass-asp to lizard by baboons
'The children were made to be hit by the lizard (by the baboons)'

This contrasts with the causee, which never triggers verb agreement or

becomes the subject of a passive in these structures:

(56) a. *Anyani a-na-zi-meny-ets-a ana kwa mbuzi
baboons SP-pst-OP-hit-cause-asp children to goats
'The baboons made the goats hit the children'

b. *Buluzi a-na-meny-ets-edw-a ana (ndi anyani)
lizard SP-pst-hit-cause-pass-asp children by baboons
'The lizard was made to hit the boys by the baboons'

This pattern is very common in languages of the world, also showing up in languages as diverse as Turkish, Jacaltec, French (Gibson 1980), and Malayalam (Mohanan 1983).

It has been claimed that the causative pattern in (51) is the only one allowed in Universal Grammar (Perlmutter and Postal 1974, Comrie 1976). Gibson shows that this is not the case, however, arguing that Chamorro (Austronesian) causatives in particular show a different pattern. In this language, the subject of the base verb becomes the object of the causative verb on the surface, regardless of the transitivity of the base verb. If the base verb has an object, it surfaces as a kind of 'second' object. Gibson schematizes this pattern as follows:

(57) CAUSATIVE RULE 2:

GF in embedded clause	GF in surface clause
subject	object
object	'2nd object'[14]

In order to choose as minimal a contrast as possible to the Chichewa examples above, I illustrate this causative pattern from a language identical to Chichewa in most respects--namely another dialect of Chichewa. Based on work with informants from the 'inland' area of Malawi,

Trithart (1977:80-81) reports the following patterns:

(58) a. Mphunzitsi a-na-lemb-ets-a ana
teacher SP-pst-write-cause-asp children
'The teacher made the children write'

b. Catherine a-na-kolol-ets-a mwana wake chimanga
Catherine SP-pst-harvest-cause-asp child her corn
'Catherine made her child harvest the corn'

(58a) is the causative of a verb used intransitively; (58b) is the causative of a verb used transitively. In (58a), the causee of the base verb (and its only argument) behaves like the direct object of the surface verbal complex. Evidence for this is that the causee triggers object agreement on the verb (59a), and becomes the subject when the verb is passivized (59b):

(59) a. Mphunzitsi a-na-wa-lemb-ets-a ana
teacher SP-pst-OP-write-cause-asp children
'The teacher made the children write'

b. Ana a-na-lemb-ets-edw-a ndi mphunzitsi
children SP-pst-write-cause-pass-asp by teacher
'The children were made to write by the teacher'

In this respect, the two dialects of Chichewa are identical (compare (59) with (53)). In the causative based on a transitive verb, however, the difference appears. In (58b), the causee of the base verb, 'her child', behaves like the direct object of the verb, rather than like an oblique. Thus, it appears without morphological or prepositional marking, immediately after the verb. It also may trigger object agreement or move to the subject position in passives:

(60) a. Catherine a-na-mu-kolol-ets-a mwana wake chimanga
Catherine SP-pst-OP-harvest-cause-asp child her corn
'Catherine made her child harvest the corn'

b. Mnyamata a-na-kolol-ets-edw-a chimanga ndi Catherine

boy SP-pst-harvest-cause-pass-asp corn by Catherine
'The boy was made to harvest the corn by Catherine'

The underlying object of the base verb shows none of this object behavior, however, in spite of appearing morphologically unmarked. It neither triggers object agreement, nor may it become the subject in a passive:

(61) a. *Catherine a-na-chi-kolol-ets-a mwana wake chimanga
Catherine SP-pst-OP-harvest-cause-asp child her corn
'Catherine made her child harvest the corn'

b. *Chimanga chi-na-kolol-ets-edw-a mwana wake ndi Catherine
corn SP-pst-harvest-cause-pass-asp child her by Catherine
'The corn was made to be harvested by her child by Catherine'

Comparing (60) with (57) and (61) with (55), we see that the set of grammatical sentences in Trithart's dialect of Chichewa is the opposite of the set of grammatical sentences in Mchombo's dialect. Mchombo's dialect follows the schema of 'Causative Rule 1' in (51), while Trithart's dialect follows the schema of 'Causative Rule 2' in (57), and the two patterns crucially differ when the base verb is transitive. I will refer to Trithart's dialect as 'Chichewa-B', and to Mchumbo's dialect as 'Chichewa-A', or simply as 'Chichewa'. In seeking to establish the existence of 'Causative Rule 2', Gibson (1980) shows that the surface pattern in Chamorro causatives cannot adequately be derived by maintaining Causative Rule 1 and adding to it the independent effects of some other process. Rather, she claims that a second kind of causative rule is truly necessary. Other languages that have this second causative pattern include Cebuano (Gibson (1980)), Choctaw (Davies (1979)), Chimwiini (Marantz (1984)), and indeed most of the members of the Bantu language family.

This situation presents a problem for the Verb Incorporation analysis of morphological causative constructions. As discussed above, there is no

explicit rule of causative formation under this analysis, merely an interplay of general principles which constrain movement. Thus, there is no rule of causative formation which can be different in (for example) Chichewa-A and Chichewa-B. Yet the facts laid out in this section seem to contradict this. The only way out would be to find some independent and systematic difference between languages with 'Causative Rule 1' and languages with 'Causative Rule 2' which will interact with the theory of incorporation in such a way as to derive the differing effects of Verb Incorporation in the two classes of languages.

In fact, closely related as they are, there is another difference between Chichewa-A and Chichewa-B which is striking in this regard. Both languages have 'dative' verbs which take two arguments, an NP theme and a PP goal:

CHICHEWA-A:
(62) Amayi a-na-perek-a mtsuko kwa ana
woman SP-pst-hand-asp waterpot to children
'The woman handed the waterpot to the children'

CHICHEWA-B: (Trithart 1977:10)
(63) Joni a-na-pats-a nthochi kwa mai wake
John SP-pst-give-asp bananas to mother his
'John gave the bananas to his mother'

Only in Chichewa-B, however, can some of these verbs appear in a second context, with two unmarked postverbal NPs:

CHICHEWA-A:
(64) *Amayi a-na-perek-a ana mtsuko
woman SP-pst-hand-asp children waterpot
'The woman handed the children the waterpot'

CHICHEWA-B: (Trithart 1977:31)
(65) Joni a-na-pats-a amai ake nthochi
John SP-pst-give-asp mother his bananas
'John gave his mother the bananas'

Thus, 'dative shift' appears to be possible in Chichewa-B but not in

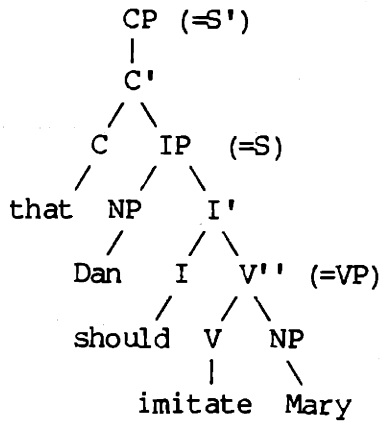
Chichewa-A. Now, in the unmarked situation, a Case assigning element can only assign Case to one NP, and that NP must be adjacent (in the proper sense) to the Case-assigner (cf. Stowell 1981). Given only these assumptions, we expect sentences such as (64) to be ungrammatical, since there will be no way for the second NP, 'waterpot', to receive Case. This Case theory problem, however, can apparently be overcome in some way in Chichewa-B (and in English), thereby making (65) possible in that language. Thus, the languages must differ in some aspect of Case Theory. With this starting point, I will use this difference to explain the existence of the two kinds of morphological causative constructions, as well as the behavior of surface direct objects in each.

3.3.2 V movement and the structure of S

As a first step toward understanding the more complex aspects of causative constructions, we must go back and revise a preliminary assumption. In section 3.1, we took the structure of clauses to be parallel to the structure of noun phrases, except that noun phrases are built around a head noun, while clauses are built around a verb. Much recent work in Government-Binding Theory suggests that this is an oversimplification, however. Rather, there are two other categories to be considered in the clausal system: namely INFL and COMP. I will take these categories to be similar to nouns, verbs, and adjectives with respect to X' theory, in that they head their own projections. On the other hand, they differ from these 'major categories' in that they do not theta mark arguments of their own, and they do not necessarily count as governors. Because of these differences, and the generally syncategorematic status of INFL and COMP, they are distinguished as being nonlexical heads. Now, I

assume, following (Chomsky (1985)) that V is the head of VP, which is a maximal projection; that S is the maximal projection of INFL, with the subject as the specifier of INFL'; and that S' is the maximal projection of COMP, with the landing site for wh-movement as the specifier of COMP'. Lexical items (normally) take only S'=CP (COMP phrase) as an argument. Then the full structure of a clause will be as in (66):

(66) That Dan should imitate Mary (is obvious)

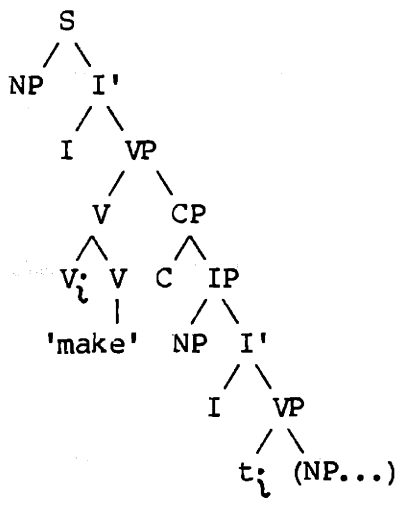


For many purposes, the full articulation of this structure is masked by the nonlexical status of COMP and INFL, and by the special close relationships between COMP and INFL (cf. Stowell (1982)) and between INFL and the verb. This is why in some cases V seems to act like the head of its clause.

This more complex structure for clauses now interferes with the analysis of morphological causatives in terms of Verb Incorporation. Suppose that causative morphemes are like other elements that take propositional complements in that they (at least in the unmarked case) subcategorize for a full S'.[15] Then the problem is that the position of the matrix verb does not govern the position of the embedded verb, because the maximal projections of COMP and INFL intervene. If the embedded verb is moved

directly onto the matrix verb, it will not govern its trace, and the structure will be ruled out by the ECP:

(67)



In particular, the embedded IP and VP will be barriers to government between the adjoined verb and its trace, since they are not theta indexed with the complex verb. Thus Verb Incorporation should be impossible in this structure. On the other hand, in many cases the matrix verb must find a verb root to affix to, in order to satisfy its morphological subcategorization frame by S-structure, as discussed in the last section.[16]

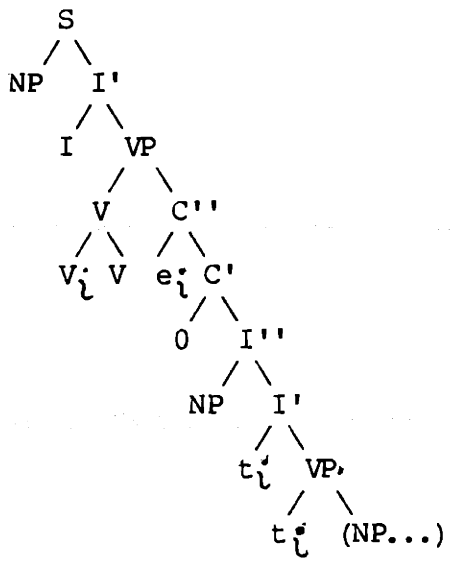
Given our assumptions, there remains only one way to derive a morphological causative construction: the verb must make a preliminary move from its base position, into a position where it is governed by the matrix verb. Then from this new position it can be incorporated into the matrix. The principles of Government-Binding Theory immediately determine much about the properties of such a construction.

What position could be the destination of such a movement? The only possibilities are the specifier position of the COMP of the embedded

clause, or perhaps the COMP position itself. If the verb moved higher, into the actual VP of the matrix verb, it would be appearing in a subcategorized position without itself being an argument of that verb, in violation of the Projection Principle. On the other hand, if the verb stays lower than this, it will still not be governed from the outside, IP being a barrier to government as before. IP is not a barrier to government, however, relative to positions outside of it. Moreover, the CP is theta marked and hence lexically governed by the causative verb, and therefore is a barrier between the matrix verb and an something contained in CP. Movement of material into such a position is licit with respect to the Theta Criterion, because it is not a position to which a theta role is assigned. In fact, the specifier of COMP is the normal landing site of wh-movement.[17]

What can be the category that moves into this position? Here there are two possibilities, and I will claim that both are realized under certain circumstances. First, the verb itself can move into the governed position, from which it will be directly incorporable:

(68)

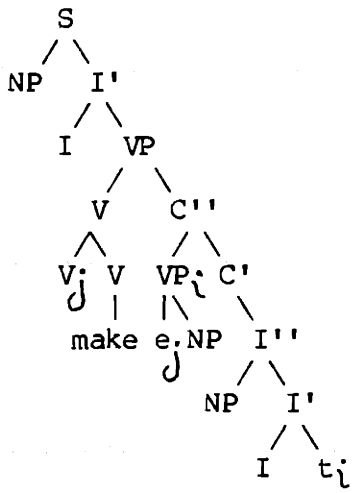


In this structure, the verb undergoes a kind of successive cylic movement to reach the COMP position, by incorporating first into the embedded INFL node, and from there into the embedded complementizer node. Since both the nonlexical INFL and the complementizer are phonologically empty (and perhaps also lexically empty) in this structure, the verb gains no extra morphology from the movement. At each step, the X-o movement is from the head of a phrase to the next highest head, and thus appears to obey the Head Movement Constraint (ECP). COMPs and INFLs do not theta index categories, however, so certain auxiliary technical assumptions are needed here to prevent these movements from being ruled out in the same way that incorporations out of adjuncts are ruled out. A number of possible avenues exist in the literature. For concreteness, I will make the following assumptions. Following Fabb (1984), I claim that the INFL assigns a special kind of verbal case to the VP in order to make the verb visible for theta role assignment at LF. Furthermore, we know from Exceptional Case Marking structures that a Case indexing relationship must, like a theta indexing relationship, suffice to make a category not a barrier with

respect to the assigner (cf. footnote 10, chapter 1; Chomsky (1985)). Now, if we simply assume that this is true of verbal Case as well as nominal Case, the V-to-INFL incorporation in (68) will be legitimate: the VP node is not a barrier between the INFL and the V because of the verbal Case assigning relation between it and that INFL. As for the movement from the INFL position to the COMP position, I simply will follow Chomsky (1985), who stipulates that the IP node is a 'defective category' and is never a barrier to government if it is the only maximal projection between the two positions being considered. Formally, this too will involve indexing anything in the COMP position with the IP, where this index too releases IP from barrierhood with respect to the positions in CP.[18] Thus, the INFL to COMP movement is legitimate as well, and (68) is a viable structure.

There is, however, another way of getting the embedded verb to be governed by the matrix verb so that incorporation can take place: the entire embedded VP can move to the specifier of COMP:

(69)



In this construction, government of the (VP) trace is not problematic--it

is straightforwardly antecedent-governed by the VP in SPEC of COMP, given that IP is never a solitary barrier to government. Furthermore, the VP is governed by the matrix causative verb, and so therefore is its head V (cf. Belletti and Rizzi 1981).[19] Thus, the embedded V can incorporate from this position and still satisfy the Head Movement Constraint (ECP).

In conclusion, because of the articulated structure of S' which includes COMP and INFL nodes, the verb of an embedded clause must move internal to that clause before it can be incorporated. Given independently motivated assumptions, there are two ways this can be accomplished--by V-to-COMP movement or by VP-to-COMP movement. I will claim that these two options underlie the two different causative constructions described in the preceding subsection. Specifically, the VP-to-COMP movement configuration (69) will yield a structure in which the underlying embedded object acts like the surface object by the Government Transparency Corollary ('Causative Rule 1'); the V-to-COMP movement configuration (68) will yield an 'Exceptional Case Marking'-like structure in which the embedded subject acts like the surface object ('Causative Rule 2').

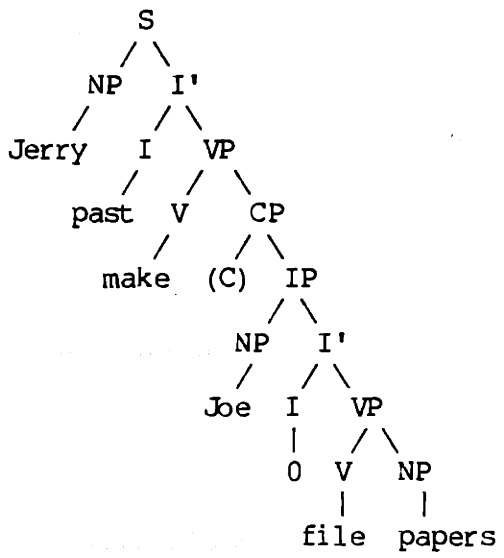
In closing, it should be pointed out that the developments of this subsection do not undermine the explanation of why VI only takes place out of sentential direct objects. The journey of V has been broken down into two steps: V(P) to COMP, followed by Verb Incorporation Proper. The first of these steps may perhaps be independent of the role of the containing clause in the matrix sentence, but the second step will not be. In particular, the V-o trace of the second movement will need to be antecedent governed as before. This will be possible if and only if the CP containing it is not a barrier to government with respect to it. This in turn will be

the case if and only if the CP is theta indexed by a lexical governer. Therefore, VI will be possible out of a sentential direct object, but not out of a sentential subject or an adjunct clause, just as before.

3.3.3 Case and causative differences

We are now ready to turn to the issue of Case assignment in causative constructions. The Case Filter requires that every phonetically realized NP be assigned abstract Case in a given structure, so that the NP may be visible for theta role assignment. In an English-type periphrastic causative construction, it is easy to see how this requirement might be satisfied:

(70) Jerry made Joe file his papers

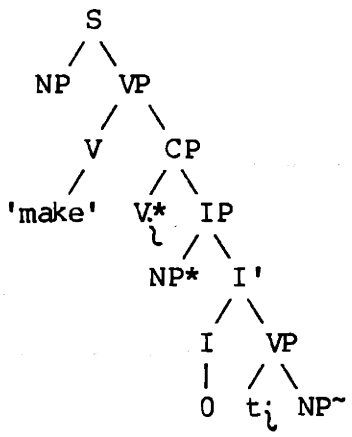


Here the matrix tensed INFL assigns nominative Case to the matrix subject 'Jerry', and the embedded transitive Verb 'file' assigns accusative Case to its object 'papers'. The null embedded INFL cannot assign case to the embedded subject 'Joe' because it has no agreement features; but the matrix

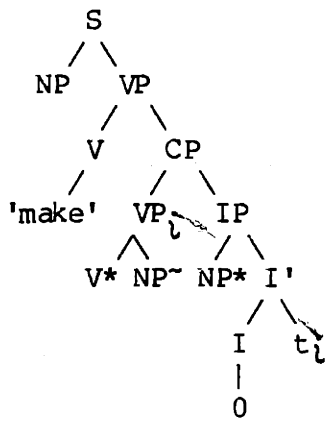
verb 'make' can assign accusative case to this element in the manner of an 'Exceptional Case Marking' verb. Thus, Case assigning relationships are natural and straightforward.

In languages whose causative morphemes trigger Verb Incorporation, these natural Case assigning relationships are perturbed by V-movement, however, leading to potential Case marking problems. Consider the two possible intermediate structures discovered in the last section, the one based on V-to-COMP movement (71a) and the other based on VP-to-COMP movement (75b) (the matrix INFL is omitted for simplicity):

(71) a.



b.



We assume (following Stowell 1981, Chomsky 1981) that, in the unmarked situation, a must govern and be adjacent to the NP it assigns accusative Case to (i.e. is morphologically indexed with) at S-structure. Furthermore, a verb trace cannot assign (accusative) Case at all. This follows Rouveret and Vergnaud's (1980) discussion of French causatives, and has been explained in terms of the 'morphological identification' developments of Case theory worked out in sections 2.3.2 and 2.3.3. (principle 2.3.3 (99)). Given these assumptions, the movement of V* in (71a) causes two problems for Case Theory: on the one hand, V* is no longer

in a position to assign Case to its semantic object NP~; on the other, V* now blocks V from assigning Case to NP* by destroying adjacency (and perhaps government) between the two. As consolation, V* is now in a position to assign case to NP*, but NP~ is left irresolvably without resource. The movement of VP in (71b) is more considerate to NP~; here it is moved along with V*, the verb it belongs to semantically. NP* this time is left without resource, however, since the moved VP insures that it is not governed by or adjacent to either potential Case assigner. Therefore, as long as we restrict our attention to the Universally unmarked type of Case assignment, Case Theory allows no grammatical Verb Incorporation with transitive verbs. Thus, we must per force expand our attention to marked types of Case assignment, i.e. to the regions where languages differ idiosyncratically. In particular, we will consider marked types of Case assignment which are allowed independently in a given language to deal with morphologically underived "dative"-type verbs such as 'give'. If a particular marked type of Case assignment can also apply in either (71a) or (71b), that will determine the type of morphological causative which is possible in the language. In fact, there are several subcases, leading to more than the 'traditional' two types of causatives discussed in section 3.3.1 above.

3.3.3.1 True Double Accusative Languages

Some languages appear to be marked in that (some of) their verbs can assign accusative case to more than one NP which they govern. Clearly strict adjacency will not be a requirement for Case assignment for at least one of the accusative cases in such a language, since both cannot be

adjacent to the verb.[20] In GB theory, the most of the distinctive properties of direct objects follow from their being governed, theta marked, and assigned accusative Case by the verb (see the discussion in 1.3.3). Now verbs can generally govern and theta mark more than one NP, and in these languages they can also, by assumption, Case mark more than one. Thus the characteristic property of such a language is that it will have 'true' double object verbs, where both NPs in question have identical objectlike behavior. The classic case of a language such as this from the literature is Kinyarwanda, a Bantu language spoken in Rwanda and Burundi (Kimenyi (1980), see also Gary and Keenan (1977), Dryer (1983), Marantz (1984)):

KINYARWANDA:

(72) a. Umugabo y-a-haa-ye umugore igitabo
man SP-pst-give-asp woman book
'The man gave the woman the book'

b. Umugore y-iim-ye abaana ibiryo
woman SP-refuse-asp children food
'The woman refused the children food'

c. Umugabo y-eerets-a abaana igitabo
man SP-show-asp children book
'The man showed the children the book'

In each of these sentence types, both postverbal NPs show the same range of properties which are diagnostic for direct objects in many languages. For example, either--or in fact both--of the postverbal NPs in (72a) can trigger object agreement (i.e. can cliticize) on the verb:

(73) a. Umugabo y-a-ki-haa-ye umugore
man SP-pst-OP1-give-asp woman
'The man gave it to the woman'

b. Umugabo y-a-ba-haa-ye igitabo
man SP-pst-OP2-give-asp book
'The man gave them the book'

c. Umugabo y-a-ki-ba-haa-ye
man SP-pst-OP1-OP2-give-asp
'The man gave it to them'

Similarly, either postverbal NP can become the subject when the verb is passivized:

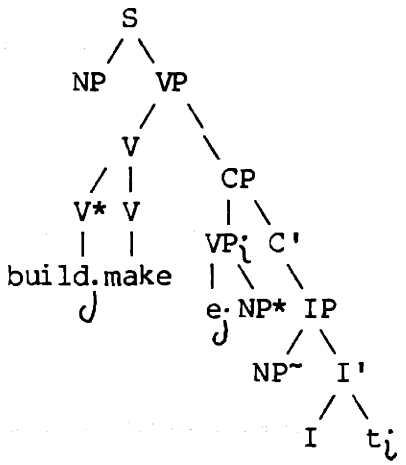
(74) a. Igitabo cy-a-haa-w-e umugore (n'umugabo)
book SP-pst-give-pass-asp woman by-man
'The book was given to the woman (by the man)'

b. Umugore y-a-haa-w-e igitabo (n'umugabo)
woman SP-pst-give-pass-asp woman by-man
'The woman was given the book (by the man)'

Kimenyi goes on to show that both objects of these double object constructions may undergo reflexivization and may be extracted by relativization and clefting in identical fashion. Thus, Kinyarwanda is simply a exception to the functional generalization (2.3.3 (102)) that languages usually allow their verbs to only m-identify one argument with a given m-indexing device.

This special Case marking property of Kinyarwanda gives it a way of realizing the morphological causative of a transitive verb, since both causee and lower object can potentially get accusative Case from the same verb form. In particular, suppose that the entire VP is moved to COMP, and then the V is incorporated into the matrix verb, giving the structure in (75):

(75)



Now, consider the government domain of the derived complex verb 'make-build' in this structure. In the discussion of Noun Incorporation and Possessor Raising in the last chapter, we saw that a complex word structurally governs everything that the incorporated verb used to govern, by the Government Transparency Corollary. Therefore, the 'lower object' NP* is governed by the complex verb. Furthermore, our technical assumptions also imply that the verb complex governs NP~ as well. CP is theta indexed with the causative morpheme and therefore with the complex verb, so it will not be barrier to government. Meanwhile, V* is indexed with IP by virtue of appearing in COMP; therefore when it incorporates into the matrix verb, the resulting verb complex is also indexed with the IP by inheritance. Therefore IP is not a barrier to government relative to the verb complex either. Essentially, this too is a consequence of the GTC, as it combines with the special properties of the IP category discussed in the previous subsection. Finally, the NP~ node itself is a potential barrier between and the verb complex and NP~. NP~, however, is the external argument of V*, from which it gets its theta role (albeit indirectly). On this basis, we can say that NP~ is theta indexed with V*.[21] The derived

verb complex will inherit this index as well, and the result is that even NP~ is not an actual barrier in this configuration. Therefore, there are no barriers to government between the complex verb and NP~, and the government relation holds. Thus, before Incorporation the matrix verb governs neither NP* nor NP~, but afterward it governs both, thanks to the indexes that the incorporated verb contributes. Again, the GTC is at work changing government relationships in incorporation structures, this time in a rather more complex way.

In fact, this is the right result. Since Kinyarwanda verbs can have the capability to assign two accusative Cases to NPs which they govern, the complex verb in (75) may do so to both the lower object and the causee. This gives rise to grammatical morphological causatives, in which both NPs originating in the lower clause surface as morphologically unmarked postverbal NPs (Dryer (1983)):[22]

(76) a. Umugabo a-ra-som-eesh-a abaana ibitabo
man SP-pres-read-cause-asp children books
'The man is making the children read the books'

b. Umugabo a-r-uubak-iish-a abaantu inzu
man SP-pres-build-cause-asp people house
'The man is making the people build the house'

Moreover, both NPs are represented in the theta grid of the complex verb (via the lower verb). Since both are governed by a verb that assigns them Case and theta role, they are both expected to show the behavior of direct objects. Kimenyi (1980) shows that this is true. For example, either NP (or both) may trigger object agreement (cliticization) on the causative verb:

(77) a. Umugabo a-ra-b-uubak-iish-a inzu
man SP-pres-OP-build-cause-asp house
'The man is making them build the house'

b. Umugabo a-ra-yi-uubak-iish-a abaantu
man SP-pres-OP-build-cause-asp people
'The man is making the people build it'

c. Umugabo a-ra-yi-b-uubak-iish-a
man SP-pres-OP-OP-build-cause-asp
'The man is making them build it'

Similarly, either NP can become the surface subject in a passivized causative:

(78) a. Abakozi ba-r-uubak-iish-w-a inzu n'umugabo
workers SP-pres-build-cause-pass-asp house by-man
'The workers are made to build the house by the man'

b. Inzu i-r-uubak-iish-w-a abakozi n'umugabo
house SP-pres-build-cause-pass-asp workers by-man
'The house is being made to be built by the workers by the man'

Kimenyi goes on to show that both NPs can also equally well be relativized or clefted--possibilities in general only open to the direct object (and the subject). Thus, Kinyarwanda's marked property of having dative type verbs that can Case mark two noun phrases accounts for the syntax of its morphological causative. The same pattern of data is found in certain other Bantu languages, including Luyia, Mashi (Gary 1977), and Kimeru (Hodges 1977), as well as perhaps Sanskrit (see Aissen 1974).

3.3.3.2 Partial Double Object Languages

Much more common than the situation described in the last section are languages in which some verbs appear with two accusative (or unmarked) noun phrases, but, unlike in Kinyarwanda, the two NPs do not show the same range of syntactic behavior. I illustrate this from another Bantu language, Chimwiini (Kisseberth and Abasheikh (1977)):

(79) ni-m-pele Ja:ma kuja
1sS-OP-gave Jama food
'I gave Jama food'

Superficially, this sentence looks very much like its Kinyarwanda analogues in (76); nevertheless there is a crucial difference—here only the goal argument 'Jama' acts like a direct object. Thus, Kisseberth and Abasheikh observe that the goal may trigger object agreement as in (79), but the theme argument may not. Furthermore, only the goal may become the subject of a passive sentence:

(80) a. Ja:ma Ø-pel-a: kuja na: mi
Jama SP-gave-pass food by me
'Jama was given food by me'

b. *Kuja i-pel-a Ja:ma na: mi
food SP-gave-pass Jama by me
'Food was given Jama by me'

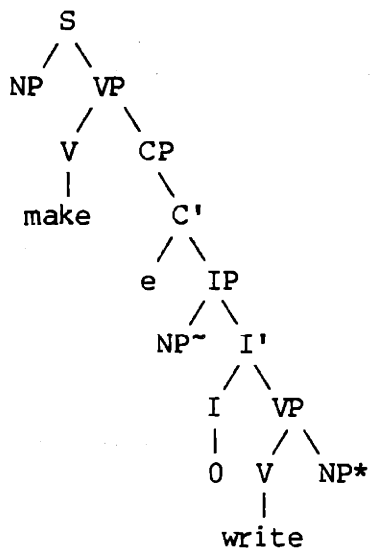
It is clear from the marginality of the English gloss of (80b) that English double object constructions are more like those of Chimwiini than like those of Kinyarwanda in these respects.

I will not attempt a full explanation of these problematic constructions here (see Chapter 4). Nevertheless, certain reasonable outlines of an analysis will be enough to proceed. By the Case Filter, both postverbal NPs in (79) must get Case. Given the contrast with Kinyarwanda, it seems that they may not both get structural accusative Case from the verb at S-structure; in Chimwiini verbs never assign more than one such Case. Since it is the dative argument that generally behaves like a (surface) direct object, it must be the recipient of the one structural accusative Case available. We can assume that the object agreement in (79) is a 'spell out' of this Case, and that it is this Case which is 'absorbed' in

the passive, forcing the goal argument to move to the subject position. Then, the only possibility for the theme argument is that it has some kind of inherent accusative Case.[23] Inherent Case differs from structural Case in several related ways (cf. Chomsky (1984)): it is generally associated with a particular thematic role (here theme); it is assigned at D-structure rather than S-structure; and there is no adjacency requirement on its assignment. In these terms, the marked Case theory property of 'partial double object' languages like Chimwiini and English is that their verbs may license this type of inherent accusative Case in certain constructions.

This special Case marking property gives these languages a way of realizing the morphological causative of a transitive verb, albeit a rather different way from that of Kinyarwanda. Consider again the general D-structure for a morphological causative:

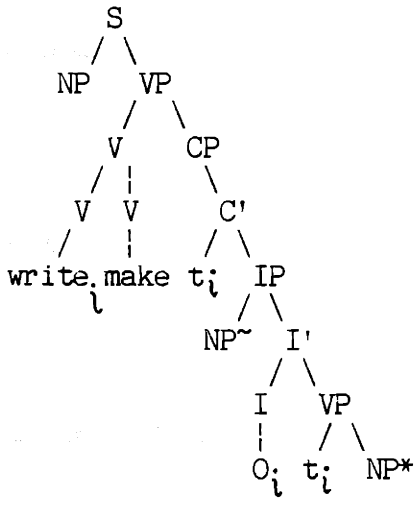
(81)



In this language, the lower verb can license inherent accusative Case on the lower object, NP*, in this configuration. Since this is determined at D-structure and there is no adjacency requirement on inherent Case, the

lower verb is free to move away, into COMP. From there, it can be incorporated into the matrix verb, yielding the S-structure in (82):

(82)



Now, the complex verb in this structure can only assign as many structural cases as a simple verb in the language can (2.3.3 (103)); therefore, it has the capacity to assign exactly one structural accusative Case. By the principles of Incorporation, the complex verb governs everything that the incorporated verb governed in its former position. In its position in COMP, this verb governed the causee NP~, just as the prepositional complementizer <u>for</u> governs the subject position in English. Thus, the complex verb governs and may assign Case to NP~; therefore this NP will act like the direct object of the causative verb. Meanwhile, NP* passes the Case Filter by virtue of its inherent Case, but it is neither lexically governed nor assigned structural Case at S-structure; thus, it will not behave like a direct object. In fact, we expect this phrase to be largely syntactically inert, as is usual with inherently Case marked NPs. Notice also that in Chimwiini there will be no grammatical structure derived from (81) by moving the whole VP to COMP: then both NPs would be governed at S-structure, but verbs cannot assign two accusative Cases in Chimwiini.

Neither can the causee NP~ have inherent accusative Case, because it is not governed at D-structure, where such Case must be licensed.

The result of this is that Chimwiini has morphological causative constructions which look like 'double object' verbs, with two unmarked postverbal NPs (data from Abasheikh (1979), cited in Marantz (1984)):

(83) Mwa:limu Ø-wa-andik-ish-ize wa:na xati
teacher SP-OP-write-cause-asp children letter
'The teacher made the children write a letter'

Moreover--also like 'double object' verbs--only one NP will be a true object, and that NP will necessarily be the causee rather than the lower object. This is confirmed by the data. Thus, the verb form in (83) agrees with the causee 'children' and not with the lower object 'letter'. Furthermore, the causee may become the subject in the passive of a causative, while the lower object may not:

(84) a. Wa:na wa-andik-ish-iz-a: wati na mwa:limu
children SP-write-cause-asp/pass letter by teacher
'The children were made to write a letter by the teacher'

b. *Xati a-andik-ish-iz-a wa:na na mwa:limu
letter SP-write-cause-asp/pass children by teacher
'The letter was made to be written by the children by the teacher'

In the terminology of section 3.3.1, this is an instance of 'Causative Rule 2', in which the subject of the embedded verb is described as becoming the object of the causative, while the object becomes an inert second object. We have explained how and why this type of causative exists in languages which independently have underived 'double object' verbs. Other languages of this type include Swahili (Bantu, see Vitale (1981)) and Japanese (Marantz (1984)), as well as the dialect of Chichewa described by Trithart

(1977), illustrated above in section 3.3.1.[24]

Also of this general type are certain languages which behave essentially the same way, but in which the 'second objects' are not morphologically marked in the same way as ordinary direct objects are; rather they appear in a morphologically oblique case which the language uses in a range of cases to salvage an otherwise Caseless NP. Chamorro (Austronesian, Gibson 1980) is an example. In this language, goal arguments of morphologically underived verbs most commonly appear as the object of the prepostion para:

(85) Hu tugi' i kätta pära i che'lu-hu
1sS-write the letter to the sibling-my
'I wrote the letter to my brother'

However, there is a class of verbs which can appear in a 'dative shifted' frame, with the goal appearing as the surface direct object. When this happens, the theme argument shows up in the oblique case:

(86) In nä'i si tata-n-mami nu i babui
1pexS-give PN father-Ø-our obl the pig
'We gave our father the pig'

This oblique case has many uses in Chamorro, such as marking the 'by-phrase' NP in passives and antipassives, and instrumental NPs. It can also mark the embedded object in a causative construction, thereby giving it Case. This then frees the embedded verb to move out of its VP as in (82), in order to join with the matrix causative verb, which will thereby govern and assign Case to the embedded subject. Thus, the causatives of transitive verbs in Chamorro have structurally cased causees and obliquely cased lower objects:

(87) a. Ha na'-taitai hám i ma'estru ni esti na lebblu
3sS-cause-read 1pex the teacher obl this lk book
'The teacher made us read this book'

b. Ha na'-pula' yu' i mediku ni magagu-hu
3sS-cause-undress me the doctor obl clothes-my
'The doctor made me take off my clothes'

Gibson shows that the causee has all the 'object' properties expected of an NP governed and assigned structural case by the matrix verb. For example, it becomes the subject when the causative verb is passivized:

(88) Ma-na'-fa'gasi si Henry ni kareta nu i famagu'un
pass-cause-wash PN Henry obl car obl the children
'Henry was made to wash the car by the children'

Similarly, it may be reciprocally or reflexively dependent on the matrix subject causer, and it is restricted by Chamorro's animacy hierarchy. These properties do not hold of the oblique lower object.

The Eskimo languages are similar, with object/themes which generally may appear in the 'modalis' (or instrumental) case, and which must appear in the modalis case with dative-shifted and transitive-verb-incorporated structures. This is sketched out in the following paradigm (cf. Smith (1982)):

(89) a. Dyadic verb, absolutive case theme:
anguti-up annak taku-janga
man-erg woman(abs) see-3sS/3sO
'The man sees the woman'

b. Dyadic verb, modalis case theme:
angutik anna-mik taku-juk
man(abs) woman-mod see-3sS
'The man sees a woman'

(90) a. Tryadic verb, absolutive case theme: (Johns (1984))
anguti-up titiraut nutarar-mut tuni-vaa
man-erg pencil(abs) child-allative give-3sS/3sO
'The man gave the pencil to the child'

b. 'Dative shifted' verb, modalis case theme:

anguti-up titirauti-mik nutaraq tuni-vaa
man-erg pencil-mod child(abs) give-3sS/3sO
'The man gave the child the pencil'

(91) a. VI of dyadic verb, modalis case lower object:
angutik anna-mik taku-kqu-ji-juk siitsi-mik
man(abs) woman-mod see-want-Apass-3sS squirrel-mod
'The man wants the woman to see the squirrel'

b. *VI of dyadic verb, absolutive case lower object:
*anguti-up sugusik taku-kqu-vaa annak
man-erg child(abs) see-want-3sS/3sO woman(abs)
'The man wants the child to see the woman'

Thus, we see that the same marked Case assigning device which is used to mark the theme in 'double object' or (more generally) 'dative shift' constructions is used throughout to form grammatical causative constructions.

Throughout this section I have emphasized the similarities between causative verbs and basic 'double object' verbs in the languages considered. These similarities have led some researchers (e.g. Grimshaw and Mester (1984)) to argue that causative verbs should be completely assimilated to basic double object verbs in these languages. This is accomplished by forming causative verbs in the lexicon by lexical rules, the result of which is identical to basic tryadic verbs from the point of view of the syntax. In the view put forth here, however, morphological causatives are similar to tryadic verbs only with respect to Case theory and part of Government Theory; they are crucially different in other ways. Thus, the Projection Principle requires that the initial biclausal structure of causatives be maintained at S-structure. In fact, causatives in these languages are essentially like Exceptional Case Marking structures, in that a nominal receives accusative Case from the matrix verb (complex), but is still the subject of a full embedded clause. Indeed, there is strong evidence for this from other modules of the grammar. Thus,

the causee, though objectlike in terms of government and Case, typically still serves as a subject for the Binding Theory, as discussed in Marantz (1984). For example, Chimwiini has a reflexive anaphor ru:hu- which appears in 'object' positions, and which must have a subject antecedent within its governing category (Abasheikh (1979)). A simple example is:

(92) Chi-i-um-ile ruhu-z-i:tu
1pS-bit-asp ourselves
'We bit ourselves'

In a morphological causative construction, this anaphor may appear either as the causee/embedded subject with the matrix subject as its antecedent, or as the embedded object with the causee as its antecedent:

(93) a. Mi m-phik-ish-ize ru:hu-y-a cha:kuja
I 1sS-cook-cause-asp myself food
'I made myself cook food'

b. Mi ni-m-big-ish-ize mwa:na ru:hu-y-e
I 1sS-OP-hit-cause-asp child himself
'I made the child hit himself'

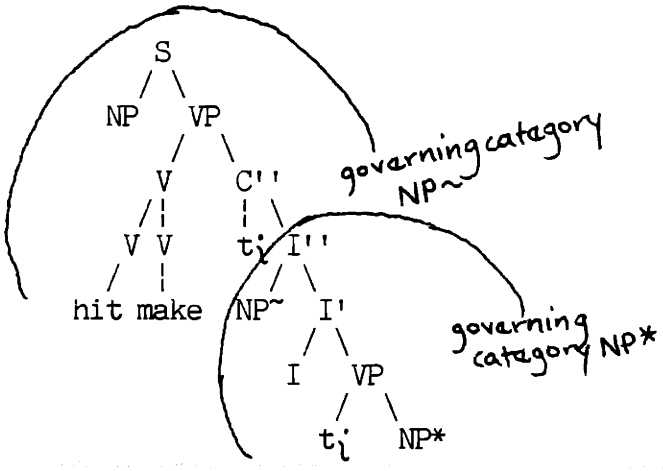
The anaphor in the embedded object position cannot take the matrix subject as an antecedent:

(94) *Mi ni-m-big-ish-ize Ali ru:hu-y-a
I 1sS-OP-hit-cause-asp Ali myself
'I made Ali hit myself'

Thus, from the viewpoint of the material in the lower clause, the causee counts as a subject both in that it is a valid antecedent itself and in that it creates an opaque domain, outside of which an anaphor cannot find an antecedent. Note that the pattern of grammatical sentences in Chimwiini in (93), (94) is exactly the same as that in the English glosses and in English Exceptional Case Marking structures in general. This is exactly

what is expected on this analysis of causatives, where the causee NP~ is still a structural subject:

(95)



Gibson (1980) shows that a similiar situation holds in Chamorro. Chamorro does not have anaphors in the traditional sense, but if a pronoun in the object position of a clause is coreferent with the subject of that same clause, the morpheme maisa can (optionally) be inserted:

(96) In atan maisa ham gi hanum
1pex-look self we loc water
'We saw ourselves in the water'

Maisa cannot signal a link between a pronoun and an antecedent outside of its governing category:

(97) *Ha tungu' ha' si Juan na atrasao maisa gui'
3sS-know EM PN Juan that late self he
'Juan knew that himself was late'

However, in a causative structure, coreferentiality between the embedded subject and the matrix subject can be signalled by maisa:

(98) Siempri un na'-malangu-n maisa hao
surely 2sS-cause-sick self you
'You will make yourself sick'

Even more significantly, the causee still acts like a subject in that a referential link between it and the embedded object can also be signalled by maisa:

(99) In na'-fa'gasi-n maisa gui' si Juan ni hapbun
1pex-cause-wash self him PN Juan with soap
'We made Juan wash himself with soap'

Again, we see the characteristic 'Exceptional Case Marking' pattern, in which the same NP has the binding properties of an object with respect to the matrix clause and those of a subject with respect to NPs of the lower clause.[25] Marantz (1984) shows that similar facts hold in Japanese as well. All this is unexpected and unexplained in a theory which base generates morphological causative constructions; it is immediately explained under the Verb Incorporation analysis, giving it very strong support.[26]

3.3.3.3 Non Double Object Languages

There exists a third class of languages, which can be distinguished from the two previous types on the basis of their treatment of tryadic, dative shift type verbs: languages which have no underived double object verbs at all. This difference among languages is well known even among the European languages: English has dative shifted double object constructions, but French and the other Romance languages do not:

(100) a. John gave a book to Mary

b. John gave Mary a book

(101) a. Jean a donné un livre a Marie

b. *Jean a donné Marie un livre

*Jean a laissé ses enfants beaucoup d'argent
*Ils ont envoyé Jean une lettre recommandee, etc.

As discussed in section 3.3.1, Chichewa-A (Mchombo) and Chichewa-B (Trithart) differ in exactly this way. Chichewa-A has verbs which select for two internal arguments, one a theme and the other a goal:

(102) a. mbidzi zi-na-pereka msampha kwa nkhandwe
zebras SP-past-hand trap to fox
'The zebras handed the trap to the fox'

b. agalu a-na-tumiza nsomba kwa fisi
dogs SP-past-send fish to hyena
'The dogs sent some fish to the hyena'

c. mvuu zi-na-lemba kalata kwa amalinyero
hippos SP-past-write letter to sailors
'The hippos wrote a letter to the sailors'

However, no morphologically underived verb can appear in a dative shifted, double object frame:[27]

(103) a. *mbidzi zi-na-pereka nkhandwe msampha
zebras SP-past-hand fox trap
'The zebras handed the fox the trap'

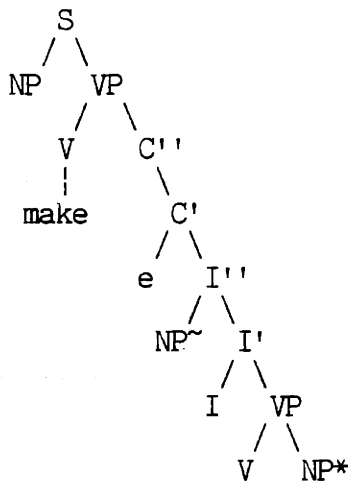
b. *agalu a-na-tumiza fisi nsomba
dogs SP-past-send hyena fish
'The dogs sent the hyena some fish'

c. *mvuu zi-na-lemba amalinyero kalata
hippos SP-past-write sailors letter
'The hippos wrote a letter to the sailors'

The obvious way to account for the ungrammaticality of the examples in (103) and (101b) is in terms of Case theory; they are bad because there is no way for the second NP in the VP to receive Case. Thus, we conclude that Chichewa(-A) lacks both the marked ability of Kinyarwanda verbs to assign two structural accusative Cases each, and the ability of Chimwiini verbs to sanction an extra inherent accusative Case.

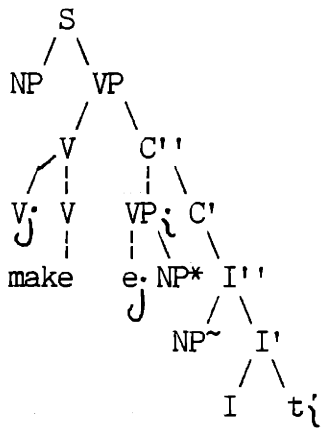
These Case marking properties have a different set of consequences for morphological causatives. Consider again the standard VI construction D-structure:

(104)



As usual, the lower verb must move and adjoin to the higher verb in order to satisfy the latter's morphological subcategorization properties. Also as usual, it must make a preliminary move within the embedded clause in order to be close enough to the higher verb to incorporate. However, in Chichewa, there is no inherent accusative Case which can be assigned to NP* at D-structure, before the verb moves. Then, if the verb does move, stranding NP*, NP* will not be governed by any lexical item (only by the verbal trace) in the resulting structure. Therefore, NP* will have no chance of getting Case, and the structure will be ungrammatical. The only possible solution is for the verb to take NP* along with it--i.e. to move the entire lower VP to COMP, with the verb continuing on into the matrix:

(105)



In this construction, NP* is governed by the verb immediately before it incorporates, and thus it is also governed by the verbal complex at S-structure, according to the GTC. Therefore, it can receive accusative case from this verbal complex. The problem now is how NP~ can receive Case. The same principles determine that NP~ is also governed by the verbal complex (cf. the discussion of Kinyarwanda above); however in Chichewa it is a general property of verb nodes that they can assign only one case each (cf. 2.3.3 (102), (103)). At this point, the special Case Theory property of Chichewa comes to light--in the form of a highly particular Case insertion rule, which inserts a preposition or a case ending on NP~ in this configuration, thereby allowing it to pass the Case filter.[28]

These assumptions lead us to expect a morphological causative for Chichewa(-A) in which the thematic lower object behaves like the direct object of the surface causative verb, while the causee is obliquely marked and (relatively) syntactically inert. This is because the lower object is governed and assigned structural Case by the verb, but the causee does not receive a structural Case. This is correct:

(106) a. Anyani a-na-meny-ets-a ana kwa buluzi
baboons SP-past-hit-cause-asp children to lizard
'The baboons made the lizard hit the children'

b. Kambuku a-ku-umb-its-a mtsuko kwa kadzidzi
leopard SP-pres-mold-cause-asp waterpot to owl
'The leopard is having the owl mold a waterpot'

Here the lower object but not the causee has the typical Bantu traits of objecthood: it appears immediately after the verb, unmarked by a preposition; it can trigger object agreement with the verb, unlike the causee:

(107) a. Anyani a-na-wa-meny-ets-a ana kwa buluzi
baboons SP-past-OP-hit-cause-asp children to lizard
'The baboons made the lizard hit the children'

b. *Anyani a-na-zi-meny-ets-a ana kwa mbuzi
baboons SP-past-OP-hit-cause-asp children to goats
'The baboons made the goats hit the children'

and it can become the subject of a passive, again unlike the causee:

(108) a. Ana a-na-meny-ets-edw-a kwa buluzi (ndi anyani)
children SP-past-hit-cause-pass-asp to lizard by baboons
'The children were made to be hit by the lizard (by the baboons)'

b. *Buluzi a-na-meny-ets-edw-a ana (ndi anyani)
lizard SP-past-hit-cause-pass-asp children by baboons
'The lizard was made to hit the boys by the baboons'

In the terminology of section 3.3.1, this is an instance of 'Causative Rule 1'. We have explained how and why this type of causative appears in languages which do not have underived 'dative shift' verbs.

Based on the discussion in Mohanan (1983), the Dravidian language Malayalam seems to be a typologically quite different language which is just like Chichewa-A in these respects. Thus, in the canonical dative shift type verbs, only the argument with the theme role can appear with a

structural case ending,[29] and it alone can become the subject of a passive verb:

(109) a. amma kuṭṭikk@ aanaye koṭuttu
mother-nom child-dat elephant-acc gave
'Mother gave the elephant to the child'

(110) a. ammayaal kuṭṭikk@ pustakam koṭukk-appeṭṭ-u
mother-instr child-dat book-nom give-pass-past
'The book was given to the child by the mother'

b. *ammayaal kuṭṭi pustakam koṭukk-appeṭṭ-u
mother-instr child-nom book-nom give-pass-past
'The child was given the book by the mother'

Thus, there is no overt evidence--either for the linguist or for the child learning the language--that Malayalam verbs can assign structural case to two different NPs or that it can assign an inherent Case to a theme. Thus, it is assumed that neither possibility exists in the language. Then, as predicted, in the morphological causative of a transitive verb, the thematic lower object is case marked as the surface object, and the causee appears in an oblique postpositional phrase:

(111) a. amma kuṭṭiye-kkoṇṭ@ annaye ṇuḷ-icc-u
mother child-acc with elephant-acc pinch-cause-past
'Mother made the child pinch the elephant'

b. raajaaw@ jooṇine-kkoṇṭ@ meeṟiye keṭṭ-icc-u
king-nom john-acc with Mary-acc tie-cause-past
'The king made John marry Mary'

Furthermore, the thematic lower object can become the subject of the passive of a causative verb, while the causee cannot:

(112) a. ammayaal aana ṇuḷ-ikk-appeṭṭ-u
mother-instr elephant-nom pinch-cause-pass-past
'The elephant was caused to be pinched by mother'

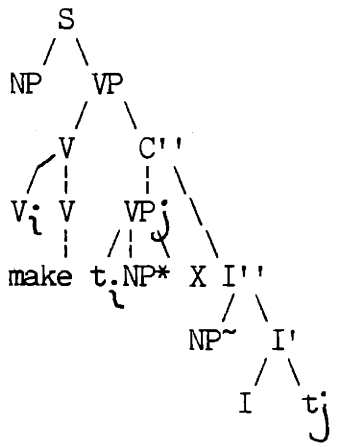
b. *ammayaal kuṭṭi annaye ṇuḷ-ikk-appeṭṭ-u
mother-instr child-nom elephant-acc pinch-cause-pass-past

'The child was made to pinch the elephant by the mother'

This correlation between lacking a dative shift structure and having a 'Rule 1' morphological causative seems to be quite general. In addition to Chichewa and Malayalam, this class of languages includes Turkish, Jacaltec, Quechua, and many others. In 3.3.5 below, we will see that the Romance languages can be taken to be of this type as well.

In the last subsection, we saw that the binding patterns of anaphors in causative constructions gave evidence that causatives are not base generated and that a biclausal structure is maintained, even at S-structure. This argued for the Verb Incorporation anaysis, in which the verb is moved, but the relationships between the NPs in the sentence remained the same. In the 'Rule 1' causatives of this section, however, the relationships between NPs will not remain the same throughout the derivation. The reason is that these causatives involve not V movement but VP movement. This movement will take an object NP out of the domain of its original subject. Therefore, we expect the anaphoric possibilities to be somewhat different in these languages. The relevant S-structure will have the following form:

(113)



Consider a (subject oriented) anaphor in the original embedded VP of such a structure--either NP* or something in the position marked 'X'. If it stays where it is, it will be bound by NP~, which will be its only possible antecedent. However, after the VP containing it moves to COMP, the anaphor is no longer c-commanded by NP~; thus NP~ cannot be the antecedent in a causative construction.[30] On the other hand, the anaphor, which was originally governed by the lower verb, is now governed by the matrix verb complex which contains that verb. Thus, the governing category of the anaphor will be the matrix clause, and the matrix subject will be a viable antecedent. Mohanan describes exactly this distribution for the Malayalam reflexive swa- 'self', which necessarily takes a subject as antecedent: the matrix subject can be its antecedent, but the embedded subject causee cannot be:

(114) amma kuttiyekkont@ aanaye swantam wittil wecc@
mother-n child-acc with elephant-acc self's house at
null-icc-u
pinch-cause-past
a. Mother made the child pinch the elephant at mother's house.
b. * ...at child's house.

Note that this is the opposite class of possibilities as that found in 'Rule 2' causatives, where the nominal contents of the VP remain deep in the embedded clause--cf. Chimwiini and Chamorro in (92)-(99) above. The difference is fully explained in terms of the movement analysis of these causatives.

Before leaving this subsection, let us consider the special rule for Case marking the causee in more detail. The invoking of such a rule is perhaps the least appealing aspect of the whole VI account of morphological causatives; it seems like stipulative patchwork with little generality.

Nevertheless, the evidence confirms that the process involved has exactly this nature. The rule is odd in that it introduces a Case which cannot be classified theoretically as either purely structural or purely inherent. It cannot be structural, because the structural Case assigning potential of the items involved is already taken up by other NPs; it cannot be inherent, because the Case is neither thematically motivated nor present at D-structure. Indeed, the causee acts like it is neither structurally nor inherently Case-marked. Structural case can often be absorbed or assigned to other arguments, yielding clitic doubling and passive-like constructions; yet these are often not possible with the obliquely marked causee. On the other hand, the causee were associated with inherent Case, this case would be expected to be thematically relevant in some way. Yet languages with similar Case systems seem to differ idiosyncratically as to what case is assigned to the causee in this construction--some give it dative, some instrumental, others the marking of a source or of the agent in a passive. It is unlikely that the causee actually has different meanings in these different languages, such that it forms a semantic natural class with goals in one but with instruments in another. Rather, it seems that the case ending or preposition is simply not involved in giving a thematic role to the NP in question in these cases.

Another sign that the causee is Case marked by a highly particular case-marking rule is that this rule differs in idiosyncratic ways across languages. For example, both Chichewa and Italian put causees of transitive verbs as the object of the preposition which is used to mark goals in the language; nevertheless, they differ on the situations in which this preposition may be inserted. In Chichewa, it may only appear if the causee is directly string-adjacent to the causative verb and the lower

object--i.e. only in the context:

(115) V NP ____
'cause' +acc

The consequence of this is that if the incorporated verb obligatorily subcategorizes for more than one argument, the causee is ungrammatical, since the second VP argument destroys the context for this rule:[31]

(116) a. ana a-na-ika mtsuko pa mpando
children SP-past-put waterpot on chair
'The children put the waterpot on the chair'

b. *amayi a-na-ik-its-a mtsuko pa mpando (kwa) ana
women SP-past-put-cause-asp waterpot on chair to children
'The women made the children put the waterpot on the chair'

In Italian, sentences corresponding to (116b) are acceptable (Rizzi (personal communication)), suggesting that the Italian insertion rule is somewhat more tolerant in this respect. This kind of low-level, detailed idiosyncratic variation between languages is not the behavior we would expect of a deep central principle of Case theory. It is, however, exactly the behavior one might expect of a rule that must be explicitly learned as a part of the marked periphery of the language.[32]

The ultimate proof that Case marking of the causee should be accomplished by a special rule comes from Gilgak, as cited by Comrie (1976). In this language, the causee of a transitive sentence is marked with a case ending which has no other use anywhere in the language. Clearly, this cannot be the automatic byproduct of some more general case marking process, nor can it be explained in terms of the lexical derivation of morphological causatives. It is, however, a natural enough situation if Case assignment is by a special insertion rule; there is no reason why such a rule could

not insert a novel morpheme.

In summary, it seems correct to say that a special rule of the marked periphery is responsible for assigning Case to the causee in 'rule 1' morphological causatives. This can be interpreted as empirical support for the current analysis, which was forced to this conclusion on theoretical grounds.

3.3.3.4 Other Languages

At the beginning of this section, it was observed that verb movement in causative constructions disrupts the natural government relations in a way that creates problems for Case theory. The previous three subsections have shown how special processes of Case assignment in different languages allow a causative construction with particular properties to surface for that language: some languages allow two accusative cases per verb; some provide an inherent accusative case for theme arguments; some include a case insertion rule to rescue stranded causee NPs. All of these processes are marked, however, and explicit positive evidence will be needed to acquire them. This gives rise to the expectation that there will be languages which have none of the Case theory extensions we have considered. Suppose that a language has no marked extensions of Case Theory. Then there will be no way that all of the NPs in the causative of a transitive verb will be able to receive Case. What would be the consequences for morphological causative constructions in the language? There are two cases to consider.

First, Chapter 2 has given us a way in which a NP can escape the Case Filter--its head can incorporate into the governing verb (section 2.3). This satisfies the crucial identification requirement for theta role

assignment at LF, without taxing the verb's Case assigning abilities.

In this light, consider dative shift type verbs in Southern Tiwa. In this language, Incorporation of an unmodified animate noun is generally optional. Yet, when the sentence contains a tryadic verb with the goal appearing as the direct object (morphologically unmarked and governing verb agreement), incorporation of the theme nominal becomes obligatory (Allen, Gardiner, and Frantz (1984)):

(117) a. Ta-'u'u-wia-ban hliawrade
1s:A/A-baby-give-past woman
'I gave the woman the child'

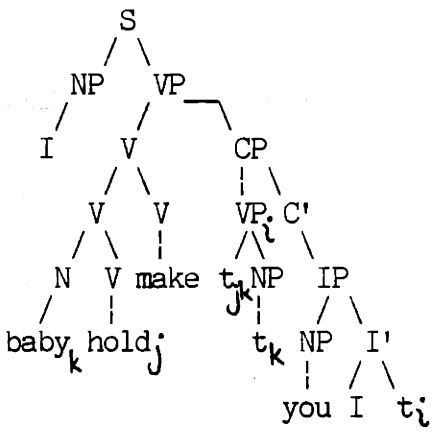
b. *Ta-wia-ban hliawrade 'u'ude
1s:A/A-give-past woman baby
'I gave the woman the child'

(117b) must be ruled out by Case theory, implying that Southern Tiwa has neither the double accusative case of Kinyarwanda, nor the inherent accusative of Chimwiini. It does have a resource of its own, however, namely Noun Incorporation. In fact, the theme NP can and must incorporate in order to escape the Case filter and still leave the verb's one accusative Case for the goal NP. This accounts for why Noun Incorporation is obligatory in this structure.

Next, consider causative constructions. Here, the same strategy can be used: the verb can avoid a Case Theory bind in transitive sentences by incorporating its object NP before it moves This yields structures such as the following:

(118) a. I-'u'u-kur-'am-ban
1s:2s-baby-hold-cause-past
'I made you hold the baby'

b.



Here, the lower object baby is incorporated into the governing V, and is therefore satisfies the Condition of Morphological Identification (the new Case filter). Meanwhile, the causee you is governed by the verb complex by virtue of the incorporation, and can therefore receive accusative case from it. Thus, the sentence is grammatical, and the causee acts as the surface object, determining, for example, object agreement on the verb. On the other hand, if the object is not incorporated, it will need to receive case. The verb cannot strand the object NP, because there is no inherent Case in the language to sustain it; the verb cannot take the object along, because there is neither an extra accusative Case or a specially inserted Case marker to salvage the embedded subject. Therefore, Noun Incorporation is obligatory in causatives:

(119) *'u'ude i-kur-'am-ban
baby 1s:2s-hold-cause-past
'I made you hold the baby'

Again, the Case theory resources of the language as revealed in the 'dative verb' constructions determine the properties of the causative

constructions.

The last possible situation is one in which the language has VI type causative constructions, but has absolutely no special resources for either satisfying the Case filter or avoiding the Case filter. In this case, causatives of transitive verbs will simply be ungrammatical, ruled out by the Case filter. This may be the situation in the North African language Berber. Here, causatives of intransitive verbs are free and productive, while causatives of transitive verbs are systematically impossible (Guerssel (personal communication)):[33]

(120) a. y-ss-jen Mohand arba
3sS-cause-sleep Mohand boy
'Mohand made the boy sleep'

b. y-ss-iwd wydi arba
3sS-cause-fear dog boy
'The dog made the boy afraid, scared the boy'

c. y-ss-ttc wryaz arba
3sS-cause-eat man boy
'The man made the boy eat, fed the boy'

(121) a. *y-ss-wt wryaz aggzin i-wrba
3sS-cause-hit man dog to-boy
'The man made the boy hit the dog'
(Also: *y-ss-wt wryaz arba i-wggzin)

b. *y-ss-icr wryaz tacurt i-arba
3sS-cause-steal man ball to-boy
'The man made the boy steal the ball'
(Also: *y-ss-icr wryaz arba i-tcurt)

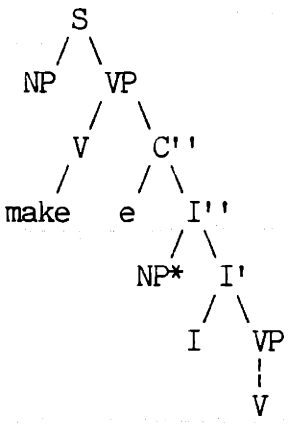
A similar situation may hold in Vata (Koopman (1984)) and certain other languages (Nedyalkov and Silnitsky (1973)).

3.3.4 The two causative problem solved

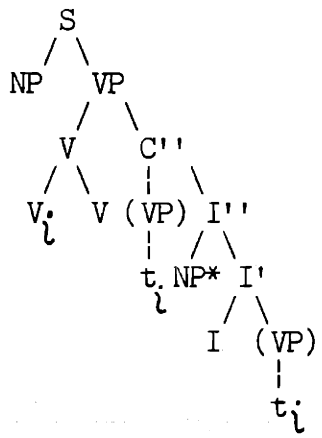
In the first part of this section, the following challenge was put to an analysis of morphological causative constructions in terms of Verb Incorporation: if there is no explicit rule of causative formation, how can differences betweeen causative constructions across languages be accounted for? In particular, what is the nature of the difference between the two causative 'rules' discovered by Gibson (1980), Marantz (1981), and others? The preceding subsections of this section have defended the thesis that a single, general process of V movement is indeed at the heart of all morphological causative constructions, and that this process does not have intrinsic conditions on its application; nor can it. Rather, the behavior of V movement in a given language is determined by the requirements of Case theory, plus independent Case marking properties of the language. Differences in causatives are then related to differences in Case marking more generally. This provides a legitimate answer to the original question. In fact, there is reason to believe that this answer is superior to other answers that have been proposed in the literature.

First, I observe that the Case marking pressures on causative constructions which were the driving force behind the explanation of their variation across languages are completely absent if the embedded verb is intransitive. In this situation, there is one less NP which needs Case, so the causee will have no competition for the accusative Case of the verb complex. The relevant structures can be schematized as in (122):

(122) a.



b.



As usual, either the whole VP or simply its head V can move to COMP, in order to get the V within incorporating range of the matrix verb. Since the verb has no object that needs Case, there is no reason why it must take the VP along; on the other hand, there is no reason why it cannot either. In either case, once the verb has incorporated into the matrix, the Government Transparency Corollary implies that the causee NP* will be governed by the matrix verb complex (see discussion in 3.3.3.1 for details). Therefore, this NP may receive accusative Case from the matrix. There is no competition for this Case; neither are there other NPs around that need other arrangements. Thus the structure will be grammatical, with the causee NP* showing 'object' behavior with respect to the surface causative verb. Moreover, this result is independent of whether V or VP initially moves to COMP. More importantly, it does not depend on any marked processes of Case theory such as those we have discussed above. Thus, an account of causatives in terms of V movement plus the requirements of Case theory leads us to expect that the causatives of intransitive verbs will be essentially identical in all Verb Incorporating languages.

This expectation is confirmed by the data. Thus, regardless of their differences in the causatives of transitive verbs, all of the languages

discussed in this section treat intransitive verbs similarly; in each case, the causee does indeed act like the (Government and Case) direct object of the matrix clause. This can be seen in that the causee appears unmarked or in accusative case, can trigger object agreement on the verb, and becomes the subject of a passive, each according to the manner of the language in question. For example, Kinyarwanda was a language in which both causee and lower object behaved like surface objects in the causative of a transitive verb:[34]

KINYARWANDA: (Kimenyi (1980))
(123) Umugore a-ryaam-iish-ije abaana
woman SP-sleep-cause-asp children
'The woman made the children (go to) sleep'

Chichewa-B (Trithart) and Chamorro were examples in which only the causee acted like a surface object:

CHICHEWA-B: (Trithart (1977))
(124) Mphunzitsi a-na-lemb-ets-a ana
teacher SP-past-write-cause-asp children
'The teacher made the children write'

(125) a. Mphunzitsi a-na-wa-lemb-ets-a ana
teacher SP-past-OP-write-cause-asp children
'The teacher made the children write'

b. Ana a-na-lemb-ets-edw-a ndi mphunzitsi
children SP-past-write-cause-pass-asp by teacher
'The children were made to write by the teacher'

CHAMORRO: (Gibson (1980))
(126) Hu na'-kati si Maria
1s-cause-cry PN Maria
'I made Maria cry'

(127) Ni-na'-fata'chung si Jose ni ma'estru gi ringkon
pass-cause-set PN Jose obl teacher loc corner
'Jose was made to sit in the corner by the teacher'

Chichewa-A (Mchombo) and Malayalam were examples in which only the thematic

lower object acted like a surface object:

CHICHEWA-A:
(128) a. Buluzi a-na-sek-ets-a ana
lizard SP-past-laugh-cause-asp children
'The lizard made the children laugh'

b. Mulungu a-na-yer-ets-a kunja.
God SP-past-clear-cause-asp sky
'God made the sky clear.'

(129) a. Buluzi a-na-wa-sek-ets-a ana
lizard SP-past-OP-laugh-cause-asp children
'The lizard made the children laugh'

b. Ana a-na-sek-ets-edw-a (ndi buluzi)
children SP-past-cause-pass-asp by lizard
'The children were made to laugh by the lizard'

MALAYALAM: (Mohanan (1983))
(130) acchan kuṭṭiye karay-icc-u
father-nom child-acc cry-cause-past
'Father made the child cry'

(131) acchanaal kuṭṭi swantam wiiṭṭil wecc@ karay-ikk-appeṭṭ-u
father-inst child-nom self's house-loc at cry-cause-pass-pst
'The child was made to cry at the child's house by the father'

Finally, Berber was the example of a language in which causatives of transitive verbs are completely ungrammatical. In spite of this, causatives of intransitive verbs have the same syntax as they do in these other languages:

BERBER: (Guerssel (personal communication))
(132) y-ss-jen Mohand arba
3sS-cause-sleep Mohand boy
'Mohand made the boy sleep'

(133) y-ttw-s-ru wrba
3sS-pass-cause-cry boy
'The boy was made to cry'

These patterns are explained under the VI analysis. In fact, I claim that this uniformity when marked processes are not needed reveals the fundamental, underlying unity of morphological causative constructions.

In this regard, there is an important contrast with theories where causatives are derived by particular rules, either lexical or syntactic. In such a theory, there is no clear reason why causatives should not vary as much with intransitive verbs as they do with transitive verbs. To take perhaps the clearest hypothetical example, why does not the causative in Chichewa-A or Malayalam map the subject of an intransitive verb onto an oblique case NP in the same way that it maps the subject of a transitive verb onto an oblique NP? Then, instead of (128), Chichewa would have sentences like those in (134):

(134) a. *Buluzi a-na-sek-ets-a kwa ana
lizard SP-past-laugh-cause-asp to children
'The lizard made the children laugh'

b. *Mulungu a-na-yer-ets-a kwa kunja
God SP-past-clear-cause-asp to sky
'God made the sky clear'

This hypothetical causative rule could be schematized as in the following way:

(135) 'CAUSATIVE RULE 3:' (unattested, cf. (51), (57))

GF in embedded clause	GF in surface clause
subject	oblique
object	object

Such a causative rule would a priori be at least as simple as the one Chichewa actually follows (51); if anything it would be simpler, since it treats thematic subjects the same regardless of the transitivity of the lower verb. Nevertheless, as far as I know, this never happens, either in Chichewa nor in languages of the same Case marking type.[35] There is no

immediate account of this in a system that includes explicit causative formation rules. It is explained in the Verb Incorporation analysis.

In fact, this problem is a very general one for syntactic frameworks which take grammatical relations such as 'subject' and 'object' to be basic notions of the theory over which particular relation-changing 'rules' are stated--including the causative relation. Relational Grammmar (see Perlmutter (1983)) and Lexical-Functional Grammar (see Bresnan (1982)) both have this general theoretical property. These frameworks succeed in describing the data, and can trivially deal with the question of diversity in morphological causatives as posed in section 3.3.1, by simply stipulating different relation-changing rules for the different languages. We can, however, pose the complementary question for these frameworks: why are only (more or less) the above possibilities allowed in causative constructions? Put another way, why is there not more diversity in morphological causative constructions than in fact there is? A theory that seeks to explain the structure and typology of natural language (not to mention the fact that it can be learned) must clearly address this question as well as the former. Moreover, it does seem empirically true that there are types of morphological causatives which can be stated simply in terms of grammatical functions, but are not attested in languages of the world. One such is given in (135). Another would be a language in which the causee took precedence over the causer in competition for the matrix subject position, driving the causer into the object position or into oblique case:

(136) 'CAUSATIVE RULE 4:' (unattested)

GF underlyingly GF in surface clause

matrix subject	object (or oblique)
embedded subject	subject
embedded object	'2nd object' (or object)

A large number of other possibilities can be stated similarly, with varying degrees of plausability. Thus, theories of this type are then faced with the task of explaining why some particular causative rules exist while others do not.[36] The theory developed here felicitously avoids the whole question for the simple reason that if there is no causative rule stated anywhere in the grammar of the language, then the causative rule cannot be (135) or (136). Rather, causatives are formed by the general process of movement, which has the same properties it does in Noun Incorporation structures or even wh-movement structures. The limitations on causative structures follow from general constraints of the theory, and the diversity of surface form is determined by independent differences in the languages in question. For example, the hypothetical rule (136) looks plausible enough when stated in terms of grammatical functions, but it is completely incoherent when viewed in GB-terms in the syntax. At least two of the following three fundamental principles would be violated: proper binding of traces by their antecedents (the causer); the Theta Criterion (the causee, maybe the causer); the Projection Principle. For this reason, I claim that the analysis of causatives presented here is not only a viable approach to causative constructions, but the correct one.

Closer to my account of causatives both in terms of general framework and specific analysis is Marantz (1984). He too provides an account in which the properties of causative constructions are determined not by explicit rule, but by general principles as they apply to a structure in which

underlyingly separate verbs have united (his notion of merger). Thus, he need not be concerned about avoiding Causative Rules 3 and 4. There is, however, a more subtle problem with his account. In order to explain the difference between 'Rule 1' type causatives and 'Rule 2' type causatives, he resorts to an unreducible stipulation: namely, that morphemes can as, an inherent property, specify the syntactic level at which they 'merge'. Thus, causative morphemes in some languages must merge with a verb at 'logico-semantic structure' (= approximately D-structure), while others must merge at S-structure. The former yield 'Rule 1' causatives; the latter, 'Rule 2' causatives (see Marantz 1984 for mechanisms). True, once this single stipulation is made, the rest of the account follows automatically; nevertheless, it does introduce into the analysis of the causatives a factor that is not needed independently. This stipulation has no correlate in my analysis; it is fully eliminated in terms of independent Case assigning properties. Now, the nature of Marantz's stipulation is somewhat problematic in and of itself; it is not clear what kind of a natural lexical property it is to say 'I must merge at level X'. More importantly, however, Marantz's theory makes the implicit claim that morphological causative constructions can vary independently of other aspects of the language. In particular, the type of causative construction a language has is independent of the Case marking possibilities for tryadic verbs in that language. Thus, Chamorro could remain exactly as it is except that it would have a Malayalam-type causative; whereas Malayalam could switch to a Chamorro-type causative but be otherwise unchanged. This is impossible with a Verb Incorporation analysis of causatives, where the verb movement is always the same (and at the same point in the syntax), with differences following from Case marking properties. In fact, we have

already seen in detail that causative type does covary with Case marking properties rather than being independent of them. Here the Chichewa dialectology of 3.3.1 is especially striking, where a language apparently did in fact switch from a Chamorro-type causative to a Malayalam-type causative, but the 'dative shift' verb constructions changed as well. Thus, it is wrong to have any intrinsic difference between different causatives at all. Once again, the VI analysis of causatives proves not only viable, but to have the correct properties in detail.

In conclusion, I observe that the relationship between the Case marking abilities of a language and its behavior in causatives has been noticed before: in particular, by Aissen (1974). She writes (p. 29):

> (a) If a language derives its causative by PR [Predicate Raising], then if the language does not allow double accusative objects, the subject NP of an embedded transitive verb will appear in some case other than accusative. What case it appears in depends on the case system of the language, but it will be the same case as that assigned to 'second' objects.
>
> (b) The only languages in which the subject and object of the embedded verb will both be accusative in the causative construction are languages which allow double accusatives to simple verbs.

This is an interesting and important generalization in its own right. However, when Aissen speaks of 'case' here, she is referring to surface morphological case as represented in specific inflectional endings, rather than to the Abstract Case which enters into the Case theory of GB. In this section, I have picked up this generalization, extended into it to Abstract Case in all languages, and have explained why the generalization must hold. Furthermore, I have used it as a basis for explaining deeper, structural differences among causatives in different languages involving government and Binding theory--differences not explicitly or systematically

realized in Aissen's work. In this way, many of the most important properties of morphological causative constructions can be understood.

3.3.5 Reanalysis and Romance causatives

In the context of the discussion so far, it is instructive to compare morphological causatives with the causative constructions in the Romance languages. It is well known that Romance causatives behave in many ways like the morphological causatives we have been discussing (Aissen (1974), Comrie (1976), Marantz (1984), etc.). There is, however, one important difference between the two: from the viewpoint of morphology, the causative verb and the embedded verb are still two separate words in Romance. I will illustrate these properties in Italian (data from Burzio (to appear)). Simple examples are:

(137) a. Maria fa lavorare Giovanni
Maria makes work Giovanni
'Maria makes Giovanni work'

b. Maria ha fatto riparare la macchina a Giovanni
Maria has made fix the car to Giovanni
'Maria made Giovanni fix the car'

If the lower verb is transitive, the causee surfaces as an oblique (dative) object; if the lower verb is intransitive, the causee surfaces as an accusative direct object. Thus, Italian seems to show the same 'Rule 1' causative pattern as Chichewa-A and Malayalam (section 3.3.3.3). This result is confirmed in that the causee argument of (137a) and the lower object argument of (137b) may each appear as direct object clitics on the matrix verb:

(138) a. Maria lo fa lavorare ec
Maria him makes work
'Maria makes him work'

b. Maria la fa riparare ec a Giovanni
Maria it makes fix to Giovanni
'Maria makes Giovanni fix it'

Furthermore, the same NPs may become the matrix subject when the causative verb is passivized:

(139) a. Giovanni è stato fatto lavorare (molto)
Giovanni was made work (a lot)
'Giovanni was made to work'

b. La macchina sará fatta riparare a Giovanni
The car will be made fix to Giovanni
'The car will be made to be fixed by Giovanni'

Thus (at least at this level of abstraction) the syntax of causatives in Italian is identical to that of causatives in Chichewa and Malayalam. Furthermore, the Romance languages are like Chichewa and Malayalam in that they systematically lack dative shift constructions (cf. (101) above). Thus, the correlation between Case marking and causative construction type discussed above seems to generalize to Romance.

Nevertheless, the causative verb fare and the lower verb simply do not become a single word morphologically. Thus, in examples like (137), both verb stems are independently inflected: fare with tense and the agreement features of the subject, the lower verb with the infinitival ending. This contrasts with Chichewa and Malayalam, where there is only one inflectional ending and two verbal roots. Furthermore, it is possible for the normal adjacency between the fare and the verb to be interrupted in some cases: for example, some adverbs and object clitics can show up between the two.[37] Normal morphological words can, of course, not be so interrupted.

In the face of this collection of facts, it seems that we must give an account of Romance causatives in which they have exactly the same syntax as (say) Chichewa causatives, but they differ with respect to the morphology. In other words, these seem to be cases of 'incorporation' without the incorporation. This essentially follows a GB tradition in Romance causatives in which two independent verbs become 'reanalyzed' somehow as one verb--a tradition stemming from Rouveret and Vergnaud (1980). In the current context, this process can be unified with Verb Incorporation in the following way. Suppose that there exists in natural language a process that can coindex two lexical nodes if and only if the first governs the second--i.e. if and only if the second could be legitimately incorporated into the first. I will call this relation either 'Abstract Incorporation' or 'Reanalysis'. Furthermore, suppose that the coindexing between the nodes is interpreted exactly like the coindexing relationship between a complex word and the trace of one of its parts with respect to principles such as the Government Transparency Corollary. Intuitively, the idea is that the two structures in (140) are equivalent:

(140) a. $[_{YP}...[\ X_i\ Y]_Y\ ]...[_{XP}\ t_i...]]$

b. $[_{YP}...Y^i...[_{XP}\ X^i...]]$

In effect, the same relationship holds beteen the two head positions in both cases, and it does not matter where the lower head actually happens to appear phonologically.

In fact, we can tentatively push this one step farther, and claim that Reanalysis is actually true incorporation happening in the mapping between

S-structure and LF, rather than in the mapping between D-structure and S-structure, as in the cases which we have been studying thus far. Thus, we have two types of X-o movement--syntactic and LF--parallel to the two types of wh-movement analyzed in Huang (1982) and subsequent work. Since Reanalysis is Incorporation that takes place at LF, a level which does not feed into the phonological component of the grammar, no actual combination of morphological forms will be visible. On the other hand, this explains why Reanalysis should form a natural class with Incorporation, whose properties follow from the theory of movement (see 1.4.3); it has the same properties as movement simply because it too is movement, albeit movement which one cannot see. In particular, the ECP is known to be a condition on LF representations, which governs 'covert' movement as well as overt movement (cf. Kayne (1983), Huang (1982)). Then, since the ECP (specifically, its corollary the HMC) is the primary principle which determines the distribution of Incorporation, the distribution of LF Incorporation should be exactly the same. Thus, LF Incorporation is exactly 'incorporation without the incorporation'; I will maintain that the proper content of the notion Reanalysis is exactly this.[38]

Once this notion is available, we have an account for why the syntax of Italian causatives is identical to that of Chichewa causatives. Fare is not an incorporater, but it is a 'reanalyzer', and must enter into the Reanalysis relationship with another verb at LF. This may well be a semi-semantic property of the verb, to the effect that it forms 'complex semantic predicates', accounting for why it is generally the same kinds of verbs which have such properties in language after language (e.g. 'cause', 'want', 'is able to', etc.). Because of the presence of the INFL node in

the sentential object, the verb must undergo movement internal to the clause in order to get into position to Reanalyze. This much happens in the syntax by S-structure. Since verbal traces cannot assign Case (and since there is no inherent accusative Case in Italian), if the lower verb is transitive, the entire VP must move into sentence initial position, so that the lower object does not violate the Case filter. This is exactly the analysis of Rouveret and Vergnaud (1980) for French causatives. The lower verb then may and does enter into the Reanalysis relation with the matrix verb by incorporating into it at LF. Our principles then imply that the matrix verb will govern and assign Case to the object of a transitive verb or to the subject of an intransitive verb. Thus, these NPs may cliticize onto the matrix verb, and may become the subject if the matrix verb is passivized. Finally, the subject of a transitive verb receives Case via a special dativization rule. This analysis is the heir of the VP-preposing analyses of Romance causatives (Kayne (1975), Rouveret and Vergnaud (1980), Burzio (1981, to appear), and others). However, it adds to these the insight that possible Reanalysis structures are the same as possible cases of overt morphological merger. This increases the empirical content of the notoriously slippery notion of Reanalysis. Hereafter, I will consider cases of Reanalysis to be cases of Incorporation in good standing.

3.4 Verb Incorporation and Wh-movement

The Verb Incorporation theory of causatives has been developed in the context of two guiding assumptions: the Uniformity of Theta Assignment Hypothesis, and the Projection Principle. The first of these implies that causative sentences should have a biclausal D-structure where thematic role assignments are represented consistently; the second implies that this biclausal structure is maintained throughout the syntactic derivation. Thus, the framework forces us to conclude that even morphological causatives must be biclausal at S-structure. This contrasts with nearly all current theories of morphological causatives. Thus 'lexicalist' theories of morphological causatives claim that causative verbs are formed in the lexicon, and the constructions are base-generated. Therefore, they monoclausal at any and all levels of syntactic description (Williams (1981), Mohanan (1983), etc.). This approach would be consistent with the Projection Principle, but not with the UTAH. Other approaches take causatives to be biclausal in underlying structure, but claim that they become monoclausal by surface structure, via a process of 'merger' (Marantz (1984)) or 'clause union' (Aissen and Perlmutter (1983), Gibson (1980), and much other work in Relational Grammar). This approach is consistent with the UTAH, but not with (a strict form of) the Projection Principle. These two views have many differences, but they agree that causatives consist of only one clause on the surface--contrary to the prediction of my framework. Now there is, of course, in the literature a large amount of evidence put forth in favor of the notion that morphological causatives do

behave like monoclausal structures in many respects. Nevertheless, it does not necessarily follow that they are monoclausal themselves; causatives could be biclausal, but with this largely masked by the fact that much of the material of the embedded clause either becomes moves out of the lower clause entirely or governed by the matrix predicate as a 'side-effect' of the basic Verb Incorporation. In fact, the last section provided an account for the most important arguments for monoclausalness -including Case assignment and agreement patterns, passivizability, and certain binding facts--in exactly these terms. Nevertheless, if the theory is correct, we expect that the effects of a biclausal structure would not be totally invisible to all subtheories of the grammar. Recall that we have already seen some evidence of this type: it was observed in section 3.3.3.2 that the Binding Theory reveals a biclausal structure in morphological causatives in certain languages. In this section, I will turn to the Bounding Theory (i.e. the subjacency condition) for systematic evidence for the existence of a biclausal structure at S-structure in causatives.

3.4.1 Stong subjacency: Chichewa

Consider the following paradigms from relative clauses in Chichewa:[39, 40]

(141) a. Kalulu a-na-meny-a njovu
hare SP-past-hit-asp elephant
'The hare hit the elephant'

b. Iyi ndi njovu i-mene kalulu a-na-meny-a
This is elephant agr-which hare SP-past-hit
'This is the elephant that the hare hit'

(142) a. Kalulu a-na-lir-its-a njovu
hare SP-past-cry-cause-asp elephant
'The hare made the elephant cry'

b. ?Iyi ndi njovu i-mene kalulu a-na-lir-its-a

This is elephant agr-which hare SP-past-cry-cause-asp
'This is the elephant which the hare made cry'

(143) a. Kalulu a-na-bay-its-a njovu (kwa alenja)
hare SP-past-stab-cause-asp elephant to hunters
'The hare made the hunters stab the elephant'

b. Iyi ndi njovu i-mene kalulu a-na-bay-its-a (kwa alenja)
This is elephant which hare SP-past-stab-cause-asp to hunters
'This is the elephant which the hare made the hunters stab'

(141a) shows an ordinary transitive sentence; (141b) contains a relative clause based on the this sentence. The structure is similar to that of English, with a relative pronoun i-mene moving from the object position to become adjacent to the head noun. (142b) is the causative of a basically intransitive verb. Notice that apart from the internal morphological structure of the verb form, (142a) looks superficially exactly like the ordinary transitive structure (141a). Surprisingly, however, when a relative clause is formed by extracting the superficial object in this structure (142b), the result is interpretable but odd--noticeably worse than its counterpart (141b). The last twist is provided by (143). (143a) is also a causative this time of a transitive verb instead of an intransitive one. When its superficial object is extracted to form a relative clause (143b), the result is better again. The same curious pattern of facts can be seen in the cleft construction:

(144) a. Mavuto a-na-on-a mfumu
Mavuto SP-past-see-asp chief
'Mavuto saw the chief'

b. Ndi mfumu i-mene Mavuto a-na-on-a
be chief which Mavuto SP-past-see-asp
'It's the chief that Mavuto saw'

(145) a. Asilikari a-na-vin its-a atsikana
soldiers SP-past-dance-cause-asp girls
'The soldiers made the girls dance'

b. ?Ndi atsikana a-mene asilikari a-na-vin-its-a
be girls which soldiers SP-past-dance-cause-asp

'It's the girls that the soldiers made to dance'

(146) a. Kalulu a-na-meny-ets-a mbuzi (kwa mkango)
hare SP-past-hit-cause-asp goats to lion
'The hare made the lion hit the goats'

b. Ndi mbuzi zi-mene kalulu a-na-meny-ets-a (kwa mkango)
be goats which hare SP-past-hit-cause-asp to lion
'It's the goats that the hare made the lion hit'

Why the difficulty in extracting the causee in causatives of intransitive verbs? I will claim that the difference is precisely that there are still embedded clausal nodes in the causatives (142) and (145), which have no counterparts in the basic transitives (141) and (144). These clausal nodes then trigger a (mild) subjacency violation when the causee is moved. These sentences will thus provide strong evidence in favor of the Projection Principle, as well as for the particulars of the Verb Incorporation analysis of causatives (not to mention aspects of the theory of Bounding).

The general approach to Bounding theory that I will assume for concreteness is that of Chomsky (1985). On this account, a link of a chain formed by movement is acceptable if no more than one 'barrier' category contains one of the 'link positions' but not the other. This is the Subjacency Condition. At a more detailed level, Subjacency is probably a graded condition, in which the more barrier categories that are crossed, the worse the resulting structure. The key notion 'barrier', then, is related to theta-marking, with nonargument categories in general creating barriers. Barriers are not inherent, but relative to the positions in question. They can be defined as follows (adapted from Chomsky (1985); compare definitions in 1.4.3 (67) and footnote 19):

(147) x is a <u>blocking category</u> for y iff x is not coindexed with a c-commanding lexical category and x contains y.

(148) x is a <u>barrier</u> for y iff (i) or (ii):

(i) x immediately dominates z, z a blocking category for y
(ii) x is a blocking category for y, x not an IP.

Finally, there are some low level parameters of variation, which add an extra barrier in some cases. In particular, certain dialects of English differ from Italian in that the most deeply embedded IP counts as an additional (weak) barrier for Subjacency (Chomsky 1985, cf. Rizzi 1983). Languages which include this IP as a barrier I will say obey 'strong subjacency'; languages which do not obey 'weak subjacency'.

With this informal background, we turn to Chichewa relative and cleft constructions, to establish their nature independently of causative constructions. Both are instances of so called 'unbounded movement' in the sense that the relative pronoun can appear arbitrarily far from its 'gap':

RELATIVES:

(149) a. Iyi ndi njovu imene ndi-ku-ganiz-a kuti kalulu a-na-meny-a
This is elephant which 1sS-pres-think that hare SP-past-hit
'This is the elephant that I think the hare hit'

b. Iyi ndi mfumu imene ndi-na-nen-a kuti Mavuto a-na-on-a
This is chief which 1sS-past-say that Mavuto SP-past-see
'This is the chief that I said Mavuto saw'

CLEFTS:

(150) a. Ndi kwa mfumu kumene Mavuto a-na-nen-a kuti ndi-na-tumiza
be to chief which Mavuto SP-past-say that 1sS-past-send
chipanda cha mowa
calabash of beer
'It's to the chief that Mavuto said that I sent
a calabash of beer'

b. Ndi mtsuko umene ndi-na-nen-a kuti Mavuto a-na-umb-a
be waterpot which 1sS-past-say that Mavuto SP-past-mold
'It's the waterpot that I said that Mavuto molded'

Nevertheless, the relationship between the relative pronoun and its gap is certainly not unrestricted; rather, it shows the familiar island properties. For example, both types of movement are quite poor out of a clause which is the sister of a noun (the weak cases of Complex Noun Phrase

Constraint violations):

RELATIVE:
(151) ??Iyi ndi mfumu imene ndi-ku-tsuts-a funda yoti nyani a-na-on-a
This is chief which 1sS-pres-dispute claim that baboon SP-past-see
'This is the chief which I dispute the claim that the baboon saw'

CLEFT:
(152) *Ndi njovu imene ndi-na-mr-a mphekesera yoti Mavuto a-na-ph-a
be elephant which 1sS-past-hear rumor that Mavuto SP-past-kill
'It's an elephant that I heard the rumor that Mavuto killed'

A Bounding theory such as that developed above accounts for these facts, assuming that Chichewa clefts and relatives involve movement governed by the Bounding Theory. Movement is allowed to be successive cyclic, originating as object in the lowest clause, moving to the SPEC-of-C position near the complementizer yoti, and then on to its final destination. Following Stowell (1981), assume that the head nouns 'claim' and 'rumor' do not assign theta roles to their sister clauses; rather these clauses are in an appositional relationship to the head. Then, this CP will be a blocking category and hence a barrier with respect to anything contained within it. Furthermore, the NP node immediately dominates this blocking category; hence it too is a barrier. Thus, the second chain link will cross two barriers, and the sentences are unacceptable. The relevant substructure is for (152) is (158), with barriers circled:[41]

(153) ...elephant [CP which$_i$ [IP I heard [(NP) rumor [(CP) t_i that...]]]]

Chichewa clefts and relatives are also degraded when they extract an NP out of a wh-island:

RELATIVES:
(154) a. ?Iyi ndi mfumu imene ndi-ku-dziw-a amene a-na-on-a
This is chief which 1sS-pres-know who SP-past-see
'This is the chief who I know who saw'

b. ?Uku ndi ku sukulu kumene nkhuku zi-ku-dziwa amene
there is to school where chickens SP-pres-know who
anatumiza mitolo ya udzu
SP-past-send bundles of grass
'That way is (to) the school to which the chickens know
who sent bundles of grass'

CLEFTS:

(155) a. ?Ndi njovu imene ndi-na-funs-a ngati kalulu a-na-meny-a
be elephant which 1sS-past-ask if hare SP-past-hit
'It's the elephant which I asked if the hare hit'

b. ?Ndi mtsuko umene ndi-ku-dziw-a amene a-na-umb-a
be waterpot which 1sS-pres-know who SP-past-mold
'It's the waterpot that I know who molded'

These judgments can also be accounted for in terms of Bounding theory. In each of these cases, the embedded SPEC-of-C position is already filled with a wh-element of one kind or another. Therefore, the relative pronoun cannot move successive-cyclically, but must move to its final position in one step. This movement crosses the embedded IP and the embedded CP. IP is never theta-marked, and thus is always a blocking category. This will make CP a barrier, because it immediately dominates IP. Furthermore, in Chichewa, as in English, the most deeply embedded IP seems to count as an extra barrier in and of itself. Thus, the movement crosses two barriers, and is unacceptable. The structure is:

(156) ...waterpot [CP which$_i$ [IP I know [(CP) who$_j$ [(IP) t$_j$ molded t$_i$]]]]

This wh-island violation is a somewhat weaker effect than the CNPC violation (as in English), because one of the barriers involved is a special, parameterized one, and not as strong as the barriers that follow from universal principles. I conclude on the basis of these examples, that relativization and clefting are instances of movement in Chichewa, and that as such they are subject to the same Bounding theory principles as English

wh-movement is. Furthermore, the wh-island effects establish the fact that Chichewa has the 'strong subjacency' system.[42, 43]

Now, consider the structure of the causative of an intransitive verb, under the VI analysis:

(157) a. Kalulu a-na-lir-its-a njovu
hare SP-past-cry-cause-asp elephant
'The hare made the elephant cry'

b. [hare [cry$_i$-made] [(CP) V_i [(IP) elephant INFL V_i']]]]

Notice that this structure is very similar to that of a wh-island, in that the verb (or VP) has moved out of the embedded IP, filling the COMP position. Hence this position is not available to NPs from the lower clause for successive-cyclic movement. Therefore, any extraction of the causee 'elephant' will have to cross both the embedded IP and the embedded CP. The first of these is a weak parameterized barrier, while the second one will be a barrier by virtue of dominating IP, a blocking category. Hence, extraction of the causee will be a (mild) subjacency violation. This accounts for the marginality of (142b), (145b) repeated here:

(158) a. ?Iyi ndi njovu i-mene kalulu a-na-lir-its-a
This is elephant agr-which hare SP-past-cry-cause-asp
'This is the elephant which the hare made cry'

b. ?Ndi atsikana a-mene asilikari a-na-vin-its-a
be girls which soldiers SP-past-dance-cause-asp
'It's the girls that the soldiers made dance'

In fact, taking into account the 'graded' nature of subjacency, we predict that the violation should have exactly the status of a weak wh-island violation in the language: that of mild but noticeable oddness. This is correct; for instance, both (158) and (154), (155) are better than the CNPC

violations (151) & (152), but worse than normal successive cyclic movement cases like (149) & (150). The structure in (157) thus has the unusual property that the causee is 'close enough' to the matrix to be governed by the matrix verb, but not close enough to be subjacent to its antecedent in the matrix clause--even though government is a stricter relation than subjacency. This paradox has two roots. First, IP is sometimes a (parameterized) barrier for subjacency, but it is not a barrier for government (Chomsky (1985)). Second, in my system, the barrierhood of a category with respect to Government theory is relative not only to the contained element, but also to the c-commanding element (section 1.4.3). Thus, CP in (157) is not a barrier for government from the matrix verb because the matrix verb assigns a theta role to it, and therefore is theta indexed with it. The CP is a barrier with respect to the relative pronoun, however, which has no such special connection with CP. These two factors combine to make a two barrier difference, yielding the paradoxical result that government succeeds where subjacency fails. And this is the right result for causative constructions, where the causee behaves in many ways like the object of the matrix verb (cf. section 3.3.3.3), but cannot be wh-moved like the object of a matrix verb (hence (147b) versus (146b)).

The parallelism between (158) and extraction from wh-islands breaks down in one interesting way, however. Note that in (158) it is the <u>subject</u> of the embedded clause that is moved 'long-distance'. Normally, this produces much stronger violations than when the object is extracted:

(159) a. ?ndi njovu imene ndi-na-funs-a ngati kalulu a-na-meny-a ec
be elephant which 1sS-past-ask if hare SP-past-hit
'It's the elephant that I asked whether the hare hit'

b. *ndi kalulu amene ndi-na-funs-a ngati ec a-na-meny-a njovu
be hare which 1sS-past-ask if SP-past-hit elephant

'It's the hare which I wonder whether hit the elephant'

This contrast, familiar from English, is due to the intervention of the ECP (Chomsky 1981). The trace be properly governed, i.e. governed by a category coindexed with it either by theta marking or by 'Move Alpha'. In cases of long-distance movement, no antecedent will be able to govern, so proper government can only come from a lexical theta assigner. The object has such a theta assigner in the verb, while the subject does not. Hence the subject-object asymmetry in (159). Now, the sentences in (158) have the grammatical status of (159a), not (159b); for the ECP they act like objects again, even though the Projection Principle implies that they are subjects.

A brief comparison between the structures of (163) and (164b) reveals the relevant difference. In the case of wh-movement in (164b), the embedded COMP is clogged up with a phrase which has no relation to the embedded subject. In the case of causatives, on the other hand, the embedded COMP contains a phrase with a special relationship to the subject--namely the verb which assigns it an (external) theta role. In general, the only reason that the verb properly governs its complements but not its subject is that it is in the wrong structural position to do so, since it does not c-command it. When in a causative construction, the verb moves to COMP and ultimately onto the matrix verb, this lack is made up. Thus, the embedded subject will be governed by a lexical item which is theta indexed with it; therefore it is properly governed (cf. Torrego (1984), also section 3.3.3.1).[44] When the embedded verb incorporates into the matrix verb, the resulting verb complex will also be theta indexed with the lower subject, inheriting the necessary index from the incorporated verb. In this way,

the causee does become like a direct object of the causative verb with respect to the ECP.[45] Therefore, the ECP is satisfied in (158), and the sentences show only the much milder subjacency violation. This result is supported by the fact that constituent questions--formed by wh-in-situ in Chichewa--are perfectly grammatical when the causee is questioned:

(160) Mu-ku-ganiz-a kuti kalulu a-na-lir-its-a chiyani
2sS-pres-think that hare SP-past-cry-cause-asp what
'What do you think that the hare made cry?'

Following Huang (1982) and later work, assume that wh-in-situ phrases move to COMP to take scope at LF, and that the ECP but not subjacency is relevant at that level. Then, the fact that (165) is grammatical confirms that the causee is properly governed. Furthermore, the fact that LF movement (165) is better than overt movement (163) confirms the hypothesis that Subjacency, an S-structure condition, is responsible for the deviance of the latter.

Now, we return to extraction from the causatives of transitive verbs. In these cases, the oddness of extracting the surface object disappears again: (143) and (146) compared with (142) and (145). Superficially, this is strange, since both kinds of causatives look like simple transitive verbs, and both have the same causative morphology. The difference follows automatically, however, given a VI analysis that obeys the Projection Principle. In such an analysis, the structure of the causative of a transitive verb in Chichewa is as follows:

(161) a. Kalulu a-na-bay-its-a njovu (kwa alenja)
hare SP-past-stab-cause-asp elephant to hunters
'The hare made the hunters stab the elephant'

b. [hare [stab$_i$-made] [$_{CP}$ [$_{VP_j}$ V_i elephant] [$_{IP}$ hunters INFL VP_j]]]

As in (157), we are considering the extraction of the NP 'elephant'. This time, however, 'elephant' is the object of the lower verb. For Case theory reasons, it moves together with the verb into the COMP of the embedded clause as a part of causative formation. Thus, when it comes time to extract this NP, it has a different structural position from that of the subject of an intranstive verb. In particular, this phrase is no longer contained in the embedded IP; hence, this IP will be neither a blocking category nor a (parameterized) barrier with respect to it. Furthermore, CP will not be a barrier relative to this position either, since it is not an inherent barrier (it is theta marked), and it no longer inherits barrierhood from the IP. Moreover, VP will be neither a blocking category nor a barrier for this position, since it comes to act as the head of the embedded CP. This is part of a more general fact that whatever moves into the COMP position comes to act like the head of COMP with respect to positions outside of the CP. Technically, this can be captured with a last special assumption about the nature of the nonlexical categories COMP and INFL (see also section 3.3.2): following Chomsky (1985), we can say that there is special rule that coindexes the phrase in the SPEC of C position with the head C, which in turn is coindexed with its maximal projection CP. Note that such a result is needed independently for V Incorporation itself to happen out of COMP.[46] Finally, CP will not be a barrier with respect to 'elephant', since it is not one inherently (it is theta marked), and neither of the maximal projections it dominates is a blocking category for 'elephant'. Thus, extraction of this superficial object crosses no barriers, and we explain why sentences like (162) are fully grammatical:

(162) a. Iyi ndi njovu i-mene kalulu a-na-bay-its-a (kwa alenja)
This is elephant which hare SP-past-stab-cause-asp to hunters
'This is the elephant which the hare made the hunters stab'

b. Ndi mbuzi zi-mene kalulu a-na-meny-ets-a (kwa mkango)
be goats which hare SP-past-hit-cause-asp to lion
'It's the goats that the hare made the lion hit'

Comparing this situation to that of extracting the causee of an intransitive verb, we see that having the crucial phrase appear outside of IP makes a difference of not one but two barriers, since CP is a barrier only relative to positions inside IP in this system. Thus, it is the difference between a fully grammatical sentence, and a subjacency violation. In this way the difference between the two Chichewa causatives is parallel to that between traces in COMP, which are governed from the outside, and PROs in the subject position of IP, which are not. Torrego (1985) illustrates a similar contrast from Spanish:

(163) a. *Esta es la autora [de la que]$_i$ [$_{IP}$ [varias traducciones t_i]
han ganado premios internaccionales]
'This is the author by whom several translations have won international awards.'

b. [De que autora]$_i$ no sabes [$_{CP}$ [que traducciones t_i]$_j$
[$_{IP}$ t_j han ganado premios internaccionales]
'By what author don't you know what translations have won international awards?'

In the first example, movement takes place directly out of a phrase in IP, and subjacency is violated (strongly), parallel to Chichewa (158). In the second example, the containing phrase is first moved out of IP into COMP, and the phrase in question moves from there. Here subjacency is not violated, parallel to Chichewa (162). This parallelism with Spanish is strong support for the hypothesis that causative formation in these cases involves syntactic V(P) movement, over base generated alternatives.

Finally, there is one more type of NP in Chichewa causatives whose extraction possibilities we might consider: namely the causee in sentences with transitive embedded verbs. A simple look at the structures in (157) and (161) suffices to show that the causee of a transitive verb is identical to the causee of an intransitive verb in all the relevant structural respects. Both are governed from the matrix, but separated from it by an IP node, a CP node, and a filled COMP. Therefore, we predict that extraction of transitive causees will also yield relatively mild subjacency violations. In fact, in many cases, the violation is much worse than expected:

(164) **Uyu ndi (kwa) alenja amene kalulu a-na-bay-its-a njovu
This is to hunters which hare SP-past-stab-cause elephant
'These are the hunters which the hare made stab the elephant'

This has to do with an independent factor, however. Thus, causees of transitive verbs differ from those of intransitive verbs in that they appear as objects of prepositions in Chichewa for Case theory reasons. Now, objects of prepositions in general simply cannot be moved in relatives, neither by preposition stranding, nor by pied piping, nor by omitting the prepostion entirely. This is true even in uncontroversial cases of 'short' movement. For example:

(165) a. Atsikana a-ku-nen-a za mfumu
girls SP-pres-talk about chief
'The girls are talking about the chief'

b. *Iyi ndi mfumu imene atsikana a-ku-nen-a za
This is chief which girls SP-pres-talk about
'This is the chief that the girls are talking about'

c. *Iyi ndi (za) mfumu zi-mene atsikana a-ku-nen-a
This is (about) chief about-which girls SP-pres-talk
'This is the chief about which the girls are talking'

d. *Iyi ndi mfumu imene atsikana a-ku-nen-a

This is chief which girls SP-pres-talk
'This is the chief which the girls talk'

Thus, it is this effect that rules out (164). For some unknown reason, however, clefting in Chichewa differs from relativization in that the ban against preposition pied piping is lifted. Thus there is a grammatical cleft of (165a):

(166) Ndi za mfumu zi-mene atsikana a-ku-nen-a
be about chief about-which girls SP-pres-talk
'It's about the chief that the girls are talking'

Thus, the prediction about extraction of 'transitive causees' can be checked in the cleft construction. Indeed, it is found to have the intermediate status that we expect:

(167) ??Ndi kwa alenja ku-mene kalulu a-na-bay-its-a njovu
be to hunters to-which hare SP-past-stab-cause elephant
'It's the hunters that the hare made stab the elephant'

As in the case of the intransitive causee, movement of the transitive causee appears to violate subjacency but not the ECP. This latter conclusion is again confirmed by the fact that wh-in-situ question words are grammatical in this position, implying that it is in fact properly governed:

(168) Asilikali a-na-phik-its-a nsima kwa yani
soldiers SP-past-cook-cause cornmush to who
'Who did the soldiers make to cook cornmush?'

This in turn supports the analysis that it is subjacency, an S-structure condition, which is responsible for the marginal status of sentences like (167).[47]

3.4.2 Weak Subjacency: Italian

An important point to notice about the whole account of the extraction from causatives in Chichewa depends crucially on one of the parameterized aspects of Bounding theory.[48] Specifically, it is the fact that the most embedded IP can count as an extra barrier in Chichewa that provides the second barrier to make causee extraction marginal. Now, it is also the status of this IP that determines whether an indirect question will be an island in a particular language. Therefore, we expect that in languages which do not respect wh-islands but are otherwise similar to Chichewa, extraction of the causee will be grammatical. Italian is the original example of a 'weak subjacency' language with simple wh-island violations (Rizzi 1983a):

(169) Il solo incarico [che non sapevi [a chi avrebbe affidato]]...
(...è poi finito proprio a te)
The only charge [that you didn't know [to whom they would entrust]]... (has been entrusted exactly to you)

Compare this with the parallel Chichewa examples in (154), (155), which are marginal. Moreover, given the results of the previous section (especially 3.3.5), Italian does have causative structures similar to those in Chichewa, at least at an abstract level. As expected, the same wh-movements of causees which are marginal in Chichewa are perfect in Italian:

(170) a. Maria fa lavorare Giovanni
Maria makes work Giovanni
'Maria makes Giovanni work'

b. Chi fa lavorare t?
'Who does she make work?'

(171) a. Maria ha fatto riparare la macchina a Giovanni
Maria has made fix the car to Giovanni
'Maria made Giovanni fix the car'

b. A chi ha fatto riparare la macchina ec?
'Who did she make fix the car?'

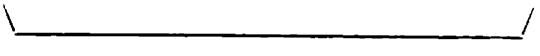
The simple fact that the lowest IP never counts as a bounding node in Italian does not imply that the subjacency condition is without effect in that language, however. On the contrary, Rizzi (ibid) has shown that it has many predictable consequences. For example, a subjacency effect appears when a relative pronoun is wh-moved out of a <u>double</u> wh-island construction. To take only one of his examples:

(172) a. Non so proprio [chi possa avere indovinato [a chi affiderò questo incarico]].
'I really don't know who might have guessed to whom I will entrust this task.'

b. *Questo incarico, [che non so proprio [chi possa avere indovinato [a chi affiderò t]]], mi sta creando un sacco di grattacapi.
'This task, that I really don't know who might have guessed to whom I will entrust, is getting me in trouble.'

Here, the moved relative pronoun must cross over two COMPs without leaving a trace due to the interfering question words in them. Each S' node associated with these COMPs is then a barrier to movement, and subjacency is violated:

(173) [NP task [S' O_i [...[S' chi [S...[S' a chi [S...t_i]]]]



We can then use this as a test to see if the clausal structure of causatives is maintained in Italian as it is in Chichewa. The relevant structure will be one in which a 'causee' is extracted out over a

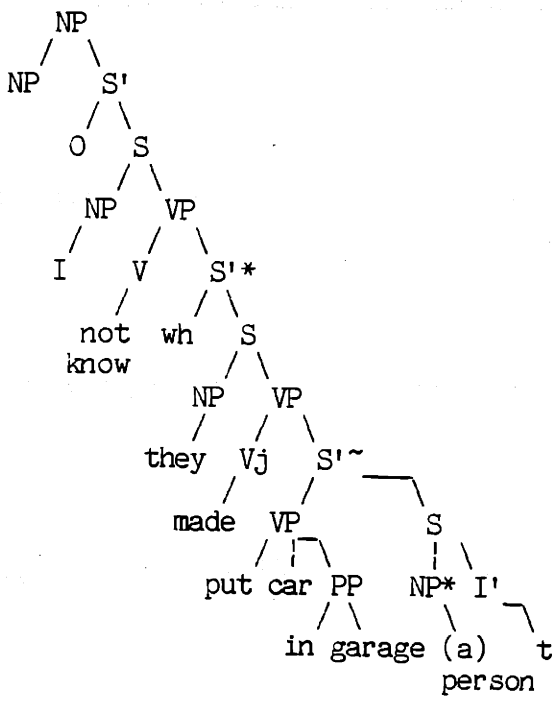
wh-island. Then the VP in COMP because of the causative should force the first barrier, and the wh-word in the next COMP will provide the second barrier, yielding a noticeable degradation due to subjacency. Such a movement should then be minimally compared to the extraction of some constituent of the lower VP of the causative over a wh-island. In this case, as in Chichewa, the lowest S' node will not count as a barrier relative to the position in question; the position is outside of IP so that S' will not inherit barrierhood from IP. This time, the movement will cross only a single wh-island and should hence be good as (169) is. In fact, when all other factors are controlled for, a subtle but consistent difference is observed between the two:

(174) a. Questo è il garage in cui non so a chi han fatto mettere la macchina.
'This is the garage in which I don't know who they made t put the car t.'

b. ??Questo è la persona a cui non so in che garage han fatto mettere la macchina.
'This is the person who I don't know in which garage they made t put the car t.'

As these examples show, the long extraction of an obligatorily subcategorized PP is noticeably better than the long extraction of the causee, in precisely the way that we predict.[49] The structure of these examples is:

(175)



In (174a), NP* moves to the COMP of S'* and the PP moves to the highest COMP; each crosses only one barrier and all is well. In (174b), the same phrases move to the opposite COMPs, and the movement of NP* violates subjacency, since S'~ (as well as S'*) is a barrier to its movement, although not to movement of the PP.

To take a slightly different example, in (176) the lowest verb <u>dire</u> is one which optionally takes an dative object. In (176a), this argument appears and is extracted over a wh-island with perfect results. In the minimally different (176b), the verb does not take an indirect argument, but the verb is causativized, giving rise to a dative causee. This causee is then extracted over the wh-island, and the result is worse:

(176) a. Ě a Gianni che mi domando che cosa abbiano detto.
'It's to Gianni that I wonder what they have said t t.'

b. ?Ě a Gianni che mi domando che cosa abbianno fatto dire.
'It's Gianni that I wonder what they made t say.'

This shows that the structure of a causative in Italian is not simply that of a basic ditransitive verb. Rather, there is a full lower clause structure retained. Only the lower subject remains fully in this category, but its effects still show up in the form of subjacency violations when this subject is moved. This accounts for the difference between the two. Moreover, we see that the incorporation account of causative constructions appears to interact with the parameters of Bounding theory in exactly the right way: extractions from causatives in Italian differ from corresponding extractions in Chichewa, and the difference can be related to the independent difference in extraction from wh-island constructions in an explanatory way.

3.4.3 Implications

In summary, it has been shown that NPs in causative structures group together in two different ways in Chichewa. 'Intransitive causees' (i.e. the thematic lower subject of an intransitive sentence embedded under the causative predicate) and 'transitive (thematic lower) objects' pattern together with respect to Case theory, both contrasting with 'transitive causees'. Thus, the first two but not the last appear morphologically unmarked, trigger object agreement, passivize, and relativize. This was accounted for under the VI analysis in section 3.3; it is also consistent with theories in which causatives are monoclausal at surface structure, either because causatives are base generated or because they are derived by some kind of clause union. On the other hand, 'intransitive causees' pattern together with 'transitive causees' with respect to Bounding Theory, both contrasting with 'transitive objects', as well as with normal objects

in simple structures. Thus, the first two but not the second two cannot naturally undergo wh-movement. The existence of this second grouping is inexplicable in theories with monoclausal surface structures for causatives. The VI analysis, however, gives it a natural explanation and reveals parallelisms between these facts and island phenomena in Chichewa and other languages. Thus, the VI analysis is superior. In turn, the extraction facts give reasonably direct support for all of the assumptions underpinning the VI analysis: notably the Projection Principle, the UTAH, and the view of the interaction of morphology and syntax.

Beyond the details of analysis, a very general theoretical point is at issue here: this Chichewa situation argues against theories of syntax in which Grammatical Functions such as 'object' are basic, undefined notions of grammar. Instead, they point to a theory in which such notions are defined, and which involves a modular system of principles. To see why this is so, ask the question: is the causee in the causative of an intransitive verb an object or not? We have just seen that there is no answer to this question. All that can be said is 'In some ways yes; in some ways no.' This situation is unacceptable, if the notion 'object' is somehow fundamental. If, however, notions of 'object' are defined in terms of certain canonical structural or thematic properties, this situation is harmless. It can be expected, given a modular theory. The 'intransitive causee' simply has some of the structural and thematic characteristics of cannonical direct objects, and lacks others. Thus, from the point of view of one modular subtheory, it may be an 'object' (in that it behaves identically to canonical objects), whereas from the point of view of another subtheory it may not be. How we choose to actually use the word 'object' is then a matter of terminology. Since Chichewa causatives show

this 'half-way' GF behavior, they provide very strong support for the Government-Binding Theory perspective on grammatical relations and the nature of grammar more generally (cf. section 1.3.3 and Chomsky (1981)).

3.5 Incorporation Interactions and the Mirror Principle

In the final section of this chapter, I wish to consider briefly the possibilities of interactions between Verb Incorporation as studied in this chapter and Noun Incorporation as studied in the last chapter. There are two reasons for doing this. First, if we have given the right analysis for these processes in simple cases, we expect that properties of their interactions should follow automatically. Thus, it was argued in Baker (1985) that the weakness of previous accounts of morphosyntactic processes is revealed precisely by their failure to correctly determine certain properties of their interactions. Second, one of the goals of this work is to provide a theory of morphosyntactic processes that explains the truth of the Mirror Principle (Baker (1985)); we need to check that progress is being made toward that goal.

3.5.1 NI and VI interactions

Notice first at an abstract level that the Verb Incorporation analysis of causative constructions has the right general properties for explaining the Mirror Principle. The intuitive content of this principle is that morphological derivations and syntactic derivations must reflect one another--i.e., that the morphological aspects of a process and the syntactic aspects of that process must have the same relative ordering with

respect to other, interacting processes. Now, the heart of the account of causativization is that the verb of a lower clause moves to adjoin to the verb governing that clause. This single incorporation then has both morphological and syntactic effects. On the one hand, it creates an adjunction structure in which two X-o categories are dominated by an X-o category. This type of structure is automatically interpreted as either an affixation or a compounding (depending on inherent morphological features of the items involved) by Morphology theory. On the other hand, the movement creates a coindexing between two positions in the phrase structure, a coindexing which affects the way syntactic principles apply to the structure as a whole. In particular, this coindexing interacts with the theory of government to change the government relationships in the structure such that the government domain of the matrix verb is extended (the Government Transparency Corollary). From this follow the aspects of causativization which are usually described as the changing of grammatical functions, as causees and lower objects become governed and potentially Case marked by the matrix verb. Thus, the morphological affixation (or compounding) in causatives and the syntactic changing of GFs both are automatic consquences of the single process of incorporation. Therefore, both kinds of changes happen at the same point in the derivation. When other, interacting processes have the same property, the Mirror Principle will follow as a theorem: the morphological aspects of a process and the syntactic aspects of that process will have the same relative ordering with respect to other, interacting processes because the morphology and the syntax crucially happen at the same time.

With this in mind, consider Southern Tiwa, a language with both Verb Incorporation causatives and highly productive Noun Incorporation. The two

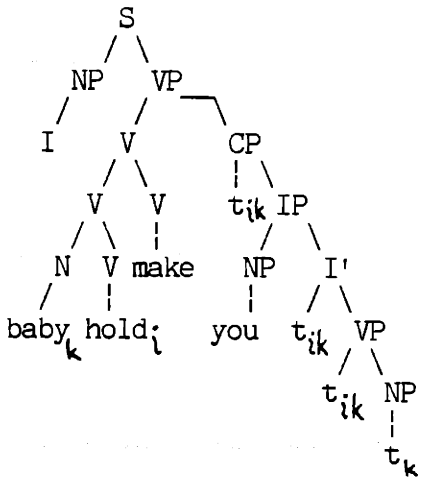
processes interact in the language in interesting ways (data from Allen, Gardiner and Frantz (1984)). Thus, as discussed in section 3.3.3.4, Southern Tiwa has none of the special Case marking abilities found in other languages. This means that causatives of transitive verbs are generally ungrammatical in the language:

(177) *'u'ude i-kur-'am-ban
baby 1s:2s-hold-cause-past
'I made you hold the baby'

However, Noun Incorporation relates the direct object to its governing verb in a way which makes the verb intransitive in the currently relevant sense: it causes the verb to have no object to which it must assign Case (see 2.3). Thus, NI can feed VI, by making a transitive verb into an intransitive verb, which can then incorporate without causing a Case theory violation. This yields the grammatical sentence in (178), associated with the S-structure in (179):

(178) I-'u'u-kur-'am-ban
1s:2s-baby-hold-cause-past
'I made you hold the baby'

(179)



In most ways, this structure is identical to normal V Incorporation

structures; the only relevant difference is the trace of 'baby' in the lower VP. This trace satisfies the ECP at all points: initially, because it is locally governed by its antecedent in the governing V; finally, because indexes of a subpart of a word are considered indexes of the whole word, and by convention, traces will share all of the indexes of their antecedent (see section 1.4.3, 1.4.5 for discussion). Therefore, the trace of the V will keep the index of 'baby', and the trace will be properly governed at S-structure, even though its original lexical content has moved on.

Notice that the same structure crucially cannot be derived in the other order, by first performing the VI and then the NI. The reason is that the NI would be too long, such that its antecedent in the matrix verb would not govern its trace embedded in the lower VP.[50] Essentially, at S-structure the difference comes down to the fact that the lowest V trace will <u>not</u> bear the index of the N 'baby' under the second derivation.

This situation then gives us a Mirror Principle type prediction: namely, that the incorporated N root will appear inside of the causative affix in the morphological structure of the verb, reflecting the fact that NI must have happened before VI. The morpheme order in Southern Tiwa is consistent with this prediction, but also with the opposite, since the compounded noun and the suffixed verb appear on opposite sides of the root verb:

(180) [i- [['u'u-kur] -'am] -ban] OR [i- ['u'u- [kur-'am]] -ban]
agr baby hold cause past agr baby hold cause past

I predict, however, that in a language where NI and VI happen on the same side of the verb, that NI of the lower object in a causative structure will produce the morpheme ordering in (181a) and not the one in (181b):

(181) a. [[[verb] noun] cause]

b. *[[[verb] cause] noun]

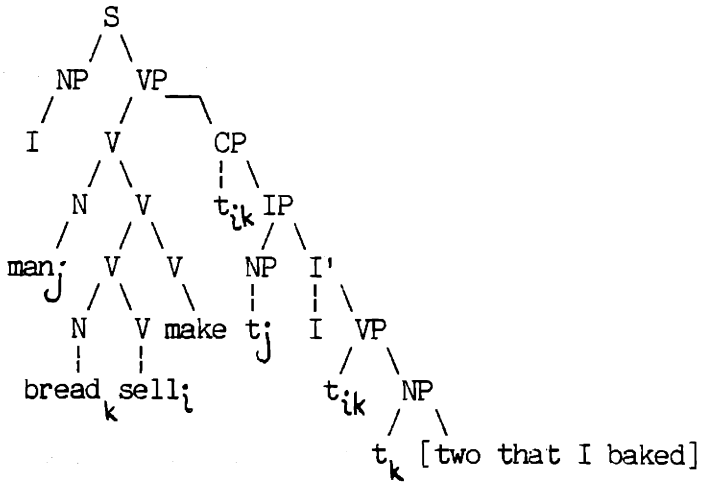
There is another way in which NI and VI can interact in Southern Tiwa. NI can only apply to move a noun out of a 'direct object'--i.e. out of a NP which is directly governed by the host V. Thus, subjects cannot normally incorporate, and abstract structures such as (182) are always ungrammatical:

(182) [I [man$_i$-said] [CP that [IP [NP t$_i$] should sell the bread]]]]
='I said that the man should sell the bread'

However, we have seen throughout this chapter that incorporating the V out of the embedded clause causes the matrix verb complex to govern the embedded subject. Thus, VI creates 'objects' in a way which can feed NI. This yields grammatical sentences such as (183), with the S-structure in (184):

(183) Ti-seuan-p'akhu-kumwia-'am-ban wisi te-khaba-?i
1s:A-man-bread-sell-cause-past two 1s:C-bake-subord
'I made the man sell the two breads that I baked'

(184)



This structure is identical to that in (179) with one added wrinkle; after

the derivation has proceeded as above, the head noun of the subject NP incorporates into the matrix verb complex. Since the V trace in COMP provides a government link between the matrix verb and the embedded subject, the antecedent will antecedent govern its trace, satisfying the ECP. Therefore the structure is grammatical.[51, 52]

Notice that again this sentence cannot be derived in the opposite order, with NI of the causee happening before causative VI. This time, the resulting S-structures will be identical either way (except for the morphological structure of the matrix verb complex), so it contains no violations. However, I assume (compare Lasnik and Saito (1984)) that the ECP for thematically relevant categories (at least) must be satisfied at every point of the derivation. Thus, we are not allowed to perform movements which would be illicit with respect to the ECP, but which are salvaged later by some other process. Yet this is exactly the situation if NI precedes VI. The NI movement creates a structure identical to (182), violating the ECP; the later VI is too late to save the structure.

This syntactic situation gives a second Mirror Principle type prediction: namely, that the incorporated causee N root wil appear <u>outside</u> of the causative affix in the morphological structure of the verb, reflecting the fact that NI must have happened after VI. Again, the morpheme order in Southern Tiwa is indeterminate in this regard, given that Ns compound before the root and affixes like the causative attach after the root. The prediction, however, is that in languages in which both happen to be on the same side of the verb, the NI of the causee in a causative structure will produce the morpheme ordering in (185a) and not the one in (185b):

(185) a. [[[verb] cause] noun]

b. *[[[verb] noun] cause]

Note that this order is exactly the opposite of that predicted for the NI of lower objects in (181); different morpheme orders of the same morphemes correspond to different syntactic/semantic structures, as in Baker (1985). Nor is the operation of the Mirror Principle completely invisible in Southern Tiwa. Combine the above paragraphs and imagine a causative structure in which both the causee and the lower object are incorporated. Then the lower object must incorporate before the verb and causative join, which in turn must take place before the causee incorporates. Therefore, by transitivity, the lower object must incorporate before the causee, and therefore should appear inside of it in morphological structure. This can be seen directly, since all noun roots attach before the verb. In fact, we have already seen the relevant sentence in (183) above:

(186) [Ti- [seuan- [[p'akhu-kumwia] -'am]] -ban]
agr- man- bread- sell -cause -past
='I made the man sell the breads...'
NOT = 'I made the bread sell the man...'

Here the outside noun root expresses the causee of the sentence and the inside noun root the lower object, and not the other way around--exactly as expected.

To summarize so far, our theory of Noun Incorporation and Verb Incorporation accounts for the fact that the two processes can interact, with either one feeding the other. When they do interact, the resulting structure is exactly what one would expect from a simple composition of the properties which each shows in isolation. Finally, the analysis in terms of incorporation explains the fact that differences in the order of

incorporation viewed syntactically show up as differences in the order of the relevant morphemes in the verb complex. In other words, the subcase of the Mirror Principle relevant to NI-VI interactions follows from the theory of incorporation.[53]

In chapter 2, I argued that the process of antipassive is a special case of noun incorporation, in which a pronounlike element is incorporated into the verb from the direct object position. It differs from 'full' Noun Incorporation only in that the incorporated element is morphologically an affix rather than a root for compounding, and in that its theta role can be 'doubled' in an oblique phrase in many languages. Thus, the same Incorporation principles apply to it as to other cases of Noun Incorporation. Therefore, antipassive should interact with VI causativization in exactly the same way that NI does. In particular, antipassive should be able to happen either before VI or after VI. In the former case, the antipassive morpheme will represent the thematic object of the lower verb; in the latter case, it will represent the causee subject of the lower verb (at least if the causative involves V alone moving to COMP). This seems to be correct in languages that have the relevant constructions. For example, in Chamorro, antipassive can apply in the embedded clause before verb raising, yielding structures in which the antipassive morpheme fan- expresses the lower object thematic role (data from Gibson (1980)):

(187) Ha na'-fan-aitai yu' i m'estrak-ku nueba na lebblu
3sS-cause-Apass-read me the teacher-my new lk book
'My teacher made me read a new book'

Given the analysis developed here and in chapter 2, this sentence will be

associated with the same structures as the NI sentence (178), as illustrated in (179). The nominal affix -fan will be base generated in the lower object position, and will incorporate into the lower verb, which in turn incorporates into the matrix verb. Note further that in Chamorro, the antipassive affix and the causative affix both appear on the same side of the verb, thus making it possible to test the morpheme ordering prediction (181) in this language. In (187) the antipassive is a Noun Incorporation of the lower object in a causative structure, and the antipassive does appear inside of the causative affix as predicted:

(188) [Ha [na'- [fan- [aitai]]]]
agr cause Apass read

Antipassive can also apply after Verb Incorporation, such that the antipassive is associated with the thematic embedded subject, rather than with the embedded object:

(189) Mu-nå'-sugun yu' ni adyu siha na lalahi ni kareta
NP-(Apass)cause-drive I obl that p l lk males obl car
'I let those men drive my car'

This type of sentence will be associated with the same kinds of structures as the NI sentence (183), as given in (184). Here the antipassive is base generated in the subject position of the embedded clause as in Exceptional Case Marking verbs (see 2.4.1), and is incorporated into the matrix verb after VI causes the matrix complex to govern the antipassive morpheme. Unfortunately, in this case we are not able to check the corresponding morpheme ordering prediction in (185) directly because of an idiosyncratic irregularity in Chamorro verb morphology: when it is expected to appear outside the causative morpheme, the antipassive does not have its usual segmental representation man-/fan-. Rather, it is realized as a shift of

main stress from the verb root onto the causative affix, which causes the low vowel in that affix to front by a general phonological process of the language. Nevertheless, it may be possible to claim that the Mirror Principle prediction is supported in this case in a more abstract way: nothing can shift the main word stress onto the causative affix until after the causative affix has been attached; therefore the morphophonology of antipassive is done strictly after the morphophonology of the causative, as predicted given that the morphophonology must 'mirror' the syntactic ordering.[54] The situation is somewhat clearer in Eskimo, another language with both antipassive and Verb Incorporation. Here there are no morphological surprises, and when the antipassive morpheme is associated with the embedded subject, it appears obviously outside of the Verb Incorporation-triggering affix, as expected (Labrador Inuttut dialect, Smith (1982)):

(190) angutik anna-mik [[taku-kqu]-ji]-juk siitsi-mik
man(abs) woman-mod [[see-want]-Apass]-3sS squirrel-mod
'The man wanted the woman to see the squirrel.'

Thus the general situation as seen cross-linguistically is fairly clear. Antipassive can in general either feed or be fed by causative formation, and the possible difference in syntactic derivation correlates with a difference in the morphological structure of the resulting verb form. In all these respects, antipassive has exactly the same properties as 'true' Noun Incorporation, confirming the hypothesis of chapter 2 that they are the same process. Furthermore, all of these properties are explained when an Incorporation analysis is given for each of the processes involved.

3.5.2 Double VI Interactions

Finally, there is one more interaction which we are in a position to understand at this point: Verb Incorporation can interact with Verb Incorporation to derive (say) double causative structures. This is illustrated by the following paradigms from Chichewa (Mchombo (personal communication)):

(191) a. atsikana a-na-vin-a
girls SP-past-dance
'The girls danced'

b. akaida a-na-vin-its-a atsikana
prisoners SP-past-dance-cause girls
'The prisoners made the girls dance'

c. (?)asilikali a-na-vin-its-its-a atsikana kwa akaida
soldiers SP-past-dance-cause-cause girls to prisoners
'The soldiers made the prisoners make the girls dance'

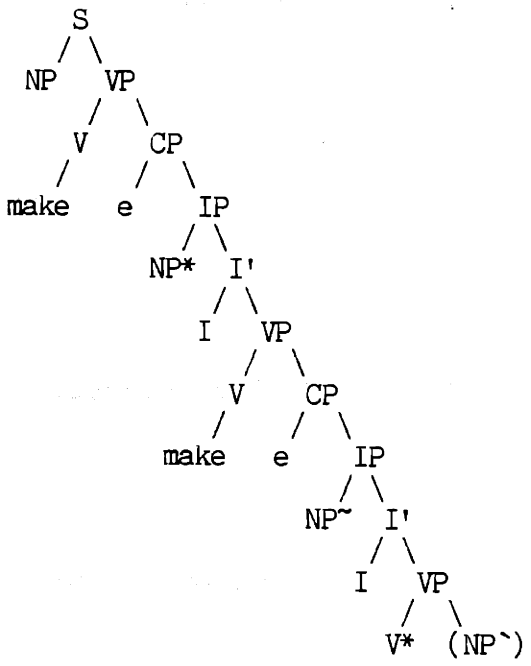
(192) a. anyani a-na-meny-a mbuzi
baboons SP-past-hit goats
'The baboons hit the goats'

b. kalulu a-na-meny-ets-a mbuzi kwa anyani
hare SP-past-hit-cause goats to baboons
'The hare made the baboons hit the goats'

c. (?)mkango u-na-meny-ets-ets-a mbuzi kwa anyani
lion SP-past-hit-cause-cause goats to baboons
'The lion made someone make the baboons hit the goats'

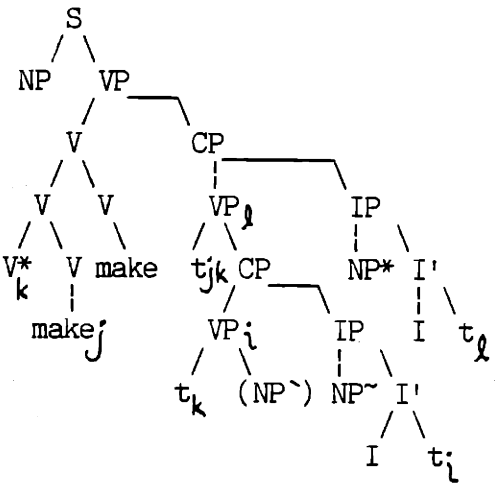
The double causative examples in (191c), (192c) are somewhat hard to process and understand, but with some thought are judged to be grammatical. Under the VI analysis, they will be associated with a D-structure such as that in (193):

(193)



This D-structure will then be transformed into the following S-structure, by two instances of VP-to-COMP movement plus V incorporation into the governing V:

(194)



The structure is well-formed, with all the lexical traces properly governed as they must be. In principle, there is no reason why this process of forming multiple causatives could not be itterated indefinitely. In

practice, however, double causatives are already a little awkward, and triple causatives are unacceptable:

(195) a. msangalatsi a-na-thyol-ets-a mpando kwa chiphadzuwa
entertainer SP-past-break-cause chair to 'beauty'
'The entertainer made the beautiful woman break the chair'

b. (?)mtsogoleri a-na-thyol-ets-ets-a mpando kwa chiphadzuwa
leader SP-past-break-cause-cause chair to 'beauty'
'The leader made someone make the beautiful woman break the chair'

c. ?*chiombankhanga chi-na-thyol-ets-ets-ets-a mpando kwa chiphadzuwa
eagle SP-past-break-cause-cause-cause chair to 'beauty'
'The eagle made someone make someone make the beautiful woman break the chair'

The explanation of this degradation is obvious: a look at the tree in (194) reveals that the VP fronting aspect of causative formation produces complex center embedded S-structures, with VPs and C''s recursively dominating each other with lexical material on either side. Thus, the resulting structures are similar to center embedded relative clause structures in English, and we expect more than two embeddings will produce an essentially unparsable structure. Beyond this, multiple causatives have the properties that we expect. They raise no new Mirror Principle type issues, however, since the affixes involved are identical and nothing can be deduced about their ordering by simple inspection. Similar multiple causative constructions are attested in Malayalam (Mohanan 1983), Turkish (Aissen 1974), and (in the Reanalysis guise) the Romance languages (Rouveret and Vergnaud 1980).

In conclusion, the Verb Incorporation analysis that has been supported for simple cases in previous sections correctly accounts for the more complex interactions of causative and causative-like structures with Noun Incorporation, antipassive, and causative itself. Moreover, it does so in a way that accounts directly for the connection between morphological

structure and syntactic derivation. Thus, the incorporation theory meets the criterion of adequacy on grammatical theory expressed by the Mirror Principle of Baker (1985).

CHAPTER THREE: FOOTNOTES

1. For starters, see Aissen (1974), Comrie (1976), Kayne (1975), Rouveret and Vergnaud (1980), Mohanan (1983), Marantz (1984).

2. This assumption will be modified below in section 3.3.2, where the role of INFL will be considered. There has been much debate about what is the head of S (and S'), with the candidates being V, INFL, COMP, and nothing. Until then, I appeal to the obvious intuition that V is the 'most important' full lexical item in S.

3. Mohanan (1983) classifies the desiderative and permissive as modals, while calling the causative a (pure) affix. Also, unlike the causative, the desiderative and permissive cause their subjects to be marked in the dative case. I assume that these differences are independent of the similarity discussed in the text.

4. Smith dismisses an analysis of (17a) in which <u>-sagai-</u> is taken to be an affix of adverbial category rather than of verbal category, on the grounds that there is no independent evidence for a category 'adverb' in Labrador Inuttut. This may be a legitimate alternative analysis, however.

5. Probably this analysis would be appropriate for the Chichewa affix <u>-nga-</u> 'can' in (8c) as well, given that it seems to have the meaning of an epistemic modal, and assuming a raising analysis of such cases.

6. In principle, we could also look for a clear case of an unergative predicate that takes a sentential subject. This would be tricky, however, (perhaps impossible) since sentential subjects are never agentive.

7. Nevertheless, there seem to be no languages in which Verb Incorporation has the kind of generality across matrix predicates which Noun Incorporation has in the Iroquoian languages and Southern Tiwa. Furthermore, certain predicates tend to favor VI structures in contrast to others in language after language, 'cause' being the most striking example. I will make some comments toward the explanation of these factors below in section 3.3.5.

8. In point of historical fact, my theory of X-o Incorporation only reconstructs a (small) part of what the Generative Semanticists intended to express via Predicate Raising--namely, those cases in which the Predicate Raising is expressed by (reasonably) productive morphology. I explain 'die-cause' in Chichewa and Eskimo via Incorporation, but not English 'kill'--an example close to the heart of the original Generative Semantics theorists.

9. Specifically, the Case Filter implies that the lower clause must be tensed in (26a), so that the lower subject can receive (nominative) Case from INFL; whereas the ECP determines that the complementizer <u>that</u> may not appear in (26b), so that the trace of the NP-movement can be properly governed by the matrix predicate. Chomsky's discussion differs slightly from the one it the text in that it takes whether the complement S is tensed or not to be the 'free option', and derives how the matrix subject position is filled from Case theory, depending on the choice. The crucial point is that the two options are linked by general principles; which option is the free one and which the determined one is mostly a matter of exposition.

10. <u>-its</u>, like other suffixes in Chichewa, undergoes a vowel harmony rule,

appearing either as [ets], following /e, o/, or [its], following /i, u, a/ (Mtenje 1984). If the root has no vowel, the form with the mid vowel [e] will always appear. I will give the high vowel variant as the citation form of Chichewa suffixes. See section 1.4.5 and below.

11. It is possible that the specification that -its must affix specifically to a verb in this lexical entry is redundant and could be eliminated. By the Head Movement Constraint, Incorporation can only take place from the head of a direct complement; thus -its will be a Verb Incorporater because its direct complement is a Verb-headed clause. If it can be held in general that only a pleonastic X can be inserted under an X node, the V' on the morphological subcategorization bracket would be unnecessary. Then the only special lexical property to be learned would be that -its is a suffix.

12. Except for the final mood suffixes -a and -e, which do not harmonize. For the statement of the harmony rule and references, see footnote 10.

13. As alluded to in footnote 7, VI never seems to be as free and productive as NI is in Southern Tiwa and the Iroquoian languages. This fact, to be accounted for in the next section, no doubt explains a slant toward VI being an affixal process and NI being a compounding process in most languages.

14. In Gibson's Relational Grammar framework, this 'second object' is claimed to be a '2-chomeur', a notion that has no direct counterpart in the GB framework. The status of this NP will be discussed in detail in what follows.

15. Other possibilities are that causatives subcategorize for S =INFL'',

with no COMP, or for a VP small clause with no COMP or INFL (cf. Manzini (1983)). In a language like Chichewa, however, this would make the causative morpheme unique in its subcategorization, all other verbs requiring an overt COMP or appearing in an obligatory control structure. See section 6.3 for comments on ECM structures, arguing that these also have COMPs in English.

16. The head COMP node is in the appropriate structural position to be incorporated into the matrix verb, but since COMP is a nonlexical, "closed class" category, it does not undergo productive morphological processes such as affixation. Thus COMP-incorporation will not save a structure like (67).

17. Given certain assumptions about the derived phrase structure, adjunction to the embedded S node would be another possible position with the required properties. Empirical evidence in favor of COMP being the landing site over this possibility will be given in section 3.4.

18. It is very possible that this stipulation is to be understood in terms of the special relationship between INFL and COMP discussed (for example) in Stowell (1981, 1982, who cites Koster), just as V-to-INFL movement depends on the special relationship between INFL and V. Perhaps it can even be related to the GTC if INFL moves to COMP at LF as claimed in these references. This is a topic for further investigation. For a somewhat wider perspective on V-to-INFL movement and INFL-to-COMP movement, see sections 5.2 and 6.3 and references cited there.

19. In fact, technically an additional technical assumption is necessary here as well; for discussion see section 3.4.1 and references cited there.

20. Some extended notion of adjacency may well be relevant, however, such as the notion of continuous Case Domains' which may not be interrupted as introduced in Travis (1984).

21. On this particular subpoint, compare Torrego (1984). She shows that simple verb fronting in Spanish causes the verb to properly govern its subject. This suggests that the theta indexing necessary for proper government is always present between the verb and the subject, and it shows up any time the verb reaches a position where structurally it can govern the subject. This can happen either by the verb fronting, as in Torrego's analysis, or by the subject inverting, as in Rizzi's (1983a, chapter IV) analysis of extraction in Italian. The causative structure considered in the text is similar to the verb fronting case.

22. Strictly speaking, we would expect the lower object to precede the causee in unmarked word order in Kinyarwanda causatives, instead of the other way around, as in (76). It is likely that other factors are responsible, however. Thus, in related Bantu languages such as Mashi and Chimwiini (Marantz 1982b) the word order between accusative postverbal NPs is described as being free and/or determined by relative animacy. Thus, the order switch between lower object and causee between (75) and (76) could be a stylistically determined part of the mapping from S-structure to PF. Note that in each example the causee must be animate and the object inanimate (Kimenyi 1980).

23. This assumption will be substantially changed in section 4.2.4 below.

24. In fact, both 'Chichewa-B' and Japanese are somewhat more like Kinyarwanda than Chimwiini or the other languages mentioned in this section

are, since in these languages either NP of a 'double object' construction may agree with the verb (Chichewa-B) or become the subject of a passive. Nevertheless, I have grouped them in this section because only the causee has these properties in causatives. Furthermore, in both languages there is some asymmetry between the two NPs--in surface Case marking in Japanese and in extraction possibilities in Chichewa.

25. Gibson (1980) distinguishes ECM (for her, raising to object) from causatives, claiming that the two clauses collapse into one in causatives, contra the Projection Principle. She gives three arguments to distinguish them. First, she observes that the causative verb and the embedded verb combine to form one morphological word, unlike in ECM. This is because causatives but not ECM involve V movement. Second, she observes that the embedded object differs in its morphological case in the two constructions--it is accusative in ECM, but oblique in causatives. This too follows from V movement, given that the trace of a verb cannot assign accusative case, so that the inherent case must be used instead. Her third argument involves the interaction with applicative constructions. This I will return to in section 4.4.4.

26. In addition to these 'Binding theory' arguments, Gibson (1980) and others show other processes that distinguish causatives from double object verbs. Discussion of these will have to await a more complete account of double object verbs in chapter 4.

27. The phrase 'morphologically underived' is crucial here, since all of the examples in (103) are grammatical if the verb stem is augmented by the applied affix -ir (see chapter 4). Nevertheless, there is a significant difference between Chichewa-A and its Bantu relatives mentioned in

preceding subsections, in that all of the latter contain a class of verbs that appear in a double object construction without the applied ending.

Even here there is an idealization, since Chichewa-A does have one verb which can appear in a (103)-type configuration; the verb patsa 'to give':

(i) mbidzi zi-na-patsa nkhandwe msampha
zebras SP-past-give fox trap
'The zebras gave the fox the trap'

But this verb proves its highly marked character in the system of the language in that it alone cannot appear in the 'unshifted' (102)-type configuration:

(ii) *mbidzi zi-na-patsa msampha kwa nkhandwe
zebras SP-past-give trap to fox
'The zebras gave the trap to the fox'

Sentences like (ii) are grammatical in Chichewa-B. Thus, I assume that patsa is a morphologically suppletive form for an applied verb, a form which has no direct unapplied counterpart (cf. 4.2.5.2).

28. A question arises at this point: namely, why can't a language like Chichewa move only its verb in (104) after all, and use a special Case insertion rule to salvage the embedded object NP* rather than the embedded subject NP~. I assume that the answer to this should be in terms of a theory of special marked rules, in particular that they be local (cf. Borer (1981)). Thus, even such an exceptional type of Case marking will be limited to situations where the NP is governed by an appropriate lexical verb. Then NP~ will be close enough to be rescued by the matrix verb in this way, while NP* will not be.

29. Morphologically, the case of a direct object in Malayalam is accusative

if the NP is animate; nominative if it is inanimate (Mohanan 1983).

30. This holds true apart from the possibility of reconstruction at LF, which seems possible in the case of full NP anaphors at least in Italian (Burzio, to appear) and perhaps in Turkish (cf. Aissen 1974).

31. In Chichewa, the subject of a lower transitive verb can be suppressed in a causative construction. Thus, (116b) is grammatical if the causee ana is dropped. For a possible analysis of this construction, see 5.4.3.

32. This is still consistent with the possibility that the rule inserting a preposition to Case mark the causee is to be collapsed with another Case marking rule of the language, such as one that marks the second NP of 'give' type verbs. Many researchers have proposed this for Romance. I do, however, claim that such an account should not generalize across languages. See Burzio (to appear) for a detailed discussion of this issue in terms of the Italian causee marking rule.

33. There is a curious exception to this constraint in Berber: a handful of 'ingestive' verbs such as 'eat' and 'drink' can form causatives even when they are used transitively. Interestingly, this same class of verbs is exceptional in Chichewa (Mchombo (personal communication)) and Malayalam (Mohanan (1983)) as well in that they seem to form 'Rule 2' causative structures rather than the 'Rule 1' structures that are usual in these languages. These facts could all be explained in these verbs were taken to be intransitive in some appropriate sense. I leave this as an open problem.

34. Kimenyi (1980) does not explicitly present the evidence that abaana is an 'object'--i.e. that it passivizes and governs object agreement. Yet it

is clear from his discussion that this is the case. See also Hodges (1977) for Kimeru.

35. In Japanese, the causee in the causative of an intransitive verb can actually be marked with the dative particle ni; the same particle that marks the causee in the causative of a transitive verb. This is not a true instance of schema (135), however, since the causee of an intransitive verb root can also be marked with the accusative particle o, with a difference in meaning. Rather, the situation seems to be that o and ni are both object markers of some kind in Japanese--cf. footnote 24.

36. This criticism is, of course, valid for any framework involving explicit rules, including an 'old style' transformational grammar, or a version of GB where causatives are derived by lexical rules over predicate argument positions (e.g. Williams (1981)). The basic (primitive) status of grammatical functions is relevant only to the degree that this assumption makes it hard in principle as well as in practice to give explanatory accounts of the behavior of the GFs. See Marantz (1984, chapter 8) for discussion.

37. This occurs in the imperative, where clitics normally appear at the end of the tensed verb, rather than before it.

38. There is one important problem with this analysis, however. Given the standard view of grammar in GB as represented in (1.3.1 (37)), all 'overt' movements that occur between D-structure and S-structure are assumed to strictly precede all 'covert' movements which happen between S-structure and LF. Yet, I will have cause to claim at various points in what follows that covert Incorporation (seems to) crucially precedes overt Incorporation

in certain cases, giving rise to ordering paradoxes. This may imply that Reanalysis, although abstract Incorporation, is not LF Incorporation after all. On the other hand, the true relationship between LF and the other levels of syntactic description is a controversial topic, and may need to be revised. Thus, either some notion of 'Reconstruction' or some notion that LF is built up in parallel with S-structure as in the Extended Standard Theory could suffice to eliminate these paradoxes; both are options which have been explored for other reasons. The issues are highly complex and theory dependent, and I will not develop these possibilities any further here.

39. All of the Chichewa sentences in this section are from work done together with Sam Mchombo. The judgments are his.

40. Chichewa is a tonal language, and there exists a special relative form of the verb which differs tonally from the normal verb. The distribution of this special form is an interesting and perhaps relevant topic, but one which I will ignore, transcribing both verb forms the same.

41. Chomsky implies this analysis in his notes, but in his text takes a different one in order to account for the difference between these cases and CNPC violations out of relative clauses, which are stronger. In all these examples, I also abstract away from Chomsky's discussion of VP as a barrier, counterbalanced by the possibility of movement adjoining to VP. We could say instead that VP is not a barrier because of its verbal Case relationship to INFL (cf. section 3.3.2).

42. Chichewa has an optional process of object agreement, which interacts with these facts: every sentence given becomes perfectly grammatical when

the most deeply embedded verb shows object agreement with the 'gap'. Since island effects disappear, such sentences must not be derived by movement. Rather, the object agreement presumably functions as a resumptive pronoun interpreted as coreferent with the head. Interestingly, the special relative tone pattern on the verb disappears in this construction.

43. Both with wh-islands and complex NPs, the strength of the violation seems to systematically be somewhat greater and more consistent with clefts than with relatives. Looking ahead, this is also the case with extraction from causatives. I have no explanation for this extra factor.

44. This Verb movement also puts V in the right structural position to govern the whole IP. There is no sense in which the IP is an argument of this lower V, however, so there will be no coindexing between the two. Thus, IP will remain a blocking category and CP will remain a barrier, as required.

45. The result achieved here is in many ways similar to that achieved by 'thematic reindexing' in Rouveret and Vergnaud (1980), in that the lower subject becomes in effect theta-marked by the verbal complex. Here, however, there is no sense in which a new thematic relationship is introduced in the derivation, which would be problematic for the Projection Principle and the definition of D-structure.

46. This assumption, or something to the same effect, is also supported by the Spanish examples cited below.

47. Chichewa also allows double causative constructions in some cases (see section 3.5):

(i) Asilikali a-na-lir-its-its-a njovu kwa kalulu
soldiers SP-past-cry-caus-caus-asp elephant to hare
'The soldiers made the hare make the elephant cry'

When the superficial object is extracted in this construction, the result is somewhat worse than even the bad cases of extraction from a single causative:

(ii) ??Iyi ndi njovu imene asilikali a-na-lir-its-its-a kwa kalulu
This is elephant which soldiers SP-past-cry-cause-cause to hare
'This is the elephant which soldiers made the hare make cry'

It is tempting to invoke the second hidden clausal boundary and explain this degredation in terms of subjacency. Unfortunately, given the Bounding theory as it stands, none of the additional nodes will be barriers. Either the theory needs revision, or the degradation is simply a matter of greater complexity. Either way, (ii) confirms the general hypothesis that clausal structure is maintained in causative formation.

48. I owe special thanks to L. Rizzi for his help on this section.

49. (174b) is presumably better than (172b) because the embedded clause which the relative pronoun is moved out of is untensed, whereas the relative pronoun in (172b) moves out of a tensed embedded clause. Extraction from tensed clauses is known to be worse in general.

50. Compare the inability of verb complex to assign Case to the embedded object (3.3.3.2), suggesting that it does not govern that position.

51. The incorporation of the lower object is in no way crucial here. We expect the incorporation of the causee to be grammatical in Southern Tiwa if the verb is a basic intransitive as well.

52. The fact that the causee can incorporate here is another argument in

favor of a syntactic account of NI as opposed to a lexical alternative based on thematic roles. The embedded subject gets no theta role at all from the causative verb, nevertheless it incorporates into it. Thus, the class of incorporable NPs certainly cannot be simply the class of themes of a host verb. See 2.1.2.

53. Strictly speaking, in order to fully derive this subcase of the Mirror Principle, one more derivation must be considered: one in which the entire VP moves to COMP in the process of the Verb Incorporation, as in section 3.3.3.3. Then the lower object will be governed by the matrix verb after VI, and could potentially incorporate after VI, yielding counterexamples to the morpheme ordering prediction in (181). Two things can be said here. First, the case may not arise, since incorporating languages that I know about all have V-to-COMP causatives rather than VP-to-COMP causatives. In fact, it may be that languages with NI are always V-to-COMP for principled reasons, and the prediction in (178) is maintained--see section 4.2.4. Furthermore, it is a general fact about incorporation that it cannot move over an empty governing head, even though it is lexically governed via the Government Transparency Corollary. This gets some independent support from P Incorporation (see 4.4), and would suffice to block the derivation in question.

54. See Baker (1985), section 5 for a general discussion of the content of the Mirror Principle in cases of non-strictly concatenative morphology.

Chapter 4

PREPOSITION INCORPORATION

In the preceding chapters, we considered at length constructions in which a single morphologically complex verb stands for both a verb and the noun of its direct object (chapter 2), or for both a verb and the verb of its sentential complement (chapter 3). It was argued that these are cases of Noun Incorporation and Verb Incorporation, respectively, where 'Incorporation' refers to the syntactic movement of an X-o category so that it adjoins to the governing X-o. Given this situation, we might expect this Incorporation process to generalize quite freely across categories in languages of the world. In particular, given that nouns and verbs incorporate into governing verbs, there is no reason not to expect prepositions to do the same.

In this light, consider the following paradigms from English and Chichewa (data from Mchombo):

(1) a. The zebras handed the trap to the fox.

b. I sent a sixpack of beer to the mayor.

(2) a. mbıdzi zi-na-perek-a msampha kwa nkhandwe
zebras SP-past-hand-asp trap to fox
'The zebras handed the trap to the fox'

b. Ndi-na-tumiz-a chipanda cha mowa kwa mfumu
1sS-past-send-asp calabash of beer to chief
'I sent a calabash of beer to the chief'

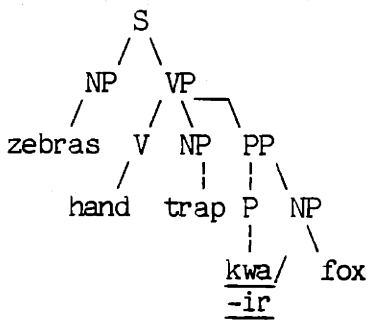
(3) a. mbidzi zi-na-perek-er-a nkhandwe msampha
zebras SP-past-hand-'to'-asp fox trap
'The zebras handed the fox the trap'

b. Ndi-na-tumiz-ir-a mfumu chipanda cha mowa
1sS-past-send-'to'-asp chief calabash of beer
'I sent the chief a calabash of beer'

In the sentences in (1) in English, the verbs take a prepositional phrase complement as well as a noun phrase complement. The same is true of the corresponding morphologically simple Chichewa verbs in (2). The Chichewa examples in (3), however, have a rather different structure. On the one hand, the verbs are morphologically complex, appearing with a suffix which is traditionally called the 'applied' or 'applicative' suffix; on the other hand, the sentences seem to have one less phrase, in that a (second) simple NP takes the place of the PP containing a P plus NP. Nevertheless, the sentences in (3) still qualify as close paraphrases of those in (2) and good translations of those in (1). In fact, they stand in what I have called the 'thematic paraphrase' relation; corresponding elements receive the same thematic roles in each case. Thus, the morphologically complex verbs in (3) are another example of a single word 'doing the work' of two words, but this time it is the work of a verb and a preposition that is done.[1]

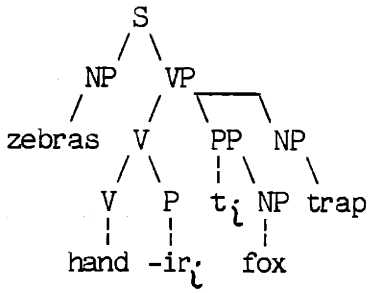
In many ways, this set of examples is parallel to those considered in the previous chapters, and the guiding assumptions of Chapter 1 point us in the same direction here. Thus, since (for example) (2a) and (3a) have the same theta role assignments, the Uniformity of Theta Assignment Hypothesis implies that the theta roles should be assigned in the same way at D-structure. Hence, (2a) and (3a) should have parallel D-structures, presumably something like (4):

(4)



I assume that in Chichewa, two different elements can fulfill the role of the preposition in assigning the goal thematic role to 'fox' in this structure: kwa and -ir. Kwa is a standard preposition; if it is inserted, nothing much need happen to the structure, and (2a) surfaces. -Ir, however, is an affix, and hence moves to attach to a verb root. In particular, given the Stray Affix Filter (3.2 (36)), it must move in the syntax, so that it will be affixed by S-structure. Then the Projection Principle implies that thematically relevant structure must be preserved throughout the derivation. Since -ir is involved in assigning 'fox' its thematic role, it must leave a trace when it moves to preserve this relation. Thus the S-structure of (3a) must have the form:

(5)



The preliminary conclusion is that Preposition Incorporation (PI) structures do indeed exist along side of Noun Incorporation and Verb Incorporation structures, and sentences like those in (3) are

instantiations of this option allowed by Universal Grammar.

In comparing the pattern in (1)-(3) with the patterns used to initially motivate Noun Incorporation (ch. 2, (1)-(3)) and Verb Incorporation (ch. 3, (1)-(3)), we notice one potentially significant difference. In Chichewa, there is no morphological relationship between the independent preposition which shows up in (2) and the prepositional incorporate which shows up in (3). This is unlike the cases of Noun Incorporation and some of the cases of Verb incorporation cited, in which the same root was clearly recognizable in both types of structures. This issue is familiar from section 3.2, however; it is simply a reflection of the fact that the prepositional element is morphologically an affix, rather than a full root. As such, in addition to the normal features of a preposition, it has a morphological subcategorization feature, expressing the fact that it must be bound to a verb. Therefore it does not have the option of staying in place as a root would have, and no direct alternation is observable. In this way, this case is more directly comparable to the antipassive subcase of Noun Incorporation than to full compounding cases of Noun Incorporation. In fact, Preposition Incorporation generally counts as morphological affixation rather than as morphological compounding.[2]

This situation implies that the minimal alternation between (2) and (3) in Chichewa is a byproduct of the fact that Chichewa happens two include to prepositional items--one an affix, the other not--which happen to overlap in the set of theta roles they can assign. Of course, this need not be the case. If a language has only one of the two types of lexical items, then only one of the two structure types will appear in that language. Many familiar European languages, including English,[3] French and Italian,

contain only the independent preposition, and thus allow no general analogue of (3). On the other hand, some languages apparently have only the prepositional affix, and thus have analogues of (3) but not of (2). One such language is Tzotzil, a Mayan language of Mexico, as described by Aissen (1983):

(6) a. ?I-Ø-h-čon li čitome
asp-A3-E1-sell the pig
'I sold the pig(s)'

b. ?I-Ø-h-čon-be čitom li Šune
asp-A3-E1-sell-to pig the Sun
'I sold (the) pigs to Sun'

(6a) is an ordinary transitive structure, with the agent argument and the theme argument expressed, the latter being the direct object of the structure. In (6b), the optional dative/goal argument is expressed. It itself shows up as an unmarked object-like NP, but when it is included, the morpheme -be must appear on the verb. Thus, Tzotzil has structures like Chichewa's (3), implying that the morpheme -be is a prepositional element that is generated along with the goal and then incorporates into the verb. -be is clearly an affix, and thus incorporation is obligatory; indeed there is no way that the goal can appear as a PP or oblique constituent of some kind, either with -be or some other morpheme. Tzotzil, then, is the case complementary to English and Italian.

What I have been calling Preposition Incorporation structures such as (3) and (6b) have traditionally been known as 'applicative' structures, or as sentences in the 'dative' voice ('instrumental voice', 'locative voice', etc.). Much rich information about the properties of such structures in a variety of languages is available in the Relational Grammar literature, usually under the names of '3-to-2 Advancement' or 'Oblique-to-2

Advancement'.[4] In fact, as these names imply, the argument that is thematically related to the prepositional element does come to act like the direct object in both Chichewa and Tzotzil (see section 4.2); thus these are cases of the GF changing process called 'applicative' in section 1.1.2. I will show that this GF changing process is fully reducible to P Incorporation. Nor is the idea of analyzing applicative constructions as cases of combining underlyingly separate verbs and prepositions in the syntax a novel one: important work by Marantz (1982, 1984) argues at length for such an analysis in terms of a framework with assumptions similar in many ways to those of the present work. Thus, he requires that the verb and the applied affix (=P) be separate constituents in underlying syntactic structure and states that the two 'merge' in the syntax, a process driven by the prepositional element's morphological status as an affix. Nevertheless, there are two important differences between Marantz's approach and mine. The first is in the nature of the principles that govern the combination of the two elements and thereby determining the properties of the result: for Marantz, a particular mapping principle including a special 'merger' relation is involved, with morphological feature percolation (in the sense of Lieber (1980)) playing a prominent role; for me the relevant principles are the Empty Category Principle, the Case Filter, and the definition of government as they apply to X-o movement. The second, crucial difference is that I assume a stronger, more rigid Projection Principle than does Marantz. This forces there to be a trace of the prepositional affix, which has no counterpart in Marantz's analysis. This chapter will endeavor to develop and defend a Preposition Incorporation analysis of applicative constructions in general, and in particular the version of such an analysis that is implicated by the

principles of Government-Binding theory as developed here.

4.1 Syntactic Preposition Incorporation and the ECP

In earlier chapters, we have seen that the distribution of Incorporation processes can be explained in terms of the Empty Category Principle as it applies to the trace of the moved X-o. In this domain, the ECP reduces to the constraint that an X-o can only move as far as adjoining to the lexical head which directly governs it, so that the X-o will be close enough to antecedent govern its trace--a generalization that I have referred to as the 'Head Movement Constraint' (HMC, following Travis 1984). In this section, I will present evidence that Preposition Incorporation respects this same constraint, thereby explaining facts about the distribution and range of applicative constructions across languages. Since the ECP is a syntactic principle, this will confirm the hypothesis that applicative constructions are in fact derived syntactically. Furthermore, since Noun Incorporation and Verb Incorporation are known to obey exactly the same constraint, this approach uncovers a deep similarity between Noun Incorporation, causative formation, and applicative constructions; they all fall under of the theory of X-o movement. Showing that PI obeys the HMC will be complicated somewhat, however, by the fact that the role of Prepositions in assigning thematic roles and Case remains rather murky in current linguistic work, as compared to the better understood properties of Verbs and Nouns. My assumptions about these matters will be developed and made explicit along the way.

4.1.1 Basic consequences

Perhaps the one kind of PP which is universally acknowledged as being subcategorized by the verb is the goal PP in 'dative' constructions such as those illustrated in (7):

(7) a. Linda threw the frisbee to Joe

b. I handed my exam booklet to the teaching assistant

c. Jerry gave a bracelet to his girlfriend

One reason for the solidity and uniformity of this assumption is that with a number of these verbs it is ungrammatical or at best elliptical to omit this dative PP. Thus:

(8) a. *I handed my exam booklet.

b. ??Jerry gave a bracelet.

Furthermore, dative to phrases cannot be freely added onto any verb one may like:

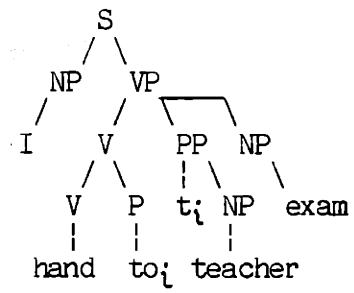
(9) a. ?*Kim beat her roomate to Brent out of anger.

b. *Don carved a figurine to Betsy yesterday.

Thus, it is fairly clear that verbs must be strictly subcategorized for the presence or absence of this type of PP in the sense of Chomsky (1965). In the system of Government-Binding Theory, there is a tight connection between subcategorization and theta role assignment, such that any argument that the verb subcategorizes for it must also assign a thematic role to (Chomsky (1981)). In particular, PPs such as those in (7) must be theta

marked by the verb that governs them. Assuming that all of this reasoning is grounded in semantic considerations that generalize to other languages, we expect that prepositions of this type should be able to incorporate in languages whose morphological properties sanction such a move. The derived structure would have the form:

(10)



Here, the moved prepositional element c-commands its trace. Moreover, the PP it is moved from is theta indexed with the verb, and thus not a barrier to government between that structural position and the position of the trace. Hence, the trace of the preposition is governed by its antecedent, satisfying ECP. Therefore, Preposition Incorporation is possible with this class of PPs. The facts bear this out: 'dative' applicative constructions are perhaps the most common and syntactically regular class across languages. The examples from Chichewa and Tzotzil in the introduction to this chapter are of this type (repeated here for purposes of comparison):

CHICHEWA:
(11) a. Ndi-na-tumiz-a chipanda cha mowa kwa mfumu
1sS-past-send-asp calabash of beer to chief
'I sent a calabash of beer to the chief'

b. Ndi-na-tumiz-ir-a mfumu chipanda cha mowa
1sS-past-send-'to'-asp chief calabash of beer
'I sent the chief a calabash of beer'

TZOTZIL:
(12) a. ?I-Ø-h-čon li čitome
asp-A3-E1-sell the pig

'I sold the pig(s)'

b. ?I-Ø-h-čon-be čitom li Šune
asp-A3-E1-sell-to pig the Sun
'I sold (the) pigs to Sun'

The same process can be illustrated in many other languages. (13)-(15) show examples languages that demonstrate the existence of such a construction in a variety of typologically very different languages. These languages will be appealed to later on in determining in detail the properties of Preposition Incorporation and its interaction with other processes:[5]

CHAMORRO: (Austronesian, from Gibson (1980))
(13) a. Hu tugi' i kätta pära i che'lu'-hu
1sS write the letter to the sibling-my
'I wrote the letter to my brother'

b. Hu tugi'-i i che'lu-hu ni kätta
1sS write-to the sibling-my obl letter
'I wrote my brother the letter'

BAHASA INDONESIA: (Chung (1976))
(14) a. Saja mem-bawa surat itu kepada Ali
I trans-bring letter the to Ali
'I brought the letter to Ali'

b. Saja mem-bawa-kan Ali surat itu
I trans-bring-to Ali letter the
'I brought Ali the letter'

TUSCARORA: (Iroquoian, Williams (1976:86))
(15) a. wa?-t-k-nv?θ
aor-du-1sS/3N-write
'I wrote it'

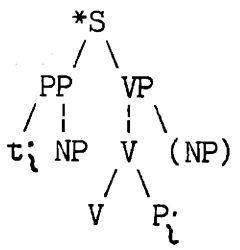
b. yah-wa?-t-khe-nv?θ-v-?
tl-aor-du-1sS/3F-write-to-punc
'I wrote [it] to him'

Similar examples exist in Huichol (Uto-Aztecan, Comrie 1982), the other Iroquoian languages, and Bantu languages.

The Head Movement Constraint also determines where Incorporation cannot

take place. We have seen that Incorporation, although allowed within the VP, is blocked from the subject position, because the incorporated X-o will not c-command its trace, leaving it not properly governed. The same is predicted to be true of Preposition Incorporation. Hence, a structure like (16) is impossible:

(16)



In fact, this seems true: I know of no plausible or proposed cases of P Incorporation from a subject position. However, this fact is not particularly telling in and of itself, since PPs are rare or impossible in the subject position across languages in the first place. Thus, the type of base structure from which (16) would potentially be derived will in general not be generated in the first place. In this way, PPs appear to differ from NPs and S's which can appear freely in the subject position. Therefore, the predictions derived by blocking P Incorporation from the subject position by the HMC (ECP) are empirically true, but vacuously so.[6]

Of more empirical bite is the prediction of the HMC that P Incorporation cannot take place out of embedded structures. A more or less likely candidate for what such a construction might look like is illustrated in (17):

(17) a. The goats [VP ate [NP the letter [PP to Britta]]]

b. (*)The goats [VP ate-to$_i$ [NP the letter [PP t_i Britta]]]

Such a structure, while perfectly immaginable, is predicted to be impossible by the P Incorporation theory. In particular, the head noun 'letter' will intervene as a closer governer, thereby blocking government between the trace of the P and its antecedent on the matrix verb. Hence, the structure will be ruled out by ECP. Strictly on the basis of lexical and morphological properties, the 'potential' structure in (17b) could be an actual structure in Chichewa. Nevertheless, the result is ungrammatical:[7]

(18) a. mbuzi zi-na-dy-a [kalata [kwa Mavuto]]
goats SP-past-eat-asp letter to Mavuto
'The goats ate the letter to Mavuto'

b. *mbuzi zi-na-dy-er-a [kalata [t Mavuto]]
goats SP-past-eat-to-asp letter Mavuto
'The goats ate the letter to Mavuto'
(OK as 'The goats ate Mavuto for the letter'!)

To the best of my knowledge, no sentence similar to (17b) or (18b) has been attested. Thus, here the theory of incorporation makes a correct and nonredundant empirical prediction about the class of possible applicative constructions. Furthermore, it relates the impossibility of these examples to both the impossibility of preposition stranding in Noun Incorporation and the impossibility of direct Verb Incorporation from an embedded clause. The abstract structures involved would be:

(19) a. *...V+Pi...[N [ti...]]

b. *...Ni+V...[P [ti...]]

c. *...Vi+V...[COMP [...ti...]]

In all these cases, a 'closer governor' blocks government between the X-o trace and its antecedent (technically, by making a thematic connection

between the two impossible), making the structures ungrammatical. In the case of (19a) and (19b), any such sentence is simply hopelessly ungrammatical (cf. 2.1.1); in the case of (19c), the evidence is strong but indirect. Thus, a superficially similar sentence can surface, but crucially only if the originally embedded verb moves to COMP before incorporating. This requirement then interacts with Case theory to predict a rich body of facts concerning the surface grammatical function behavior of NPs in causative verbs across languages (see section 3.3). Thus, Preposition Incorporation is seen to be the same as Noun Incorporation and Verb Incorporation in a deep way. Of course, arbitrarily more complex hypothetical incorporations involving deeper embedding could be generated, all of which will be impossible across all of the incorporable categories by this same reasoning. In this way, we derive a strong constraint on all morphosyntactic processes.

4.1.2 Incorporation and theta marking in PPs

The final consequence of the Head Movement Constraint is that incorporation of the head of a phrase used as an adjunct is impossible. The reason is that, by assumption, the verb is not theta indexed with such an adjunct, so that the maximal projection of the adjunct will be a barrier for government between the position of the verb and the head position inside the adjunct. Here matters become complicated, however, because it is not easy to tell which PPs are adjuncts, and which are actually arguments of the verb. In this subsection, I will explore these issues somewhat, arguing that the predictions of the HMC are true in this domain as well

Empirically, the situation seems to be as follows: applicative constructions are possible in which the NP thematically related to the applied affix bears one of the following semantic roles: dative/goal, benefactive/malefactive, instrumental, locative (of various types). This list is arranged roughly in order of decreasing commonness across languages, and productivity/syntactic regularity within a given language. Dative/goal PPs were taken to be theta marked uncontroversially, and have already been discussed. Benefactive/malefactive applicatives are (nearly) as common in languages of the world as the dative/goals, and are perhaps even more syntactically and semantically regular. Examples of these from my language sample are:

CHICHEWA: (Bantu)
(20) a. mlimi a-ku-dul-a mitengo
farmer SP-pres-cut-asp trees
'The farmer is cutting the trees'

b. mlimi a-ku-dul-ir-a nkhandwe mitengo
farmer SP-pres-cut-for-asp fox trees
'The farmer is cutting trees for the fox'

(21) a. amayi a-ku-umb-a mtsuko
woman SP-pres-mold-asp waterpot
'The woman is molding the waterpot'

b. amayi a-ku-umb-ir-a mwana mtsuko
woman SP-pres-mold-for-asp child waterpot
'The woman is molding the waterpot for the child'

KINYARWANDA: (Bantu, Kimenyi (1980))
(22) a. Umukoobwa a-ra-som-a igitabo
girl SP-pres-read-asp book
'The girl is reading the book'

b. Umukoobwa a-ra-som-er-a umuhuungu igitabo
girl SP-pres-read-for-asp boy book
'The girl is reading the book for the boy'

TZOTZIL: (Mayan, Aissen (1983))
(23) a. ?I-Ø-s-komɸan hun kampana y-u?un hč'ultottik San-torenso
asp-A3-E3-leave a bell agr-for holy-father San Lorenzo
'They left a bell for Our Holy Father St. Lawrence'

b. Č-a-h-mil-be-ik čih
asp-A2-E1-kill-for-2pl sheep
'I'll kill the sheep for you(pl)'

CHAMORRO: (Austronesian, Gibson (1980))
(24) a. Ha punu' si Miguel i babui para guahu
3sS-kill PN Miguel the pig for me
'Miguel killed the pig for me'

b. Ha punu'-i yu' si Miguel nu i babui
3sS-kill-for me PN Miguel obl the pig
'Miguel killed the pig for me'

BAHASA INDONESIAN: (Austronesian, Chung (1976))
(25) a. Mereka men-dapat suatu pekerdjaan untuk anak-ku
they trans-find a job for child-my
'They found a job for my daughter'

b. Mereka men-dapat-kan anak-ku suatu pekerdjaan
they trans-find-for child-my a job
'They found my daughter a job'

TUSCARORA: (Iroquoian, Williams (1976))
(26) a. ne-θ-rihw-ahk-θ
du-2sS-word-pickup-imp
'Sing!' (word-pickup = sing)

b. n-ak-rihw-ahk-v-θ
du-1sO-word-pickup-for-imp
'Sing for me!'

It is clear from these examples that benefactive applicative constructions are a robust phenomenon in languages of the world.[8]

Instrumental applicative constructions are as widespread linguistically as dative and benefactive applicative constructions are. In fact, all of the clearly productive examples that I know of are in African languages. Nevertheless, in the languages in which this construction appears, it can be highly regular and semantically transparent. Examples of this include:[9]

CHICHEWA: (Bantu, Mchombo)
(27) a. fisi a-na-dul-a chingwe ndi mpeni
hyena SP-past-cut-asp rope with knife
'The hyena cut the rope with a knife'

b. fisi a-na-dul-ir-a mpeni chingwe
hyena SP-past-cut-with-asp knife rope
'The hyena cut the rope with a knife'

(28) a. asilikali a-na-bay-a njovu ndi mikondo
soldiers SP-past-stab-asp elephants with spears
'The soldiers stabbed the elephants with spears'

b. asilikali a-na-bay-ir-a mikondo njovu
soldiers SP-past-stab-with-asp spears elephants
'The solders stabbed the elephants with spears'

KINYARWANDA: (Bantu, Kimenyi (1980))
(29) a. Umwaalimu a-ra-andik-a ibaruwa n'i-ikaramu
teacher SP-pres-write-asp letter with-pen
'The teacher is writing a letter with the pen'

b. Umwaalimu a-ra-andik-iish-a ibaruwa ikaramu
teacher SP-past-write-with-asp letter pen
'The teacher is writing a letter with the pen'

FULA: (Niger-Congo, Sylla (1979), cited in Marantz (1984))
(30) a. Aali taƒ-ii lekki
Aali cut-past tree
'Aali cut the tree'

b. Aali taƒ-r-ii lekki jammbere
Aali cut-with-past tree axe
'Aali cut the tree with an axe'

The fourth category of applicative constructions consists of those with NPs that have locative interpretations. In one sense, this class is more common than instrumental applicative constructions, in that many languages have a few verbs that appear in the relevant set of contexts. In most, however, this type of alternation is limited and idiosyncratic. Chamorro has a few examples of this type (Gibson 1980):

(31) a. Mata'chung si Jose gi edyu na siya
sit PN Jose loc that lk chair
'Jose sat on that chair'

b. Ha fata'chung-i si Jose edyu na siya
3sS-sit-'on' PN Jose that lk chair
'Jose sat on that chair'

However, given the apparent lack of generality of this process in these

languages, it is not clear that a syntactic analysis relationships like (31) in terms of Preposition Incorporation is either necessary or appropriate. Instead, the affix -i in (31b) could be serving as derivational affix that attaches to the verb in the lexicon. On this use, the affix makes the verb transitive, but not with a predictable semantics.[10] There is at least one language, however, which is described as having productive and regular locative applicative constructions: namely the Bantu language Kinyarwanda as described in detail by Kimenyi (1980). His illustrative examples include the following:[11]

(32) a. Abaana b-iica-ye ku meeza
children SP-sit-asp on table
'The children are sitting on the table'

b. Abaana b-iica-ye-ho ameeza
children SP-sit-asp-on table
'The children are sitting on the table'

(33) a. Umwaana y-a-taa-ye igitabo mu maazi
child SP-past-throw-asp book in water
'The child has thrown the book into the water'

b. Umwaana y-a-taa-ye-mo amaazi igitabo
child SP-past-throw-asp-in water book
'The child has thrown the book into the water'

(34) a. Umugore y-oohere-je umubooyi kw'-iisoko
woman SP-send-asp cook to market
'The woman sent the cook to the market'

b. Umugore y-oohere-je-ho isoko umbooyi
woman SP-send-asp-to market cook
'The woman sent the cook to the market'

Kinyarwanda, however, is the only case that I know of with true and clear locative applicative constructions.[12]

This range of data raises a question: is the prediction (based on the ECP) that Ps can only be incorporated out of an argument PP and not out of

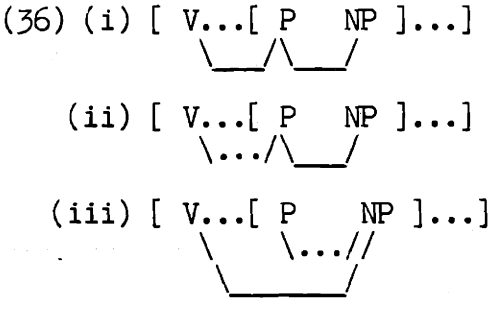
an adjunct PP confirmed or falsified by this pattern of facts? The answer depends on when a PP is an argument of the verb (perhaps an 'optional argument') and when it is simply an adjunct. Marantz (1984) assumes that phrases such as benefactives and instrumentals are adjunct modifiers of the verb phrase, rather than arguments of the verb. This is based on the fact that verbs do not seem to strictly subcategorize for benefactive or instrumental phrases in the same way that they do for certain goal phrases (see (7)-(9) above); no verbs require them, and it is not clear that any verbs forbid them either. If Marantz's assumption in this respect is correct, these cases are counterexamples to the P Incorporation theory. In Marantz's (1984) framework, it is possible to 'merge' (in his technical sense) the head of an adjunct ('modifier') phrase with the head of the main predicate; in this sense, his theory of merger is weaker than the theory of incorporation developed here.[13] However, it does not necessarily follow from the theory that just because benefactive and instrumental phrases are never obligatory that they are not theta marked by the verb when they do appear. Some clarification of the issues is needed here.

According to standard GB assumptions, there are three possible ways that theta marking could work in a structure superficially of the form:

(35) $[_{VP}...V...[_{PP}$ P NP$]...]$, where VP immediately dominates PP

Given the Theta Criterion, I assume that the NP in this structure must receive one and only one theta role, since it is used in a referential sense. One way that this could happen is that the P could directly theta mark the NP under sisterhood, as usual. The question then is what is the status of the PP itself. Here, there are two possibilities: (i) the verb

could theta mark the PP as a whole, (ii) or the verb could not theta mark the PP. In the latter case, the PP is an adjunct of some kind, which is potentially evaluated together with the V(P) at LF, but in a different way from true arguments of the V. A third possibility (iii) is that the V directly theta marks the NP, and the preposition is simply a 'spelling out' (or 'realization' in the sense of Chomsky (1984)) of either this thematic assignment or the corresponding semantic Case assignment. In this situation, the node labeled 'PP' in (35) might, in some languages, actually be an NP headed by the theta marked NP instead. These theta-assigning scenarios can be schematized as in (36), where links represent theta marking relationships, and dotted links represent secondary relationships:



Both scenario (i) and scenario (iii) are plausible theoretical reconstructions of what researchers may mean when they say that the verb and the preposition 'theta mark the NP compositionally', since both the V and P are actively involved in determining (and/or representing) the NP's ultimate theta role. Moreover, if a given verb and preposition combination has the properties of either (i) or (iii), PI will be allowed, since the verb theta marks the category labeled 'PP' in (35); therefore that category will not be a barrier to government from the V position. On the other hand, if the V-P combination has the properties of (ii), incorporation will

be impossible, blocked by the unindexed PP node. For the time being, I will abstract away from the conceptual difference between (i) and (iii), assuming for convenience that only scenario (i) exists.[14] My task, then, is to give independent reasons why benefactives, instrumentals, and at least some locatives have the thematic marking structure of (39i) rather than (39ii).

One reason for preferring structure (39i) is based on semantic intuitions as to what factors the exact semantic role of the NP in question depends on. Thus, it seems that the reading of the NP in this class of cases is determined by <u>both</u> the specific prepositional element and the specific verb involved. Consider first what I have been calling the 'benefactive' applicatives in Chichewa. The benefactive applied affix certainly narrows the range of interpretations of its associated NP drastically, giving it the element of meaning that can be characterized roughly as 'person who the actor intends to be affected by the action.' However, the specific interpretation within this general space can be determined by the particular verb involved. Consider the following examples:

(37) a. mtsikana a-na-phik-ir-a ana nsima
girl SP-past-cook-'appl'-asp children cornmeal
'The girl cooked cornmeal for the children'

b. kambuku a-na-b-er-a mkango njinga
leopard SP-past-steal-asp lion bicycle
'The leopard stole the bicycle from the lion'

(38) a. atsikana a-na-vin-ir-a mfumu
girls SP-past-dance-'appl'-asp chief
'The girls danced for the chief'

b. ndi-na-yend-ir-a kalulu
1sS-past-walk-'appl'-asp hare
'I walked for the hare'

(37a) is the classical (and most common) benefactive interpretation: the natural reading is that the woman is cooking for the children's benefit. In addition, the 'children' are a kind of goal, in that they will receive the cornmeal when it is done. If, however, the verb has negative content in some sense, the interpretation can invert, such that the associated NP is adversely rather than positively affected by the action. This is illustrated with the verb 'steal' in (37b); here also the affected NP 'lion' is the source of the bicycle rather than its goal.[15] There is a more subtle difference in interpretation between (38a) and (38b). Here both correspond to benefactives in English, but they have readings that do not coincide. The normal interpretation of (38a) is that the dancing takes place so that the chief can watch and enjoy it. (38b), on the other hand, does not have such a reading. Instead of meaning that I walk because I think that the hare will enjoy watching me do so; it means that I walk because the hare is responsible for walking for some reason, and I fulfill that responsibility for him--in other words, I walk in his place. Thus, the exact interpretation of the 'benefactive' NP is a function of both the verb and the prepositional affix in a rather strong way.[16]

Marantz ((1984), also citing Dick Carter) makes a similar point with respect to instrumental phrases. Clearly, an instrumental preposition such as <u>with</u> narrows the class of interpretation of its associated NP greatly, focusing it down to something like 'inanimate tool used by the actor in performing the action'. Nevertheless, as Marantz puts it (1984:246):

> ...The class of roles usually called instrumentals includes widely varying roles. Which member of this class a given instrumental NP will bear depends on the verb producing the predicate with which the instrumental is associated.

Two of Marantz's examples illustrating this point are:

(39) a. Elmer unlocked the porcupine cage with a key.

b. Elmer examined the inscription with the magnifying glass.

Marantz points out that a key in (39a) is an intermediary agent in the act of unlocking the porcupine cage, in that Elmer does something to the key such that the key does something to the cage, such that the cage unlocks. In contrast, the magnifying glass in (39b) certainly refers to a tool used in the action, but one which does not contact or affect the the inscription in any way. Marantz terms this class 'facilitating' instrumentals. He then points out that these differences among instrumentals have tangiable syntactic consequences: for example instruments such as those in (39a) can appear in subject position in English, whereas those in (39b) cannot:

(40) a. A key unlocked the porcupine cage.

b. #The magnifying glass examined the inscription.

Thus, the interpretation of instrumental NPs is also strongly a function of both the verb and the preposition.

The same type of argument holds for a certain subset of locative PPs. Consider the following paradigm:

(41) a. Carmel went in the room.

b. Carmel sat in the room.

c. Carmel ran in the room.

Here the phrase in the room has a significantly different meaning, depending on the verb that governs it. Thus in (41a), it names a path of motion: Carmel must have actually crossed the threshold. In (41b),

however, the same phrase describes not a path, but a pure location where the sitting takes place. In particular, the threshold of the room is not implicated in any way in (41b). Finally, (41c) is ambiguous between these two types of readings; it can mean either that Carmel went into the room by running (path reading), or that Carmel was running around in circles in the middle of the room (pure location reading). The range of possible readings is determined in each case by the nature of the verb. On the other hand, it is clear that the preposition in makes its semantic contribution in a way that is somehow common to all of these cases, by defining a particular space relative to the object mentioned by the NP the room. Change the preposition, and the meanings of these sentences change in systematic ways. Moreover, some verbs do subcategorize for locative phrases. Thus, the following are elliptical or ungrammatical without some such phrase:

(42) a. The snake went ??(down his hole).

b. Joe put the tambourine *(in his backpack) before leaving.

Assuming again with Chomsky (1981) that subcategorization implies theta role assignment, the verb must assign a theta role to PPs like these. Thus, an extra argument is available for this analysis of (some) locatives.

In each of these cases, we have found that the ultimate semantic role of the NP in structures like (35) depends both on lexical properties of the particular preposition and on lexical properties of the particular verb that appears. In fact, the semantic judgments can be adequately described by saying that the P determines a certain range of interpretations that the NP can have, and the V may further limit that range. Assuming that the theta role assignments of a structure represent in some sense the

compositional semantic dependencies, I claim that the theta structure in (36i) best represents these facts: for benefactives, instrumentals, and some locatives, the P theta marks the NP and the V theta marks the resulting PP. Finally, the Empty Category Principle can be used to confirm this hypothesis. The ECP states in essence that every empty category, and in particular the trace left by wh-movement, must be governed either by something that assigns it a theta role, or by its antecedent.[17] This principle then can be used as a test to see whether a given phrase is theta-marked or not: simply move the phrase far enough so that there is no possibility that the antecedent governs the trace. Then, proper government can only be satisfied because of the presence of a theta-marker. If the structure is grammatical, the phrase must have been theta marked; if it is ungrammatical, it must not have been theta marked (Huang (1982), Lasnik and Saito (1984)). Thus, consider the following contrast:

(43) a. I didn't remember to fix [the car] [by adjusting the spark plugs].

b. Which car$_i$ do you remember how$_j$ to fix t_i t_j?

c. *How$_j$ do you remember which car$_i$ to fix t_i t_j?

In (43a), there are two elements in the lower VP which can be questioned--the direct object and the manner adverbial. There are also two COMP position which wh-words can land in--that of the lower clause, and that of the higher clause. If the object is moved to the farther COMP and the manner adverb to the nearer one, as in (43b), the result is quite good (at most a very mild subjacency violation). If, however, the manner adverb is moved to the higher clause and the object to the lower one, the result is virtually uninterpretable (43c) (under the desired reading, where <u>how</u>

goes with the lower verb). This difference is explained in terms of the ECP: the manner adverb is not theta-marked, so its trace must be governed by a local antecedent, which it is not when how undergoes long movement as in (43c). On the other hand, (43b) is acceptable because how stays close enough to its trace to antecedent-govern it, while which car may undergo long movement since its trace, as a direct object, is theta-marked by the verb.

The question then becomes the following: do benefactive, instrumental, and locative PPs show the free movement behavior of theta marked direct objects, or the restricted movement behavior of nontheta marked adverbials? The relevant data is:

BENEFACTIVE:
(44) a. I know to bake a good cake [for my friends] [by whipping the eggwhites vigorously].

b. ?For which of your friends do you know how to bake a cake (that they will enjoy)?

c. *How do you know for which friends to bake a cake (that they will enjoy)?

INSTRUMENTAL:
(45) a. I always forget to open doors [with this key] [by flicking my wrist].

b. (?)With which key do you always forget how to open doors?

c. *How do you always forget with which key to open doors?

LOCATIVE:
(46) a. I know to sit [in that chair] comfortably [by keeping my back straight].

b. In which chair do you know how to sit comfortably?

c. *How do you know in which chair to sit comfortably?

The situation is quite clear: in each case the long movement of the PP in question is at worst slightly odd, as seen in the (b) sentences. In

particular, there is a clear contrast with the (c) sentences, which are minimal pairs showing the standard ECP effect of long-extracting an adjunct phrase. If the (c) sentences are ECP violations, we are led to the conclusion that the (b) sentences are not. This implies that the traces of the PPs are in fact properly governed. Their antecedents are too far away to serve this function, so the necessary conclusion is that they are properly governed by the embedded verb. This implies that they are theta marked by the lower verb.

To summarize, we have seen that two independent types of evidence--semantic selection/determination, and wh-movement in English--converge on the fact that benefactive, instrumental, and certain locative phrases are theta marked by the nearby verb.[18] Assuming that this conclusion has cross-linguistic validity, it follows that the PP node dominating such phrases will not be a barrier to government between the verb position and the head of the PP. Thus, Preposition Incorporation should be grammatical in these cases in languages which have the appropriate lexical items. In other words, the range of applicative constructions laid out in examples (20)-(34) provides strong evidence for a PI theory of applicative constructions, rather than counterexamples to such a theory. Typical examples of this process are repeated here, with an indication of their true S-structures:

(47) a. BENEFACTIVE: (Chichewa)
mlimi [VP a-ku-dul-ir$_i$-a [PP t_i [NP nkhandwe]] mitengo]
farmer cut-for fox trees
'The farmer is cutting trees for the fox'

b. INSTRUMENTAL: (Chichewa)
fisi [VP a-na-dul-ir$_i$-a [PP t_i [NP mpeni]] chingwe]
hyena cut-with knife rope

'The hyena cut the rope with a knife'

c. LOCATIVE: (Kinyarwanda)
Umwaana [VP y-a-taa-ye-mo$_i$ [PP t_i [NP amaazi]]] igitabo]
child throw in water book
'The child has thrown the book into the water'

Finally, there is the question whether this analysis applies to all PPs or not. In other words, are there PPs which are truly adjuncts, not theta marked by a verb? I claim that there are. The minimal contrast is within the class of locative PPs. I have argued that some locatives are theta marked by the verb, but not that all are. In fact, there is a classical linguistic distinction between argument locatives, some times called 'inner locatives' and adjunct or 'outer' locatives Hornstein and Weinberg ((1981:88), cf. also Chomsky (1965)) illusrate the difference between the two with the following examples:

(48) a. I slept in the bed.

b. I slept in New York.

Here it is claimed that in the bed is a(n optional) theta marked complement of the verb, while in New York is a locative adjunct of the kind that can be added to any verb phrase in English.[19] Hornstein and Weinberg go on to point out that there are some clear differences in syntactic behavior between the two types of locatives. For example, Preposition stranding is fine with argument locatives, but impossible with adjunct locatives:

(49) a. I slept in my bed in New York.

b. Which bed did you sleep in in New York?

c. ?*Which city did you sleep in your bed in?

This then is one class of PPs which are not theta marked by the verb. The

theory of Incorporation then predicts that Preposition Incorporation should be impossible with these 'outer locatives', just as incorporating N out of NP adjuncts or V out of S' adjuncts is impossible. This seems to be true. Thus, consider the following contrast in Kinyarwanda (Kimenyi 1980):

(50) a. Abaana b-iica-ye ku meeza
children SP-sit-asp on table
'The children are sitting on the table.'

b. Abaana b-iica-ye-ho ameeza
children SP-sit-asp-on table
'The children are sitting on the table.'

(51) a. Abaana b-iica-ye ku musozi
children SP-sit-asp on mountain
'The children are sitting on (the top of) the mountain'

b. *Abaana b-iica-ye-ho musozi
children SP-sit-asp-on mountain
'The children are sitting on the mountain'

The difference between (50a) and (51a) is directly parallel to the difference between (48a) and (48b); the first contains a locative argument, and the second contains a locative adjunct. The prepositional element can incorporate out in the first case, but not in the second, exactly as predicted. More generally, all of Kimenyi's examples of locative applicative constructions are perfectly consistent with an interpretation in which they are 'inner' locatives (for typical examples, see (32)-(34) above). Under standard assumptions, other types of adverbial adjunct PPs include most temporal phrases (e.g. 'on Monday', 'for two weeks'), manner phrases (e.g. 'in a bold way'), and 'reason' phrases (e.g. 'for a cheap thrill'). In general, the head prepositions of phrases like these cannot be incorporated to form an applicative construction as well.[20] If this is a true generalization (but see fn. 20), then the Incorporation system is superior to Marantz's (1984) Merger account of applicatives; as noted

above, merger can take place from adjuncts in general in his system, so that there is no obvious way to capture the distinction between possible and impossible applicative constructions.

In conclusion, I have shown that Preposition Incorporation does show the evidence of being governed by the Empty Category Principle that we expect--it is possible from arguments, but impossible from subjects and adjuncts. In this way, the range of cross linguistic variation in so called 'applicative' constructions is accounted for in an explanatory way. Moreover, I have extended the Generative-Semantics-like generalization about 'predicate raising' (discussed in section 3.1) to include prepositions as well as nouns and verbs: all may, under the right circumstances, incorporate into a higher predicate, and this Incorporation relation has the same configurational properties in each case.[21]

4.2 Preposition Incorporation, Case, and Government

The focus of the last section was on the range and distribution of possible applicative constructions, and how these properties can be explained in terms of a Preposition Incorporation analysis. In this section, I will turn to the consideration of the syntactic characteristics of applicative constructions which do in fact exist. As we will see, these properties too are readily explicable in terms of the principles of grammar relevant to X-o movement, as they have been developed in previous chapters. In this section, I will focus on data from dative and benefactive applicative constructions, since these are the most common and

well-described cross-linguistically.

4.2.1 The objects of PI (Marantz's generalization)

In his ground-breaking work on applicative constructions, Alec Marantz (1982, 1984) reveals a fundamental property of their syntax: whenever a verb appears with both extra morphology and with an additional NP argument bearing some kind of oblique thematic role (a pretheoretical characterization of applicatives), that additional NP argument will behave in many ways like the surface direct object of the complex verb. In fact, if the verb root itself normally takes an NP object, the 'applied object' (i.e. the added, oblique role NP) will show more behavior characteristic of 'simple' direct objects than that 'basic object' will, even if both are marked the same superficially.[22] This generalization holds true over a very large number of languages, and characterizes how word order, morphological case marking, verbal agreement, and passivization work in such languages (as wel other similar phenomona).

This can be demonstrated easily in Chichewa. Direct objects are normally immediately post verbal in this language. Furthermore, they may optionally trigger object agreement, they may 'pro-drop', and may become the subject of a passive verb. Illustrations of these properties are:

(52) a. mikango yanu i-na-thamangits-a mbuzi zathu
lions your SP-past-chase-asp goats our
'Your lions chased our goats.'

b. mikango yanu i-na-zi-thamangits-a mbuzi zathu
lions your SP-past-OP-chase-asp goats our
'Your lions chased our goats'

c. mikango yanu i-na-zi-thamangits-a
lions your SP-past-OP-chase-asp

'Your lions chased them (the goats)'

d. mbuzi zathu zi-na-thamangits-idw-a (ndi mikango yanu)
goats our SP-past-chase-pass-asp by lions your
'Our goats were chased (by your lions).'

In a benefactive applicative construction, however, these relationships change: it is the NP with the benefactive role has these properties. For example, it is the benefactive which preferentially appears in the position immediately after the verb, taking priority over the basic object:[23]

(53) a. amayi a-ku-umb-ir-a mwana mtsuko
woman SP-pres-mold-for-asp child waterpot
'The woman is molding the waterpot for the child'

b. ??amayi a-ku-umb-ir-a mtsuko mwana
woman SP-pres-mold-for-asp waterpot child
'The woman is molding the waterpot for the child'

Furthermore, the benefactive may trigger object agreement, and, if it does, it may optionally 'pro-drop', so that it is phonologically null:

(54) a. amayi a-ku-mu-umb-ir-a mtsuko mwana
woman SP-pres-OP-mold-for-asp waterpot child
'The woman is molding the waterpot for the child'

b. amayi a-ku-mu-umb-ir-a mtsuko
woman SP-pres-OP-mold-for-asp waterpot
'The woman is molding the waterpot for him'

Interestingly, when a benefactive applied object is present, the basic object can no longer do these things:

(55) a. *amayi a-na-i-umb-ir-a mwana mtsuko
woman SP-past-OP-mold-for-asp child waterpot
'The woman is molding the waterpot for the child'

b. *amayi a-na-i-umb-ir-a mwana
woman SP-past-OP-mold-for-asp child
'The woman is molding it for the child'

Finally, the benefactive applied object becomes the subject of the clause

when the verb is passive:

(56) a. kalulu a-na-gul-ir-a mbidzi nsapato
hare SP-past-buy-for-asp zebras shoes
'The hare bought shoes for the zebras.'

b. mbidzi zi-na-gul-ir-idw-a nsapato (ndi kalulu)
zebras SP-past-buy-for-pass-asp shoes by hare
'The zebras were bought shoes by the hare'

Again, the basic object loses the ability to become the subject of a passive in the presence of a benefactive:

(57) *nsapato zi-na-gul-ir-idw-a mbidzi (ndi kalulu)
shoes SP-past-buy-for-pass-asp zebras by hare
'Shoes were bought for the zebras by the hare.'

These properties of Chichewa are duplicated in other Bantu languages such as Chimwiini (Kisseberth and Abasheikh (1977)) and Swahili (Vitale (1981)) (see section 4.2.4.1 for Kinyarwanda).

A similar pattern of facts shows up in other languages with applicative constructions. Compare the Chamorro (Austronesian, Gibson 1980) sentences in (58), where the (a) sentence is in an underived form, and the (b) sentence is its applicative counterpart:

(58) a. Hu tugi' i katta para i che'lu-hu
1sS-write the letter to the sibling-my
'I wrote the letter to my brother'

b. Hu tugi'-i i che'lu-hu ni katta
1sS-write-to the sibling-my obl letter
'I wrote my brother the letter'

In (58b), the dative phrase 'my brother' lacks the preposition it occurs with in a structure like (58a). This is expected, since this preposition has been incorporated into the verb, providing the source for the applied affix -i. This is not the only surface difference between (58a) and (58b),

however. The dative phrase also appears farther to the left relative to other sentential constituents in (58b), and it is in the unmarked morphological case typical of objects (and subjects) in Chamorro. In contrast, the basic object 'letter' has shifted to the right in (58b), and it is in the oblique case, having lost the the unmarked case which it had in the nonapplicative (58a). Moreover, structures like (58a) and (58b) can both be passivized, but with different effects:

(59) a. Ma-tugi' i kätta pära i che'lu-hu
pass-write the letter to the sibling-my
'The letter was written to my brother'

b. Man-ma-tugi'-i i mane'lu-hu ni kätta
plur-pass-write-to the siblings-my obl letter
'My brothers and sisters were written the letter'

In the passive of the nonapplicative verb (59a), the basic object becomes the subject of the sentence. In the passive of the applicative verb (59b), however, the basic object may not become the subject; rather the dative applied object 'siblings' becomes the subject. This is confirmed by the fact that 'siblings' in (59b) triggers the plural agreement morpheme man- which (roughly) only appears when there is a plural subject of an intransitive verb (Gibson (1980:25), cf. Baker (1985)). Again, in Chamorro the applied object supplants the basic object subcategorized by the verb with respect to this class of surface object properties.

The same situation arises in language after language: in Bahasa Indonesia (Austronesian) the applied object supplants the basic object with respect to the 'object properties' of appearing in the post verbal position, moving to subject in the passive, and it alone can be a reflexive (Chung (1976)); in Tzotzil (Mayan) it replaces the basic object for purposes of triggering (object) person agreement, number agreement, and movement to the subject of

a passive (Aissen (1983)); in Tuscarora (Iroquoian) it takes precedence over the basic object with respect to verbal agreement. And so on.

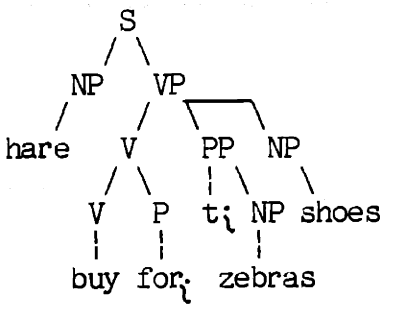
Relational Grammarians have captured this pattern of facts by writing grammatical relation changing rules. These derive (or sanction) applicative constructions by the operation of specific rules that take an oblique nominal of some kind and make it into the direct object of the clause. Thus, applicatives are usually described as 'Obl ---> 2 Advancement' in Relational Grammar work ('2' = direct object). As byproducts of this rule, the basic object automatically ceases to be a direct object, and the verb is marked with the applied affix. This describes the basic change in grammatical behavior of the NPs in an applicative construction as compared to a nonapplicative one. Marantz (1982, 1984), however, observes that there is an important generalization to be captured and explained in this area; applicative constructions always make the designated semantically oblique nominal into the direct object, rather than the subject or the indirect object, or some other kind of oblique phrase. Thus, I refer to this fact--that the NPs thematically related to the applicative morpheme always have direct object properties--as 'Marantz's Generalization'.[24]

Now, any adequate account of the syntax of applicative constructions must explain Marantz's Generalization, as it seems to be an observation central to the very nature of applicatives. It is an important virtue of the Preposition Incorporation analysis that this generalization can be immediately explained in terms of the principles that have already been developed independently. To see how this is so, consider a typical applicative construction, together with its associated S-structure under a

P Incorporation theory:

(60) a. kalulu a-na-gul-ir-a mbidzi nsapato
hare SP-past-buy-for-asp zebras shoes
'The hare bought shoes for the zebras.'

b.



I have assumed that the D-structure of a sentence like (60a) is parallel to that of its English gloss; in particular, the VP contains simply an NP which gets the theme theta role, and a PP which represents the benefactive, so that thematic assignments can be represented uniformly at D-structure. Then, on the way to S-structure, 'Move Alpha' applies, adjoining the head of the PP to the governing V and leaving a trace. As demonstrated in the last section, the existence of this trace (with the ECP) determines the distribution of PI cross-linguistically. Now, focus on the stranded NP complement of the incorporated P, 'zebras'. This NP is an argument receiving a thematic role (specifically 'beneficiary', from the P); therefore it must receive Case in order to be visible for theta role indexing.[25] In other words, it is subject to the Case Filter. Now, once the preposition has moved, this NP cannot receive Case from it Preposition once it has moved, since traces of X-o in general neither assign Case themselves, nor transmit Case from their antecedent. This assumption about Case assignment has been seen to be empirically necessary for both N Incorporation and V Incorporation, and I have related it theoretically to a

'morphological identification' perspective on the Case Filter (section 2.3.3 (99)). Thus, for an applicative sentence like (60a) to be grammatical, the stranded NP must get Case from some other category. The only other element in the structure that could do the job is the derived verb complex, 'buy-for'. Now, normally the main verb does not govern an NP embedded inside one of its PP arguments; the P acts as a closer theta role assigner, which blocks the government. However, the V+P verb complex does govern the benefactive NP 'zebras' in the post Incorporation structure by the Government Transparency Corollary (1.4.4).[26] Intuitively, the government-blocking 'closer governer' has moved, so that it is no longer closer. More technically, the V+P complex verb inherits the thematic indexes of each of its parts. In particular, it inherits from the P the thematic index of the stranded NP. Hence, the verb complex is now theta-indexed with the inner NP node, so that node is no longer a barrier to government between the V and the NP. Thus, the stranded NP needs to receive Case, and the complex V is a (potential) Case assigner which governs it. Therefore, it is both possible and necessary that the derived verb assign Case to the semantically oblique 'applied NP' at S-structure. Finally, I have assumed that no complex lexical category in a given language can assign more or different Case(s) than underived items of the same category can in that language (2.2.3 (103)). This too was related to the need to be 'morphologically identified' in order to receive a thematic role (see section 2.3.3). Underived verbs across languages generally assign one structural 'accusative' Case (of some kind), and not inherent (oblique) Case. Therefore, syntactically derived verbs must do the same. This implies that 'buy-for' in (60) can assign 'zebras' accusative Case inherited from 'buy', but not an oblique Case which could conceivably be

inherited from the incorporated prepostion 'for'. Thus, our principles taken together imply that the NP stranded by P-o movement may and must receive accusative Case from the derived verbal complex, which will govern it. Any other situation would violate the Case Filter.[27]

Now, in Government-Binding Theory, most of the properties which are traditionally called 'direct object' properties are in fact properties of that NP which is governed and assigned (structural) Case by the verb. In particular, essentially all of the direct object properties of the 'applied object' enumerated above are of this type. Thus, normal word order, verbal agreement, and morphological case are all manifestations of abstract Case assignment (i.e. all are 'morphological identifications') between the verb and the applied object. The ability for an argument to be 'pro-dropped' is also a result of its being governed by the verb, as well as being identified by verbal agreement morphology. Finally, I have assumed throughout that it is the NP which is governed by the Verb and which receives structural case from it which can become the subject when that verb is passivized. Therefore, we have explained why the 'applied object'--the NP that receives its thematic role from the incorporated preposition--always has all of these properties normally associated with direct objects.[28] In fact, oblique NPs become the surface objects of applied verbs in the same way that the stranded possessors become objects of Noun incorporated verbs in Southern Tiwa and the Iroquoian languages (2.2.2) and in the same way that thematic lower objects become the surface objects of causative verbs in many languages (3.3.3.3). In the relativized GF name terminology of section 1.3.3, all of these elements become 'Case and Government objects'. Marantz's Generalization about the syntax of

applicative constructions is thereby accounted for in the context of a more general theory of syntax.

4.2.2 PI and transitivity

An interesting result falls out from our derivation of Marantz's Generalization in the last section regarding the interaction of applicative formation and verb transitivity. Because of the interaction between X-o movement and Case theory, a grammatical applicative construction can only occur when the derived verb assigns accusative Case to the NP that was stranded by the movement of the preposition. In many instances, this is exactly what happens, and as a result, the 'applied object' acquires much of the behavior of a canonical direct object. This raises a new question however: where does the derived word get this ability to assign an accusative case in the first place?

I have been assuming that verbs are specified in the lexicon as to whether they can assign accusative case or not.[29] If a verb is specified as being a Case assigner in the lexicon, then it may assign accusative Case to an NP which it governs by virtue of that fact. However, in my system a derived 'applied verb' form is not (necessarily) listed in the lexicon at all; rather it is formed in the syntax as a result of (productive) Incorporation. Thus, it cannot be lexically associated with the ability to assign accusative Case. This ability must be sanctioned in a different way. The obvious explanation is that the derived word inherits this property from its component parts, component parts which will have lexical entries where they can be directly associated with Case assigning properties. This idea is in harmony with the more general one that

features of the subparts of a complex word derived by incorporation in the syntax are considered to be properties of the complex word as a whole. We have already seen this applied to 'identity indexes' and 'thematic indexes';[30] now we apply it to Case features (see also 2.3.3). Now, an applied verb is made up of a verb root (possibly itself complex), and a prepositional affix. As discussed in the last section, the prepositional affix will (because of its category) in general assign an oblique Case, which the complex word will not be able to inherit because of its category. Thus, the only way that the derived applied verb will be able to assign Case is by inheriting that ability from the verb root it is based on. If the verb root is lexically specified as being able to assign accusative Case, the applied verb will be allowed to assign accusative Case; if the verb root is not so specified, the applied verb will not be allowed to assign accusative Case. Now, as established in the last section, the applied object must receive Case from the derived applied verb, or it will violate the Case filter. Putting together these two statements, we derive the prediction that applicative constructions should not be possible when the verb that hosts the P Incorporation is not a Case assigner--the applied NP needs Case, but the governing applied verb has none to give it.

In fact, this prediction is confirmed in a rather spectacular way by the descriptions of applicative constructions in the literature. Chung (1976), for example, states that applicatives ('datives', in her terminology) in Bahasa Indonesian cannot be formed on verbs that do not have direct objects. Thus, she contrasts paradigms like the following:

(61) a. Mereka mem-bawa daging itu kepada dia
they trans-bring meat the to him
'They brought the meat to him'

b. Mereka mem-bawa-kan dia daging itu
they trans-bring-to him meat the
'They brought him the meat'

(62) a. Ajah saja menj-umbang kepada rumah sakit
father my trans-donate to house sick
'My father donated to the hospital'

b. *Ajah saja menj-unbang-kan rumah sakit
father my trans-donate-to house sick
'My father donated to the hospital'

The verbs bawa 'bring' and umbang 'donate' both take dative/goal PPs, as shown in (61a) and (62a) respectively. However, they differ in that 'bring' appears with a direct object, while 'donate' is used intransitively, with no direct object. This can be taken as an indication that 'donate' does not assign Case in this use. Now, the transitive verb appears in a corresponding applicative structure, as shown in (61b). This is impossible with the intransitive verb, however; sentences like (62b) are ungrammatical. This is exactly what we expect under the Preposition Incorporation analysis: once the prepositional affix has incorporated into the verb, the goal NP needs to receive case, and the intransitive based verb, unlike the transitively based one, has no Case to give it.

A similar situation occurs in Tzotzil (Mayan), according to the description of Aissen (1983). In this language, benefactive applicative constructions can be formed out of transitive structures quite regularly. For example:

(63) a. Mi mu š-a-sa?-b-on [tal ti bu batem] ti čihe
? neg asp-E2-look-for-A1 coming the where went the sheep
'Won't you bring the sheep for me from where they went?'

b. ?I-O-mil-be-ik čih
Asp-A3-E3-kill-for-3pl sheep

'They killed the sheep for him.'

However, basically intransitive verbs cannot undergo PI, such that the prepositional affix -be appears on the verb and the NP thematically related to it shows up as a direct object. This is true in spite of the fact that such intransitive verbs are perfectly compatible with a benefactive nominal, as long as it remains obliquely expressed:

(64) a. ?A li na le?e ?i-Ø-melɸah ša [y-u?un le Petule]
the house that asp-A3-make now 3s-for the Petul
'That house was made for Petul'

b. *?A li na le?e ?i-Ø-s-melɸah-be li Petule
the house that asp-A3-E3-make-for the Petul
'That house was made for Petul'

(65) a. ?A li Petule ?i-Ø-tal y-u?un li Maruče
the Petul asp-A3-come 3s-for the Maruc
'Petul came for/on account of Maruc'

b. *?A li Petule ?i-Ø-s-tal-be li Maruče
the Petul asp-A3-E3-come-for the Maruc
'Petul came on account of/for Maruc'

The impossiblity of incorporating a preposition into an intransitive verb carries over into derived intransitive verbs as well. Thus, it is impossible to form an applicative construction based on a passive verb:

(66) a. *I-Ø-y-ak'-at-be Šun li libroe
asp-A3-E3-give-pass-to Sun the book
'The book was given to Sun'

b. *?I-O-s-toh-at-be Petule li s-tohole
asp-A3-E3-pay-pass-to Petule the 3s-price
'Its price was paid to Petul'

Similarly, applicatives cannot be formed out of antipassive structures:

(67) a. C-i-?ak'-van
asp-A1-give-Apass
'I am giving [someone]' (i.e. my daughter, in marriage)

b. *Taš-Ø-k-ak'-van-be li Šune

asp-A3-E1-give-Apass-to the Sun
'I am giving [someone] to Sun' (my daughter, in marriage)

True logically monadic verbs such as those in (64), (65), passive verbs, and antipassive verbs differ in a variety of ways, but they all share the property of being intransitive in the technical sense of being unable to assign accusative Case to an NP object (at least in Tzotzil; for discussion of antipassive, see 2.4; for passive, 5.2). And indeed they equally share the inability to appear in applicative constructions. Thus, this pattern of facts also confirms the prediction that Case assignment to the applied object fails in such cases, thereby rendering the sentences ungrammatical.

As a final test case, I have checked the interaction of applicative formation and transitivity in Chichewa (Bantu) in some detail. Here, the same pattern emerges, but there are two minor factors which can interact to obscure it slightly on the surface. We have already seen that applicatives can be formed quite generally from transitive verbs; another example of this are in (68):

(68) a. afisi a-na-ph-a nsomba
hyenas SP-past-kill-asp fish
'The hyenas killed the fish'

b. afisi a-na-ph-er-a anyani nsomba
hyenas SP-past-kill-for-asp baboons fish
'The hyenas killed fish for the baboons'

Nevertheless, in spite of the productivity of benefactive applicative constructions in this realm, similar constructions are often impossible if the verb is intransitive. This is especially clear when the subject is of a nonagentive type:

(69) a. mlenje a-na-gon-a
hunter SP-past-sleep-asp
'The hunter slept'

b. *mlenje a-na-gon-er-a kalulu
hunter SP-past-sleep-for-asp hare
'The hunter slept for the hare'

(70) a. chiphadzuwa chi-a-fik-a
beautiful-woman SP-perf-arrive-asp
'The beatiful woman has arrived'

b. *chiphadzuwa chi-a-fik-ir-a mfumu
beautiful-woman SP-perf-arrive-for-asp chief
'The beatiful woman has arrived for the chief'

Verbs like these belong to the unaccusative class of verbs in many languages; their single nominal argument is base generated in the VP and is moved to the subject position to receive Case (Burzio 1981). Such verbs are not Case assigners for what seems to be a rather strong and consistant reason-- namely Burzio's Generalization, which states that a verb may assign accusative Case (if and) only if it takes an external argument. Thus, the complex applied verbs formed from these verbs will not inherit an ability to assign accusative Case from the the base verb, and the applied object will end up violating the Case filter. This accounts for the ungrammaticality of (69b), (70b) under the readings given.

Here is one place where care is needed, however, since it is not at all rare to see the applied affix -ir appear on verbs of this class, forming what looks like a transitive structure out of an intransitive one. In fact, both (69b) and (70b) are grammatical, but under a different reading from the one given in the glosses. Thus, (69b) can mean 'The hunter lay on the hare', while (70b) can mean something along the lines of 'The beautiful woman received the chief.' Note, however, that these two readings are quite unrelated to the productive dative and/or benefactive readings that we expect, nor are they productively related to each other. I claim that here we have a true example of lexical derivational morphology. -Ir can

attach to a fairly wide number of intransitive verbs forming transitive verbs out of them, but this process has a degree of idiosyncracy to it. This idiosyncracy shows up both in the fact that it applies to some verbs but not all, and in the fact that the semantics of the result is quite unpredictable; hence the Uniformity of Theta Assignment Hypothesis does not imply that the verb root and the applied affix must be separate constituents at D-structure. On the contrary, verbs like fikira and gonera are morphologically complex, but this complex structure is completely invisible to the syntax. As far as the syntax is concerned, fikira and gonera are merely basic transitive verbs at all levels of description. Therefore, it is still correct to rule out a derivation of (69b) and (70b) in which the surface form results from syntactic affixation--i.e. from Incorporation--and this result is properly achieved by our theory of Case as discussed in the preceding paragraph. As in Tzotzil, what is true of basic intransitive (unaccusative) verbs in Chichewa is also true of derived intransitives that cannot assign Case. Here there are two cases. First, there is a way of deriving intransitive stative verbs from active transitive verbs in Chichewa by adding the morpheme -ik to the verb. The result is somewhat similiar in some of its functions to the adjectival passive or to 'V-able' forms in English (carvable, bendable), but it is a full-fledged verb that can bear all verbal inflections.[31] Examples of this are:

(71) a. fisi a-na-sw-a mtsuko
hyena SP-past-break-asp waterpot
'The hyena broke the waterpot'

b. mtsuko u-na-sw-ek-a
waterpot SP-past-break-stat-asp
'The waterpot was broken'

(72) a. njovu zi-na-pind-a chitsulo
elephants SP-past-bend-asp iron-bar
'The elephants bent the iron bar'

b. chitsulo chi-na-pind-ik-a
iron-bar SP-past-bend-stat-asp
'The iron bar got bent'

I will assume without argument that stative verb formation of this kind, like English adjectival passives and V-able forms, takes place in the lexicon, where arguments can be deleted (or fail to be projected) without violating the Theta Criterion or the Projection Principle. In particular, the external/agent theta role becomes unavailable to the syntax when -ik is added. The resulting verb is presumably an unaccusative, with the remaining patient theta role assigned internal to the VP at D-structure. By Burzio's Generalization, these verbs will not have Case to assign to an object. Thus, applicatives of such verbs are predicted to be ungrammatical, and, in fact, they are:

(73) *mtsuko u-na-sw-ek-er-a mbuzi
waterpot SP-past-break-stat-for-asp goat
'The waterpot broke/was broken for the goat'

A similar thing takes place in passives. As I will argue later (chapter 5), this process is syntactic rather than lexical; nevertheless it is true in Chichewa (as in English) that a passive verb cannot assign accusative Case to its object. Instead, the object becomes the subject of the clause:

(74) a. kalulu a-na-(wa)-b-a mkazi wa njovu
hare SP-past-OP-steal-asp wife of elephant
'The hare stole the elephant's wife'

b. mkazi wa njovu a-na-b-edw-a ndi kalulu
wife of elephant SP-past-steal-pass-asp by hare
'The elephant's wife was stolen by the hare'

c. *(a/zi)-na-wa-b-edw-a mkazi wa njovu ndi kalulu
SP-past-OP-steal-pass-asp wife of elephant by hare
'There was stolen the elephant's wife by the hare'

And, applicative construtions cannot be formed based on passive verbs:

(75) a. nsima i-na-phik-idw-a ndi mbidzi
cornmush SP-past-cook-pass-asp by zebras
'The cornmush was cooked by the zebras'

b. *nsima i-na-phik-idw-ir-a kadzidzi ndi mbidzi
cornmush SP-past-cook-pass-for-asp owl by zebras
'The cornmush was cooked for the owl by the zebras'

(76) a. mitondo i-na-sen-edw-a ndi makoswe
mortars SP-past-carve-pass-asp by rats
'The mortars were carved by the rats'

b. *mitondo i-na-sen-edw-er-a mbewa ndi makoswe
mortars SP-past-carve-pass-for-asp mice by rats
'The mortars were carved for the mice by the rats'

Again, the correlation between verbs that do not assign accusative case to an object and verbs which cannot serve as hosts for PI holds fast.

The final class of verbs to be considered from this point of view is the class of 'active intransitive' verbs--i.e. the verbs which correspond to clearly unergative verbs in other languages. Here the results are somewhat varied. With some the result is essentially perfect:

(77) a. atsikana a-na-vin-a
girls SP-past-dance-asp
'The girls danced'

b. atsikana a-na-vin-ir-a mfumu
girls SP-past-dance-for-asp chief
'The girls danced for the chief'

With other verbs, the result is highly marginal or acceptable but very restricted in interpretation:

(78) a. mkango u-ku-yend-a
lion SP-pres-walk-asp
'The lion walked'

b. ok/* mkango u-ku-yend-er-a anyani

lion SP-pres-walk-for-asp baboons
'The lion walked for the baboons'

(79) a. kalulu a-na-sek-a
hare SP-past-laugh-asp
'The hare laughed'

b. ok/* kalulu a-na-sek-er-a atsikana
hare SP-past-laugh-for-asp girls
'The hare laughed for the girls'

(80) a. mtolankhani a-ku-thamang-a
journalist SP-pres-run-asp
'The journalist ran'

b. ok/* mtolankhani a-ku-thamang-ir-a chiphadzuwa
journalist SP-pres-run-for-asp beautiful-woman
'The journalist ran for the beatiful woman'

Here a sentence such as (78b) cannot mean that the lion walked simply because he knew it would please the baboons or because the baboons asked him to. In this way it contrasts with (77b), which can have these kinds of readings. (78b) is grammatical, however, under one very specific reading: it can mean that it was the baboons' responsibility to walk for some reason, and the lion discharged this responsibility on their behalf. (79b) and (79b) are similar in this regard; thus (79b) has only the (implausible) meaning that the hare fulfilled the girls' duty to laugh for them. Thus, it seems that applicative constructions based on these intransitive verbs are restricted, but possible under some circumstances.

In fact, on a theoretical level, verbs of this class have a somewhat intermediate status with respect to Case assignment as well. Thus, they are in some sense logically monadic, and do not in general appear with a direct object which they would need to assign Case. In this sense, they are generally not Case assigners. On the other hand, the single argument of these verbs is (I assume) an external one; hence these verbs are not barred from being assigners of accusative Case by Burzio's Generalization

in the way that unaccusatives are. Therefore, there is no strong reason why these verbs cannot assign accusative Case either, under the right circumstances. In fact, these verbs can to some extent appear with 'cognate' objects in languages like English (see Burzio (1981)):

(81) a. The hare cried big wet tears.

b. ?I walked a long walk yesterday.

c. Amy ran the course in under 15 minutes for the first time.

In these constructions, the verb presumably does assign accusative Case to the highlighted NP. In this way, they differ from unaccusative verbs, where structures of this type are quite impossible:

(82) a. *Kevin arrived a surprising arrival yesterday.

b. *The book fell the building in 5 seconds.

Thus, I conclude that unergative verbs can sometimes assign accusative Case, and that the naturalness of the result varies with the particular verb and the particular discourse context. This situation then can carry over into the realm of applicative constructions: (77)-(80) show that applicatives are possible with unergative verbs, and that their naturalness varies with the verb and with the interpretation. Again, this makes perfect sense if the grammaticality of an applicative construction depends on the ability of the verb to assign case to the applied object, as predicted by the PI analysis of applicatives in general. In fact, the difference between (83) and (84)-(86) might be captured in these terms as well. Verbs like yenda 'to walk' and thamanga 'to run' are virtuely impossible with any kind of direct object, cognate or not, in Chichewa (Mchombo (personal communication)); whereas vina 'to dance' can take an

object easily:

(83) a. atsikana a-na-vin-a chiwoda
girls SP-past-dance-asp chiwoda
'The girls danced the chiwoda (a tribal dance)'

Thus, children learning Chichewa will have more overt evidence that 'dance' can in fact assign Case than that other members of the unergative class of verbs can. This can account for the fact that applicatives are more natural with 'dance' than with other unergative verbs.[33]

In conclusion, we have seen that across languages, applicative constructions are directly dependent on the ability of the root verb involved to assign Case. When it does, applicatives can be formed freely and productively in the syntax; when it does not, there is no grammatical output derived by syntactic Preposition Incorporation. If there is a sentence form which appears to be an applicative of a noncase-assigning verb, it must be derived in the lexicon, and it is generally idiosyncratic in semantic interpretation. This important generalization about the syntax of applicative constructions is given as a mysterious stipulation on the relevant GF changing rule in Relational Grammar work (e.g. Chung (1976), Seiter (1979), Aissen (1983)). In fact, since Relational Grammar and other theories generally claim that there can only be one instance of a given Grammatical Function such as 'object' in a clause at one time (the 'Stratal Uniqueness Law'; cf. the 'Function-Argument Biuniqueness in Lexical-Functional Grammar (Bresnan (1982b)), one might rather expect that an oblique could only be come an object in a clause that lacks an object, rather than the contrary. On the other hand, the restriction follows in an explanatory way from the interaction of Case theory and the theory of X-o

movement; in fact, in an Incorporation framework, it could not be otherwise. This gives strong support for an analysis of applicative constructions in terms of Preposition Incorporation.[34]

4.2.3 P-Reanalysis and English psuedopassives

In section 3.3.5, I observed that there are causatives in Italian which have all the syntactic properties of Verb Incorporation causatives, except that the lower verb does not actually incorporate. Thus, there remain two morphologically distinct verbs in these Italian causatives, but the Government domain of the higher verb is still extended into the lower verb phrase, as it is when the lower verb is incorporated. These constructions have been discussed in terms of the syntactic 'Reanalysis' of two words into one; I followed this intuition, and gave content to the technical notion of Reanalysis by claiming that it was 'abstract Incorporation', possibly at LF. Formally, this was expressed by coindexing a lexical head with a lexical head that governs it, where this coindexing is interpreted as equivalent to the coindexing induced by X-o movement with respect to syntactic principles such as the Government Transparency Corollary. In other words, Reanalysis is Incorporation without the incoporation.

At this stage, we have discovered enough properties of Preposition Incorporation to recognize that there exist also instances of Preposition Reanalysis, where the latter stand in the same relation to the former as Italian causatives stand to Chichewa or Malayalam causatives. Thus, consider pairs like the following from English:

(84) a. Everyone talked about Fred.

b. Fred was talked about (last night).

(85) a. The principal spoke to John (at last).

b. John was spoken to (at last).

(86) a. The contestants skied under the bridge.

b. That bridge was skied under by the contestants.

(87) a. Three Nobel laureates have lectured in this hall.

b. This hall has been lectured in by three Nobel laureates.

((84) and (85) are based on Hornstein and Weinberg (1981); (86) and (87) on Perlmutter and Postal (1984).) In each of the (b) sentences, the NP which seems to be the object of a preposition becomes the subject of when the main verb of its clause is put into the passive. This construction is known as the 'psuedopassive' or as the 'prepositional passive' construction. In most languages, such a construction is completely impossible. This is true, for example, of French (cf. Kayne (1983)):

(88) a. Tout le monde a parle de Fred.

b. *Fred a été parle de (hier soir).

(89) a. Le proviseur a parle à Jean.

b. *Jean a été parle à.

The difference between French and English in this regard has indeed been taken to be that English has a rule of Verb-Preposition reanalysis, which languages like French lack (Van Riemsdijk (1978), Hornstein and Weinberg (1981), Stowell (1981), Kayne (1983)).[35] Furthermore, researchers have made a conceptual link between the V-V reanalysis involved in Romance causatives and the V-P reanalysis seen here.

In fact, the English psuedopassive construction can be neatly accounted for in terms Reanalysis, under my reconstruction of that notion as 'Abstract Incorporation'. In order to bridge the conceptual gap, consider Chichewa. In this language, as in French, it is totally impossible to strand a Preposition by NP movement (or by wh-movement, for that matter):

(90) a. Msangalatsi a-ku-yend-a ndi ndodo
entertainer SP-pres-walk-asp with stick
'The entertainer is walking with a stick'

b. *Ndodo a-ku-yend-edw-a ndi
stick SP-pres-walk-pass asp with
'The stick is being walked with'

If, however, the preposition that governs the NP in question is incorporated into the verb to form an applicative construction, the stranded NP can become the subject of a passive more naturally. Thus, compare (91) with (90):

(91) a. Msangalatsi a-ku-yend-er-a ndodo
entertainer SP-pres-walk-with-asp stick
'The entertainer is walking with a stick'

b. Ndodo a-ku-yend-er-edw-a
stick SP-pres-walk-with-pass-asp
'The stick is being walked with'

The difference in acceptability between (90b) and (91b) was explained in section 4.2.1 by claiming that the verb does not govern (or assign Case to) the object of a preposition in (90), since government is blocked by the P. In (91), however, the offending preposition has been incorporated into the verb, and this, by the GTC, has the automatic consequence that the verb complex governs whatever the P governed before it moved. This makes NP movement in passives possible in the latter case, but not in the former (see chapter 5 for details here).

Now, the English psuedopassives clearly behave not like passives of the verb-plus-independent-P constructions in Chichewa (90), but rather like passives of the P Incorporation structures (91). In other words, the English constructions show the properties of Preposition Incorporation, but without the actual incorporation. This, of course, is exactly my characterization of the Reanalysis relation.[36]

If Reanalysis in my sense of the term is necessarily involved in the derivation of pseudopassives, we then predict that pseudopassives should only be possible when they strand Prepositions which structurally could be incorporated in languages with (overt) PI, such as Chichewa or Kinyarwanda. This seems to be true. For example, we saw in section 4.1 that PI is possible out of theta marked argument PPs, but not out of non-theta-marked adjunct PPs. Perhaps the best minimal pairs exemplifying this were locatives, where a very similar phrase can play both roles:

(92) a. I slept in my bed last night.

b. I slept in New York last night.

As expected, the locative argument can form a psuedopassive, but the locative adjunct cannot (Hornstein and Weinberg 1981):

(93) a. My bed was slept in last night.

b. *New York was slept in last night.

This directly parallels the fact that the P can overtly incorporate in Kinyarwanda in cases like (92a), but not in (92b). This was illustrated in examples (50), (51), repeated here:

(94) a. Abaana b-iica-ye ku meeza
children SP-sit-asp on table
'The children are sitting on the table.'

b. Abaana b-iica-ye ku musozi
children SP-sit-asp on mountain
'The children are sitting on (the top of) the mountain'

(95) a. Abaana b-iica-ye-ho ameeza
children SP-sit-asp-on table
'The children are sitting on the table.'

b. *Abaana b-iica-ye-ho musozi
children SP-sit-asp-on mountain
'The children are sitting on the mountain'

More generally, I argued in that section that benefactive and instrumental PPs are arguments of their verb and can have their heads incorporate, whereas temporal, manner, and reason PPs are adjuncts and cannot participate in PI. Something of this same bifurcation is duplicated in English psuedopassives:

(96) a. ?The chief was danced for by every girl in the village.

b. ?That special baseball bat was hit with in 156 straight games.

(97) a. *Monday is overslept on nearly every week.

b. *The same way is walked in by everyone with bad knees.
(* if 'way'='manner'; ok if 'way'='path')

c. *Zest is always sung with in the shower by Linda.

The sentences in (96) are inelegant to a degree, but are quite understandable, especially in informal speech styles. The sentences in (97), on the other hand, are strongly ungrammatical. This asymmetry is immediately accounted for if Reanalysis is taken to be abstract Preposition Incorporation.

The other situation in which overt Preposition Incorporation is impossible is when there is an intervening lexical head between the base

position of the P and the V into which it incorporates. The reason is that the intervening head blocks government between the P and its trace. Thus, in no language is there an applicative construction counterpart like (98b) for a sentence such as (98a):

(98) a. The goats [VP ate [NP letters [PP to Britta]]]

b. *The goats [VP ate-to$_i$ [NP letters [PP t_i Britta]]]

Now if overt P Incorporation is impossible in such a structure, covert P Incorporation should be as well, making psuedopassives of (98a) impossible. This is, of course, a correct result:

(99) *Britta has been eaten letters to (by the goats).

(99) is perhaps inconclusive, however, given that it may be ruled out for Case theory reasons as well, if the NP headed by letters cannot receive accusative Case from the passive verb. The same point can be made where this interfering factor is eliminated, however, by following up an observation of Kyle Johnson's (personal communication). It is well known that English permits certain double prepositional structures, in which a P takes a PP complement rather than an NP complement. Examples of this are:

(100) a. The mouse ran to behind the Grandfather clock.

b. The monster emerged from under the table.

Now, pseudopassives can be formed in which any one of these Ps is stranded:

(101) a. Late people must usually run to busstops.

b. ?Busstops are usually run to by late people.

(102) a. Mice hide behind Grandfather clocks.

b. Grandfather clocks are often hidden behind (by mice).

Nevertheless, pseudopassives corresponding to the sentences in (100) in which both prepositions are stranded are completely impossible:

(103) a. *Grandfather clocks are often run to behind (by mice).

b. *The table was emerged from under by the monster.

Assuming that the structure of these examples is as in (104), the ungrammaticality of (103) is accounted for by the abstract P Incorporation analysis:

(104) $Clock_i$ was [VP run^j [PP to [PP $under^j$ [NP t_i]]]]

Here there is no Case problem, since neither PP should need to get Case from the verb. However, the P to will be a closer governer, blocking government between the position of the V and that of the embedded P under. Thus, the abstract Incorporation Relation is illegitimate here, and the pseudopassive is ungrammatical.

In conclusion, I have accepted the idea put forth by many researchers that a process of V-P Reanalysis is responsible for the existance of psuedopassives in English, and then have gone on to show that this reanalysis relation has exactly the same formal properties as the P Incorporation relation. The same conclusion was reached with respect to V-V Reanalysis and V Incorporation in Section 3.3.5. Here we see that the Reanalysis relation generalizes across grammatical categories in much the same way that the Incorporation process does, and the parallelism between the two is maintained throughout. Thus, the empirical scope of the ideas

developed in this work is increased by subsuming Reanalysis to Incorporation. At the same time, this approach gives new and helpful explication of the nature of the notion of Reanalysis.

4.2.4 The 'second objects' of PI constructions

Consider once again a typical example of an applicative construction with a dyadic transitive base verb:

CHICHEWA:
(105) kalulu a-na-gul-ir-a mbidzi nsapato
hare SP-past-buy-for-asp zebras shoes
'The hare bought shoes for the zebras.'

In the preceding portions of this section, the focus has been on the properties of what I have called the 'applied object' of the verb--mbidzi 'zebras' in (105). In particular, in sections 4.2.1 and 4.2.2, I argued that, because of PI, the applied object may and must receive accusative Case from the complex verb in order to be visible for theta role assignment at LF. This then accounts for the ways that this nominal shows behavior usually associated with direct objects at S-structure. In this section, the focus turns to what I will call the 'second' or 'basic object' of such constructions--nsapato 'shoes' in (105). One critical question arises immediately with regard to such nominals: given that the applied object receives Case from the verb, how does the second object satisfy the Case Filter in these sentences?

Clearly, the answer to this question must go beyond the universally unmarked core of Case Theory. The verb in applicative structures such as (105) has already assigned the one structural Case that it is alotted by general principles to the applied object, as we have seen, so other

provision must be made for the second object. In this sense, the situation posed by applicatives is very similar to that posed by Causative constructions as discussed in section 3.3; in both cases, an X-o movement has created a structure in which there is a problem for Case assignment--namely two NP arguments but only one potential Case assigner. Different languages respond to this situation in somewhat different ways. In fact, we shall see that, by in large, each language uses the same strategies in both causatives and applicatives.

4.2.4.1 Case and applicative differences

The first possibility is that a given langauge has no special provisions, and is in fact restricted to unmarked Case assignment. Then, the second object simply does not satisfy the Case Filter, and a sentence like (105) is ungrammatical. Hence, languages of this type will necessarily and systematically lack applicative constructions. This lack goes beyond the simple possibility that a given language may idiosyncratically lack the necessary applicative morpheme in its lexicon. Some languages presumably do not have applicative constructions for the accidental reason that they contain no lexical items with both the syntactic category features of a preposition and the morphological subcategorization features of an affix. A language such as this could presumably change so as to acquire such an item with no other changes needed. The gap in the language type we are considering is more principled. In such a language, even if an item that had the correct features to trigger applicative constructions were introduced, it would not be able to surface, because the structures derived by P Incorporation (obligatory because of the morphological subcategorization features of the applied affix) would always violate the

Case filter. Thus, not only would a new lexical item have to be introduced into such a language, but more fundamental aspects of the way that Case assignment works would have to change before an applicative construction could appear.[37] In this connection, I note that French, Italian, Malayalam, Turkish, Quechua (Muysken, personal communication), and Berber (Geurssel, personal communication) all systematically appear to lack productive applicative constructions, at least in the sense in which I have defined them here.[38] A comparison of this list with the list of languages which have either 'type 1' causative constructions or allow only causatives of intransitive verbs (sections 3.3.3.3 and 3.3.3.4) show that the two classes are virtually identical.[39] On the present account, this is no coincidence; rather, the same limitation on Case marking implies at once that such languages will have no double object constructions, no applicative constructions, and that they will only be able to form causatives by moving the entire VP to COMP, or the embedded object will not get Case.

Another logically possible way for a language to solve the Case marking challenges presented by a structure such as (105) is for a language to allow its verbs to assign accusative Case to two objects after all. This will be a marked situation, since its extensive use would cause the morphological identification of thematic roles--the functional core underlying the grammaticalized Visibility Hypothesis (see section 2.3.3 (103))--to break down. Nevertheless, it is a legitimate possibility; a possibility which is in fact realized in Kinyarwanda and certain closely related Bantu languages. In such a language, both the applied object and the second object are theta marked, are governed by the complex verb at S-structure, and are assigned structural Case by it at that level.

Therefore, these two nominals should behave identically with respect to processes which are dependent on these properties. Kimenyi (1980) shows that this is in fact the case in Kinyarwanda. Basic dative/benefactive applicative constructions are illustrated in (106):

(106) a. Umukoobwa a-ra-som-er-a umuhuugu igitabo
girl SP-pres-read-for-asp boy book
'The girl is reading a book for the boy'

b. Umuhuunga a-ra-andik-ir-a umukoobwa ibaruwa
boy SP-pres-write-for-asp girl letter
'The boy is writing the letter for the girl'

Either the applied object, or the basic object--or in fact both--can trigger object agreement on the verb, and thereby undergo 'pro-drop' (data from Gary and Keenan (1977)):[40]

(107) a. Yohani y-oher-er-eje Maria ibaruwa
John SP-send-to-asp Mary letter
'John sent Mary a letter'

b. Yohani y-a-mw-oher-er-eje ibaruwa
John SP-past-OP-send-to-asp letter
'John sent her a letter'

c. Yohani y-a-y-oher-er-eje Maria
John SP-past-OP-send-to-asp Mary
'John sent it to Mary'

d. Yohani y-a-yi-mw-oher-er-eje
John SP-past-OP-OP-send-to-asp
'John sent it to her'

Furthermore, either object may become the subject of the clause when the verb is passivized:

(108) a. Ibaruwa i-ra-andik-ir-w-a umukoobwa n'umuhuungu.
letter SP-pres-write-for-pass-asp girl by-boy
'The letter is written for the girl by the boy.'

b. Umukoobwa a-ra-andik-ir-w-a ibaruwa n'umuhuungu.
girl SP-pres-write-for-pass-asp letter by-boy

'The girl is having the letter written for her by the boy.'

Kimenyi goes on to show that the two objects show similar behavior with respect to morphological reflexive formation and certain wh-movement type constructions. Thus, Kinyarwanda behaves the way we expect it to, given the P Incorporation analysis together with the assumption that Kinyarwanda verbs can have the marked property of being able to assign as many as two accusative Cases apiece. Recall that in section 3.3.3.1 it was observed that Kinyarwanda also makes use of this special Case marking property in morphologically underived double object constructions and in VI causative constructions. Thus, theme and dative, causee and lower object, applied object and basic object all consistently show the same government and Case related direct object properties in the language. Again, this is taken to be no coincidence; rather it follows from the interaction of Case Theory and the Theory of X-o Incorporation that the three types of structures should have interrelated behaviors. Gary (1977) and Hodges (1977) show that the Bantu languages Luyia, Mashi, and Kimeru also assign two accusative Cases per verb[41] and thus behave similar to Kinyarwanda in these respects across all three constructions.[42, 43]

With these important side cases taken care of, there remains the task of accounting for the status of basic object with respect to the Case Filter in the majority of languages that have applicative constructions. To begin with, we can tell that languages like Chichewa do not assign structural accusative Case to both of their objects, because if they did, both would show similar object properties, as in Kinyarwanda. However, as noted in section 4.2.1, this is not the case. In Chichewa, as in Kinyarwanda, the applied object can trigger object agreement on the verb, can 'pro-drop',

and can become the subject of a passive verb:

(109) a. amayi a-ku-mu-umb-ir-a mtsuko mwana
woman SP-pres-OP-mold-for-asp waterpot child
'The woman is molding the waterpot for the child'

b. amayi a-ku-mu-umb-ir-a mtsuko
woman SP-pres-OP-mold-for-asp waterpot
'The woman is molding the waterpot for him'

(110) a. kalulu a-na-gul-ir-a mbidzi nsapato
hare SP-past-buy-for-asp zebras shoes
'The hare bought shoes for the zebras.'

b. mbidzi zi-na-gul-ir-idw-a nsapato (ndi kalulu)
zebras SP-past-buy-for-pass-asp shoes by hare
'The zebras were bought shoes by the hare'

However, unlike in Kinyarwanda, second objects cannot be involved in any of these processes:

(111) a. *amayi a-na-i-umb-ir-a mwana mtsuko
woman SP-past-OP-mold-for-asp child waterpot
'The woman is molding the waterpot for the child'

b. *amayi a-na-i-umb-ir-a mwana
woman SP-past-OP-mold-for-asp child
'The woman is molding it for the child'

(112) *nsapato zi-na-gul-ir-idw-a mbidzi (ndi kalulu)
shoes SP-past-buy-for-pass-asp zebras by hare
'Shoes were bought for the zebras by the hare.'

Chichewa's behavior in this regard is duplicated in other Bantu languages, such as Swahili (Vitale (1981)) and Chimwiini (Kisseberth and Abasheikh (1977)). Outside the Bantu family, it is also very common. Thus, Chung (1976) describes such behavior in detail for applicative constructions in Bahasa Indonesian. To take just one of her examples, the applied object but not the basic object can become the subject of a passive sentence:

(113) a. Orang itu me-masak-kan perempuan itu ikan.
man the trans-cook-for woman the fish
'The man cooked the woman fish.'

b. Perempuan itu di-masak-kan ikan oleh orang itu.
woman the pass-cook-for fish by man the
'The woman was cooked fish by the man.'

c. *Ikan di-masak-kan perempuan itu oleh orang itu.
fish pass-cook-for woman the by man the
'A fish was cooked the woman by the man.'

Similar behavior is seen in Chamorro (Austronesian, Gibson (1980)), Tzotzil (Mayan, Aissen (1983)), Tuscarora (Iroquoian, Williams (1976)), Huichol (Uto-Aztecan, Comrie (1982)), and other languages, with respect to whatever surface verb agreement, word order, passivization, and reflexivization effects are relevant to direct objects in the language in question. Overall, it is the normal case for applied objects to supplant basic objects with respect to all of these object type properties.

One solid conclusion can immediately be drawn from this collection of data: the basic object of applicatives in these languages does not get structural accusative Case from the verb. This is clear in that it has almost none of the properties associated with an NP that receives structural Case. When facing this issue in connection with causative constructions in section 3.3.3.2, I assumed that verbs in these languages can assign a second, inherent accusative Case as well as the usual, structural accusative Case. Such an account would then naturally be extended to applicative constructions, in which the same Case Theory problem arises. Thus, the inherent accusative is assigned to the basic object under government at D-structure, and the structural accusative is assigned to the applied object under government at S-structure. This position solves some of the most basic problems of the construction in terms of the differences between inherent Case and structural Case (see Chomsky (1984)). Thus, inherent Case need not be assigned under adjacency,

and, since it is theta-related and assigned at D-structure, it cannot be absorbed by passivization. Furthermore, it is rare for a verb to agree with its oblique arguments (i.e. those assigned inherent Case), but common for it to agree with the arguments that it assigns structural Case to. Furthermore, this accounts for the fact that languages with applicatives also tend to have 'type 2' morphological causative constructions (see section 3.3.1, 3.3.3.3).

Yet, in spite of these successes, this account seems inadequate in certain ways. The biggest problem is that the notion of semantic/inherent accusative Case is not a very clear or satisfying one. This Case never has the morphological properties of true and clear instances of semantic Case. In languages like the Bantu languages in which structural case generally has no overt morphological realization and inherent Case is realized by prepositions, these basic objects appear in their bare, unmarked form. In languages which have morphologically realized case but which include a kind of 'default' case in which a variety of 'extra' NPs appear, the second object appears in this case. Thus, in Chamorro there is an oblique case form which is assigned to NPs that function as the by-phrase of passives and antipassives, as instrumentals, and as the objects of certain certain affective verbs. This is also the case of second objects in Chamorro (Gibson 1980). Similarly, in the Eskimo languages 'modalis' or 'instrumental' case is used for instruments, for the by-phrase of antipassives and other intransitivizing processes, for the by-phrase of passives (in some dialects), as well as for second objects in applicative type constructions. Finally, in languages where every NP must have a case ending and there is no obvious default case, the second objects appear in accusative Case, identical to that of the applied object. True

semantic/inherent morphological cases tend not to be so variable. Moreover, there is a technical problem with assuming that the second object has inherent Case in these examples. We have seen that in causative constructions, the verb can move away from the its object in the syntax if this object behaves like a 'second object' in the language; yet if the verb assigns inherent case to the object, that case must be 'realized' under government by the same verb at S-structure, according to Chomsky's (1984) Uniformity Condition on inherent Case assigners (see 2.3.2). In this way too, the case of the second object is not as much like more familiar instances of inherent Case. The alternative to an account in terms of inherent accusative Case is to say that the second object does not receive Case at all. This would in fact be more natural given the morphological forms of second object NPs as described in the previous paragraph; the morphological case that they appear in would, if morphologically necessary in the language, be a default case, just as seems to be true. Yet, how would this NP be made visible for theta role assignment at LF if it does not receive Case from the verb? To answer this question, recall that in section 2.3.2 I claimed that there is more than one way to be 'visible' at LF: any way of being 'morphologically identified' appropriate to the language in question will do. This notion of 'morphological identification' includes (at least) morphological case assigned by the governor to the governed, agreement morphology appearing on the governor, adjacency holding between the governor and the governed, and having (the head of) the governed be incorporated into the governor. The first three types of relationship are usually required for making the applied object visible at LF, as we have seen. What about the last relationship? In section 2.3.1, I discussed a wide variety of evidence establishing that an

NP whose head has been incorporated does not need to receive Case; in fact the accusative Case which the NP otherwise would have needed can be assigned by the verb to some other NP in need. Thus, it seems that one way to solve the Case marking puzzle posed by applicative constructions would be to incorporate the second object into the verb. Unfortunately, it is simply not true that second object nominals appear incorporated into the verb in (say) Chichewa or Chamorro.

4.2.4.2 N Reanalysis and Possessor Raising

There is still a possibility open, however. Recall that I have argued that, parallel to Verb Incorporation, there is relation which I called Verb Reanalysis (section 3.3.5). This relation appears in Italian causative constructions and accounts for the fact that they have all of the syntactic properties of Verb Incorporation causatives, except that the verb is not actually incorporated. Similarly, we saw (section 4.2.3) that, parallel to Preposition Incorporation, there is a relation of Preposition Reanalysis. This relation appears in English pseudopassive constructions and accounts for the fact that they behave just like Preposition Incorporation applicatives, except that the preposition is not actually morphologically incorporated into the verb. This situation leads us to wonder if there also exist in languages of the world Noun Reanalysis constructions which are parallel to cases of overt Noun Incorporation in the same way that V Reanalysis and P Reanalysis are parallel to V Incorporation and P Incorporation respectively. These would in essence be cases of Noun Incorporation, but without the morphological incorporation.

Suppose, on the force of cross-categorial generality, we assume that N

Reanalysis exists: what would it look like? Both in the case of V Reanalysis and in the case of P Reanalysis we have identified the structure because of the effects of the Government Transparency Corollary--thematic arguments of the lower verb or preposition have mysteriously begun to behave as if they were getting Case under government from the higher verb.

In fact, exactly this happens to the thematic argument of a Noun in a construction known in the literature under the name 'Possessor Raising'. This is another of the GF changing processes introduced in section 1.1.2, and thus far unaccounted for in my framework. The hallmark of this construction is that the possessor of an argument NP of a verb comes to behave like an argument of the verb itself. This construction can be illustrated with fairly typical examples from Kinyarwanda (Kimenyi (1980)):

(114) a. Umugore y-a-vun-nye ukuboko k'uumwaana
woman SP-past-break-asp arm of-child
'The woman broke the arm of the child.'

b. Umugore y-a-vun-nye umwaana ukuboko
woman SP-past-break-asp child arm
'The woman broke the child's arm.'

(115) a. Umujuura y-iib-ye amafaraanga y'umunyeeshuuri.
thief SP-rob-asp money of-student
'The thief stole the money of the student.'

b. Umujuura y-iib-ye umunyeeshuuri amafaraanga.
thief SP-rob-asp student money
'The thief stole the student's money.'

(114a) and (115a) are standard structures which have direct analogues in English; the possessor of the direct object appears after the possessed head and is Case-marked with a preposition, which is the Kinyarwanda equivalent of English <u>of</u>-insertion in nominals.[44] In fact, the structure of these Kinyarwanda sentences is essentially identical to that of their

English glosses. (114b) and (115b) are thematic paraphrases of their (a) counterparts; nevertheless, they have rather different properties. Here, the thematic possessor of the thematic direct object appears without its usual prepositional Case assigner, and must obligatorily be adjacent to the main verb of the clause. These two facts together suggest that the possessor is no longer dependent upon the head noun for its Case, but rather it is dependent on the verb itself. This assumption would simultaneously explain why of-insertion is no longer necessary, and why the canonical word order between the possessor and the head is reversed, assuming that some slightly extended notion of adjancecy is required for accusative Case assignment in Kinyarwanda (cf. Stowell 1981, Chomsky 1981).[45] In fact, Kimenyi goes on to provide a variety of evidence that this is correct, and that the verb does come to govern and Case mark the possessor in constructions like (114b), (115b). For example, the possessor may trigger object agreement on the verb and then undergo 'pro-drop' itself:

(116) a. Umuhuungu y-a-som-ye ibitabo by-aa-cu
boy SP-past-read-asp books agr-of-us
'The boy read our books'

b. Umuhuungu y-a-du-som-e-ye ibitabo
boy SP-past-1pO-read-appl-asp books
'The boy read our books'

I have assumed throughout that, in the Bantu languages, when an NP triggers object agreement on the verb, it is a sign that the verb assigns accusative Case to that NP. Furthermore, there is evidence from the Binding theory that the government relations change in these structures. Thus, normally a pronoun which is the possessor of the direct object can be coreferent with the subject of the clause in Kinyarwanda as in English. Kimenyi (1980:102)

states that the situation is different in a (114b)-type structure, however: here reflexivization must apply between the subject and the possessor of the object. Thus, there is a contrast between the following two sentences:[46]

(117) a. Abaana ba-ra-shyir-a ibitabo i-ruhaande rw-aa-bo.
children SP-pres-put-asp books side agr-of-them
'The children are putting the books at their side.'

b. Abaana ba-r-ii-shyir-a ibitabo i-ruhaande.
children SP-pres-refl-put-asp books side
'The children are putting books at their side.'

In a structure like (124a), the possessor is apparently not governed by the verb, so its governing category is only the direct object NP, and the pronoun is indeed free in this category. In (124b), on the other hand, it seems that the verb (also) governs the possessor, forcing its governing category to be the entire matrix clause. Thus reflexivization happens in this case (compare NI in 2.2.2 above). Kimenyi also states (ibid:101) that the thematic possessor of a (b)-type structure may become the subject if the verb is passivized. Because the possessor of the direct object comes to show all of these object properties, Kimenyi (and many others) claim that the possessor 'raises' to become the direct object of the clause. Hence the name 'Possessor Raising'.

Examples of this so-called 'Possessor Raising' structure are found in many languages. Essentially identical to the Kinyarwanda case is Chichewa, which permits pairs like the following:

(118) a. Fisi a-na-dy-a nsomba z-a kalulu
hyena SP-past-eat-asp fish agr-of hare
'The hyena ate the hare's fish'

b. Fisi a-na-dy-er-a kalulu nsomba

hyena SP-past-eat-asp hare fish
'The hyena ate the hare's fish'

In (118b), the Possessor Raising variant, the thematic possessor shows all the usual direct object properties we have been considering: it is immediately post-verbal in canonical word order; it triggers object agreement; it may 'pro-drop', reflexivize, or become the subject of a passive. This last property is illustrated in (119):

(119) a. Nsomba z-a kalulu zi-na-dy-edw-a ndi fisi.
fish of hare SP-past-eat-pass-asp by hyena
'The hare's fish was eaten by the hyena.'

b. Kalulu a-na-dy-er-edw-a nsomba ndi fisi.
hare SP-past-eat-appl-pass-asp fish by hyena
'The hare had his fish eaten by the hyena.'

(126a) is the passive of (125a), and the whole object NP must move to the subject position as a unit, possessor and all.[47] (126b), however, is the passive of (125b); here the possessor alone moves into the subject position of the passive, suggesting that it and it alone is an NP both governed and assigned accusative Case by the main verb. Similar examples exist in the Austronesian language Chamorro (Gibson (1980), Crain (1979)):

(120) a. Ha fa'gasi si Flory i magagu-hu.
3sS-wash PN Flory the clothes-my
'Flory washed my clothes.'

b. Ha fa'gasi-yi yu' si Flory ni magagu-hu.
3sS-wash-appl me PN Flory obl clothes-my
'Flory washed my clothes.'

In (120a), the direct object head 'clothes' agrees with its possessor 'my', which then 'pro-drops' since it is identified by this agreement relation.[48] In (120b), however, the head N retains its agreement morphology,[49] but the pronominal thematic possessor appears in a word order position and

morphological form that show that it is Case marked by the verb. The head noun, on the other hand, now appears in the oblique case form, indicating that it does not receive Case from the verb in this construction. Related possessor raising constructions exist in the Western Muskogean languages of Choctaw and Chickasaw (Davies (1981), Munro (ms)), and others.[50]

What then are we to say about these so-called 'Possessor Raising' constructions? It is clear that the one thing that I cannot say given the structure of my framework is that the possessor actually raises by moving out of the base NP which it is generated in to become a full-fledged [NP, VP] direct object. Such a derivation would be a strong violation of the Projection Principle, in that it would create a new, non-thematically marked object of the verb, as correctly pointed out by Carden, Gordon and Munro (1982) and Munro (ms) (cf. the discussion of 'Subject-to-Object Raising' in Chomsky (1981)). On the other hand, if one maintains a strong version of the Uniformity of Theta Assignment Hypothesis (1.4.1), it is just as bad to avoid this problem by claiming that the thematic possessor is simply the [NP, VP] direct object at all levels of structure. In as much as sentences like (say) (115a) and (115b) are 'thematic paraphrases' of one another, with the same lexical items thematically interdependent in the same way, we expect this to be represented by parallel D-structures; this would not be the case under this last type of analysis. Fortunately, as I have observed at various points throughout the preceding discussion, the weight of the evidence is not that the possessor actually structurally becomes the NP immediately dominated by VP, but merely that it becomes the NP governed and assigned structural Case by V.[51] This can be accomodated into a GB framework without violating the Projection Principle, if the verb

can be taken to govern the NP in its base generated, thematic [NP, NP] position. However, according to the definition of government developed in 1.4.3, the possessed head noun will count as a 'closer governor' of the possessor, thereby blocking government between the verb and the possessor. Thus, to complete an analysis of Possessor Raising structures, I must discover why the head noun does not block government in this way in these particular cases. This can be done simply by assuming that Possessor Raising is exactly the case of Abstract NI/N Reanalysis which we have been seeking. The fact that the matrix verb governs the possessor of the thematic object then is exactly the expected consequence of this Reanalysis, given the Government Transparency Corollary.[52]

Here it is fruitful to compare Possessor Raising with overt NI. In Chapter 2, we saw that when the head noun of an object is incorporated into the governing verb stranding a possessor, the verb comes to govern and assign Case to that possessor. An example of this from Southern Tiwa is (Allen, Gardiner, and Frantz (1984)):

(121) a. *Kuchi-n kam-thã-ban.
pig-suf 1sS/2sO¦B-find-past
'I found your pigs'

b. Kam-kuchi-thã-ban.
1sS/2sO¦B-pig-find-past
'I found your pigs.'

In (121a), where the patient of the verb is unincorporated, the verb cannot assign show object agreement--presumably a form of Case Assignment (morphological identification)--with the possessor of that patient. This is because agreement requires government and that government of the possessor by the verb is blocked by the possessed N head. If, however,

that N head is incorporated into the verb, the verb may (and in fact must) agree with the possessor, as in (121b). Thus, in this structure, the V does govern the possessor, as a side-effect of the Incorporation process, in accordance with the GTC. However, the verb-possessor agreement in (121b) is exactly the kind of phenomenon which we have seen used to argue for a Possessor Raising structure. Thus, Allen, Frantz and Gardiner (1984) describe this state of affairs by claiming that Possessor Raising takes place in Southern Tiwa (if and) only if Noun Incorporation takes place. A similar result holds in the Iroquoian languages (2.2.2). I have explained this generalization in terms of the theory of X-o movement as reviewed here. Note, moreover, that the Possessor Raising constructions illustrated in this section. They have exactly the same properties as those of Noun Incorporation structures in Southern Tiwa and the Iroquoian languages, except that there is no Noun Incorporation; otherwise the dependent of the head noun becomes a dependent of the main verb in exactly the same way. Now, when the syntax of Incorporation is present without the morphology of Incorporation, it is a case of Reanalysis in the sense that I have developed with regard to verbs and prepositions. Thus, I conclude that N-V Reanalysis does in fact exist parallel to N Incorporation as an option in Universal Grammar, and Possessor Raising constructions of the type that I have been considering are examples of this process. This N Reanalysis account of Possessor Raising makes an immediate prediction. Since Reanalysis is in all ways syntactically Incorporation, and since Possessor Raising crucially involves Reanalysis, the distribution of Possessor Raising should mirror the distribution of Noun Incorporation. In section 2.1, it was shown that, because of the ECP, Nouns can only incorporate into a verb if they head the direct object of a transitive verb or (in some

languages) the sole argument of an unaccusative type intransitive verb. N Reanalysis must, then, obey the same restriction. The result is that Possessor Raising constructions should only be allowed if it is the possessor of a transitive verb's direct object, or of an unaccusative verb's surface subject that is 'raised'. This prediction is correct across languages. Thus, Gibson (1980:38) observes that Possessor Raising can only take place from direct objects in Chamorro. A grammatical example of this was given in (120b); an ungrammatical example where one tries to raise the possessor of an indirect object is given in (122b):

(122) a. In fahan adyu na chupa pära che'lu-hu.
1pexS-buy that 1k cigarette for sibling-my
'We bought those cigarettes for my brother.'
(constructed example)

b. *In fahan adyu na chupa pära guahu ni che'lu-hu.
1pexS-buy that 1k cigarette for me obl sibling-my
'We bought those cigarettes for my brother.'

The situation is similar in Chichewa; there too Possessor Raising can take place with the direct object, as illustrated in (118). Trying to raise the possessor of (say) a subject or the object of a preposition is quite ungrammatical, however:

OBJECT OF P:
(123) a. Fisi a-na-tumiz-a kalata kwa nsomba z-a kalulu.
hyena SP-past-send-asp letter to fish of hare
'The hyena sent a letter to the hare's fish.'

b. *Fisi a-na-tumiz-(ir)-a kalulu kalata kwa nsomba.
hyena SP-past-send-appl-asp hare letter to fish
'The hyena sent a letter to the hare's fish.'

c. *Fisi a-na-tumiz-(ir)-a kalata nsomba kwa kalulu.
hyena SP-past-send-appl-asp letter fish to hare
'The hyena sent a letter to the hare's fish.'

SUBJECT:
(124) a. Mbuzi z-a kalulu zi-na-dy-a udzu.
goats of hare SP-past-eat-asp grass

'The hare's goats ate the grass.'

b. *Mbuzi zi-na-dy-(er)-a kalulu udzu.
goats SP-past-eat-appl-asp hare grass
'The hare's goats ate the grass.'
(ok if = 'The goats ate grass for the hare,' OR
'...ate the hare's grass.')

c. *Kalulu a-na-dy-(er)-a udzu mbuzi.
hare SP-past-eat-appl-asp hare grass
'The hare's goats ate the grass.'

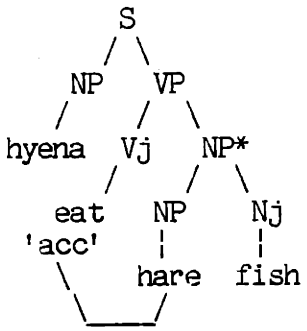
Two possible descriptive generalizations about the general process of Possessor Raising have not been distinguished in the examples we have seen so far. One could think that Possessor Raising is a process which makes the possessor of whatever NP into the direct object of the clause. Then the (b) sentences show that this is ungrammatical unless the NP which is the source of the possessor is in fact the direct object. On the other hand, one could think that Possessor Raising is a process which makes the possessor of an NP take over whatever grammatical function that NP held, while (the rest of) that NP moves out of the way. Then, the (c) sentences show that, again, the process is ungrammatical unless the NP in question is the direct object. The possibilities are perhaps slightly broader in the Muskogean languages of Choctaw and Chickasaw; Carden, Gordon, and Munro (1982) and Munro (ms) claim that Possessor Raising is possible both from direct objects of transitive verbs and from the 'subjects' of (certain) intransitive verbs in these languages. Finally, Kimenyi (1980) reports a similar distribution for Kinyarwanda, although the correct generalization for this language is made somewhat obscure by independent properties of the language.[53] Thus, it is not the case that any possessor can raise across languages; rather the process is limited to possessors of NPs whose heads are in incorporable structural positions. This fact is explained by the assumption that V-N Reanalysis (= abstract NI) is what makes it possible

for the verb to govern and Case mark an embedded possessor, giving the 'raising' effect.

I have shown on the basis of Possessor Raising Constructions that a general process of N Reanalysis exists and is available in languages of the world. According to my theory of Reanalysis, N Reanalysis structures should have all the same syntactic properties as NI structures, because the two are essentially the same process. The consequences of this have already been explored with respect to the Government Transparency Corollary, which has been seen to have similar effects in the two cases. However, in section 2.3, we learned that NI has important effects with respect to the Case filter as well; in particular, if the head noun is incorporated into the verb, the NP it came from no longer needs to receive accusative Case from the verb. Rather, the incorporation itself suffices to 'morphologically identify' the NP, making it visible for Theta role assignment at LF. The major empirical consequence of this is that the verb's usual accusative Case is then available to morphologically identify some other NP in need. This is, for instance, what happens when NI strands a possessor, as in the Southern Tiwa example repeated above; the verb may assign accusative Case to the possessor in part because the larger NP no longer needs it by virtue of the incorporation. Now, if the parallelism between Reanalysis and Incorporation holds true, we expect N Reanalysis to have the same effect, causing the reanalyzed NP to no longer need Case. In fact, the truth of this hypothesis is already implied by the Possessor Raising constructions that we have seen so far. They have the structure of (125):

(125) a. CHICHEWA:
Fisi a-na-dy-er-a kalulu nsomba.
hyena SP-past-eat-asp hare fish
'The hyena ate the hare's fish.'

b.



Here, the reanalysis between the main V and the head of its complement is indicated by the index 'j'; the Case assignment between the verb and the possessor by the line linking the latter to the case assigning feature of the former. Now in order for this S-structure to be grammatical, it must be the case that the larger NP (NP*) does not need to be linked to the verb's Case feature. This will be true, if the reanalysis does in fact serve to identify this NP in the same way that incorporation does. The fact that the NP headed by 'fish' does not receive (structural) Case from the verb in (125a) is confirmed by the fact that it does not become the subject if the verb is passivized:

(126) a. *Nsomba a-na-dy-er-edw-a kalulu ndi fisi.
fish SP-past-eat-appl-pass-asp hare by hyena
'The fish of the hare was eaten by the hyena.'

Neither can 'fish' trigger object agreement on the verb in (125a). Further evidence to this effect comes from Chamorro, in which the 'default' case form of nominals is different from the simple accusative or bare form of the nominal. In a Possessor Raising structure, the NP headed by the reanalyzed patient N appears in this default oblique case, rather than in

the unmarked case of direct objects:

(127) Ha fa'gasi-yi yu' si Flory ni magagu-hu.
3sS-wash-appl me PN Flory obl clothes-my
'Flory washed my clothes.'

The possessor, of course, does appear in the object case.

4.2.4.3 N Reanalysis in applicatives

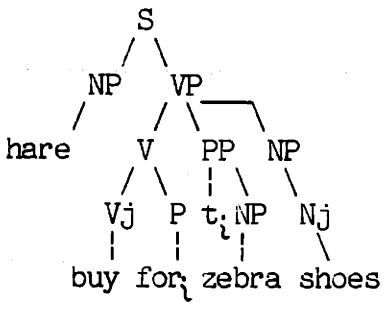
At last, we are ready to return to applicative constructions, and in particular the status of the 'second object' in a structure such as (105), repeated here:

(128) kalulu a-na-gul-ir-a mbidzi nsapato
hare SP-past-buy-for-asp zebras shoes
'The hare bought shoes for the zebras.'

It is clear that the applied object 'zebras' receives the verb's accusative Case in such structures, and that the second object 'shoes' does not. I reasoned above that perhaps the most desirable thing to say about this second object is that somehow it does not need to receive Case at all. Now, I have a theoretically viable explanation for how this can be, given that the NP in question is a theta role receiving argument--I claim that the second object in applicatives has in fact undergone N-V Reanalysis. It is morphologically identified by virtue of this relationship, and its accusative Case is no longer needed; rather, it can be freely reassigned, this time to the applied object, rather than a possessor. Abstractly incorporated nouns are still morphologically independent words, and thus need to appear in some form or another; thus they appear as unmarked stems (in Chichewa and Bahasa Indonesian) or in a default case form (in Chamorro and Eskimo). They do not, however, appear in a robust and distinctive

semantic case form. The resulting S-structure will have the following form:

(129)



If this approach is correct, we expect that if a given language has overt NI but no covert NI (i.e. N Reanalysis), the patient/basic object should be obligatorily incorporated in any applicative type construction. Southern Tiwa appears to be just such a language. Recall from above that Southern Tiwa has no Possessor Raising apart from overt NI, making it plausible that it has no N-V Reanalysis. And, indeed, NI is obligatory in applicative type constructions where the goal NP becomes Case-marked by the verb, according to Allen, Gardiner, and Frantz (1984):

(130) a. Ti-'u'un-wia-ban i-ay.
1sS:A-baby-give-past 2s-to
'I gave the baby to you.'

b. Ka-'u'un-wia-ban.
1sS:2sO|A-baby-give-past
'I gave you the baby.'

c. *'U'u-de ka-wia-ban
baby-suf 1sS:2sO|A-give-past
'I gave you the baby.'

In (130a), the goal appears in the form of a postpositional phrase. In the thematically equivalent applicative type construction (130b),[54] the postposition incorporates, and the goal comes to get accusative Case from

the verb, as signified by the fact that the verb agrees with the goal. This Case assignment is necessary, for the reasons discussed in section 4.2.1. This means that there is no Case remaining for the theme NP 'baby', so it can only escape the Case Filter by incorporating into the verb, as seen in (130b). If the 'second object' does not incorporate into the verb, the structure is ungrammatical (130c). Thus, in Southern Tiwa one actually sees the incorporation which I claim happens abstractly in every language that has applicative constructions.[55]

Before ending this section, let us briefly reconsider the causative construction. As I pointed out in the introduction to this subsection, Verb Incorporation and Preposition Incorporation put similar strains on the grammar, since both create structures in which a single morphological verb is responsible for Case marking two NPs. As seen in section 3.3.3 and again above, languages overwhelmingly tend to use the same Case marking resources to face these strains in both cases. Thus, languages like Kinyarwanda assign two accusative Cases in both situations, while languages like Turkish and Malayalam avoid the issue in both situations. I claim that languages like Chamorro and Chimwiini (abstractly) incorporate the extra NP in both situations. Thus, the results of section 3.3.3.3 on causatives in these languages which were stated in terms of assigning inherent accusative case are now refined and recast in the light of this section in terms of N Reanalysis. First, the verb reanalyzes (i.e. is coindexed) with the head of its NP object, thus freeing that object from the need to get Case. The verb then may move to COMP and ultimately incorporate without taking the object NP along. This movement, which would violate Chomsky's (1984) Uniformity Condition if inherent Case assignment

were involved, is legitimate because the trace of the verb will continue to govern the reanalyzed NP in exactly the same way that the trace of a complex N+V continues of govern the trace of the N in the case of overt Noun Incorporation (section 3.5). Finally, the complex matrix verb can assign its single Case assignment to the lower subject (causee). In this way, the properties of this type of causative construction are explained given the revised assumptions. Finally, in Southern Tiwa, where all incorporations are visible, Noun Incorporation of the lower object in a causative construction is obligatory in the same way (and for the same reasons) that Noun Incorporation of the basic object is obligatory in applicative constructions, and Noun Incorporation of the possessed noun is obligatory in Possessor Raising constructions. This was illustrated in section 3.3.3.4 (117)-(119). This confirms that it is correct to associate all of these constructions in terms of Noun Incorporation--overt or covert--as done in this section.

In conclusion, I have argued that the two objects the in the double object constructions formed by applicatives have very different statuses: one receives case from the verb in the normal way, while the other is in effect incorporated into the verb. In this way, the theoretical need for each NP to be morphologically identified (i.e. 'get Case' in the broadest sense) is satisfied without forcing the verb to assign two Cases (in the narrow sense). At the same time, certain asymmetries in the syntactic behavior of the two NPs are accounted for. Of course, many have addressed the question of how Case assignment works in 'double object' constructions in more familiar languages, with varying degrees of empirical and conceptual success (see, for example, Hornstein and Weinberg (1981), Kayne (1983), Oerhle (1975)). The account of Stowell (1981) is by far the most

similar to that of this work; Stowell too has the basic insight that one of the NPs in a double object construction must invisibly incorporate into the verb in order to avoid being ruled out by the Case Filter. The difference between my account and Stowell's is simply that Stowell incorporates the wrong NP--the dative, rather than the theme NP. That it is the theme NP that incorporates rather than the dative is clearly seen in languages with morphologically overt Incorporation such as Southern Tiwa and Mohawk, and this fact can be explained (see 4.4.2), given a disciplined account of Incorporation in general such as that developed in this work. More generally, in the system I have developed, the possibility of an account of double objects in terms of incorporation is not a strange or mysterious patchwork device; instead it falls out automatically from the combination of several notions, each of which has rich and wide-flung empirical support. Further empirical advantages to this approach to 'double object' constructions will unfold in the sections to come.

4.2.5 Appendix: On the applied affix

Consider the appearance of the so called 'applied affix' -ir/-er of Chichewa in sentence (131b):

(131) a. ngombe zi-na-tumiz-a mitolo ya udzu kwa mbuzi.
cows SP-past-send-asp bundles of grass to goats
'The cows sent bundles of grass to the goats.'

b. ngombe zi-na-tumiz-ir-a mbuzi mitolo ya udzu.
cows SP-past-send-appl-asp goats bundles of grass
'The cows sent the goats bundles of grass.'

(131a) has a preposition (kwa) which its thematic paraphrase (131b) lacks, while (131b) has the applied verbal affix, which (131a) lacks. I have argued that these two items are to be identified; the source of the applied

affix in (131b) is a preposition which is base generated in the same structural configuration as kwa in (131a), and which then undergoes X-o movement to incorporate into the verb, thereby appearing as an affix. From this assumption, a variety of facts about the distribution of applicative constructions and their syntactic properties can be explained, as we have seen. However, this cannot be the entire tale as to when the applied affix appears. Consider for instance, the following pair of sentences from the dialect of Chichewa described by Trithart (1977):[56]

(132) a. Joni a-na-pats-a nthochi kwa amai ake.
John SP-past-give-asp bananas to mother his
'John gave the bananas to his mother.'

b. Joni a-na-pats-a amai ake nthochi.
John SP-past-give-asp mother his bananas
'John gave his mother bananas.'

At least superficially, the relationship between (132a) and (132b) seems virtually identical to the relationship between (131a) and (131b), which suggests that the same principles of P Incorporation should be used to account for them. Nevertheless, the applied affix does not appear on the verb (or anywhere else, for that matter) in (132b) as one would expect if P Incorporation is in fact involved. On the other hand, consider the Chichewa Possessor Raising alternation once again:

(133) a. Fisi a-na-dy-a nsomba za kalulu.
hyena SP-past-eat-asp fish of hare
'The hyena ate the hare's fish.'

b. Fisi a-na-dy-er-a kalulu nsomba.
hyena SP-past-eat-appl-asp hare fish
'The hyena ate the hare's fish.'

In the Possessor Raised structure (133b), the applied affix mysteriously appears on the verb again, even though there is no thematic PP complement

in the thematic paraphrase (133a) which it could have incorporated from. Thus, if one holds to the view that what is traditionally called the applied affix is really a syntactically incorporated Preposition, it seems that this affix both appears when it should not and fails to appear when it should. Furthermore, neither of these mismatches is unique to Chichewa; rather they represent the usual case with applied affixes in languages of the world. Therefore the theory of the appearance of prepositional affixes stands in need of revision and clarification.

4.2.5.1 Extra applied affixes: possessor raising

Take first the case in which the applied affix productively and systematically appears when it is unexpected: Possessor Raising structures. This is not just a quirk of Chichewa; rather it is a very widespread phenomenon that the same affix that appears in dative and benefactive applicative constructions also appears in Possessor Raising constructions. For example, it is true also in the Austronesian language Chamorro:

(134) a. Ha fa'gasi si Flory i magagu-hu.
3sS-wash PN Flory the clothes-my
'Flory washed my clothes.'

b. Ha fa'gasi-<u>yi</u> yu' si Flory ni magagu-hu.
3sS-wash-<u>appl</u> me PN Flory obl clothes-my
'Flory washed my clothes.'

The same can be seen in Kinyarwanda (cf. (116)) and other Bantu languages, the Iroquoian languages, and Choctaw (Muskogean).[57] Thus, this curious homophony is something to be explained.

Let us consider the alternation in (133) more carefully. In fact, there

is an independent preposition in (133a) which does not appear in (133b) after all: namely, za 'of', the Case marker of the possessor NP. Thus, the alternation in (133) is in a sense more parallel to the paradigmatic alternation in (131) then one necessarily notices at first--the (a) sentences of both pairs have independent Prepositions and the (b) sentences both have applied affixes. Now, it cannot be the case that a P element in the position of za in (133a) moves directly to incorporate into the verb, thereby deriving (133b); such an incorporation would be blocked by the intervening head N 'fish', as discussed in section 4.1. Nevertheless, I will claim that there is a more abstract relationship between the preposition and the applied affix in structures like these.

To this end, consider more generally the role of the category 'preposition' in syntax. In its most canonical use, it performs two related but logically independent functions: it assigns a thematic role to an NP complement, and it assigns Case to that complement. Elementary examples of such uses are illustrated in English and Chichewa:

(135) a. I solved the homework problems for Pete.

b. ngombe zi-na-tumiz-a mitolo ya udzu kwa mbuzi.
cows SP-past-send-asp bundles of grass to goats
'The cows sent bundles of grass to the goats.'

Thus, for in (135a) assigns a benefactive thematic role to its complement Pete, while kwa in (135b) assigns a goal/receiver thematic role to its complement mbuzi 'goats'. In addition, these Ps are able to assign Case to these complements, and necessarily so, so that these NPs will be morphologically identified and thus 'visible' to receive their theta role at LF. Yet, in spite of the canonical link between these two functions of Prepositions, they can be dissociated under certain circumstances; in

particular, it seems that prepositions in some constructions appear to assign Case, but not to assign a theta role. Two plausible examples of this are:

(136) a. I witnessed the destruction of Babylon.

b. Anyani a-na-meny-ets-a ana kwa buluzi.
baboons SP-past-hit-cause-asp children to lizards
'The baboons made the lizards hit the children.'

In these sentences, it seems that no theta role is coming from the preposition itself; rather the theta role of the object of the P comes directly from the head noun destruction in (136a) and from the verb root -meny- 'hit' in (136b). Thus, there would be a significant theta role generalization captured between these sentences and those in (137), where no preposition is present which could possibly be involved in assigning the theta role:

(137) a. I watched them destroy Babylon.

b. Anyani a-na-chit-its-a kuti buluzi
baboons SP-past-do-cause-asp that lizards
a-na-meny-e ana.
SP-past-hit-asp children
'The baboons made the lizards hit the children.'

In fact, it seems clear that the reason why the prepositions occur in (136) is because the real theta role assigner cannot by itself assign the Case that its argument must have, either because it is inherently a category which does not assign Case, such as N in (136b) (cf. Chomsky (1981)), or because it is a morphological complex which has already reached the limit of its Case assigning ability, such as the complex V in (136b) (cf. section 3.3.3.3 and references cited there). Thus, these Ps perform one of their canonical properties, but not both, in this situation. Yet, it is

clear that it is in some sense the same preposition in both cases--compare, for example, (136b) with (135b). Now, when a P is merely present for reasons of Case assignment, it is not related to theta structure, and hence need not be present at D-structure. I will follow a common practice and assume that such tokens of prepositions, unlike their theta role assigning relatives, are in fact <u>not</u> present at D-structure and are inserted in the course of the derivation, before S-structure.[58]

I claim that applied affixes, as prepositional elements, also have two related but logically distinct functions, one involving Theta assignment, and the other involving 'Case'--or, more generally, morphological identification. Thus, in a canonical applicative construction, such as:

(138) ngombe zi-na-tumiz-<u>ir</u>-a mbuzi mitolo ya udzu.
cows SP-past-send-<u>appl</u>-asp goats bundles of grass
'The cows sent the goats bundles of grass.'

the applied affix assigns a goal theta role to the NP 'goats' (via its trace at levels past D-structure). However, like its cousin the independent preposition, the applied affix plausibly must also take some responsiblity to see that the complement it brings into the sentence is morphologically identified so that it can in fact bear the theta role destined for it. Unlike the independent preposition, however, it is not in a structural position where it can fulfill this responsibility simply by assigning Case to that NP itself, due to the principles of Incorporation and Case theory. In fact, we have seen in the body of this section that the only way allowed by the theory for the requirements of Case/morphological identification to be satisfied is for the verb (complex) to assign its structural Case to the argument of the applied affix, and for

the other object (usually the patient/theme) to abstractly incorporate with the verb. This indeed fulfills the technical, formal requirements of 'm-identification'. However, there is an obvious way in which the functional idea of morphological identification begins to break down here--for the simple reason that the 'incorporation' is abstract, having no visible morphological representation at all. If this is allowed freely, the idea of m-identification as revealing the thematic assignments becomes meaningless. Thus, it is reasonable to expect that there be an overt sign that an abstract incorporation has taken place as well. In fact, this expectation may in many cases be raised to the level of a formal requirement.[59] Then, the appearance of the applied affix can be taken to be this overt sign. This is plausible from the point of view of the language learner, in that whenever he or she sees a sentence such as (138) with an applied affix, he or she is led by Universal Grammar to assume that an abstract NI has taken place; it is then a small theoretical step to assume that it is a property of the morpheme itself that it signals the presence of an abstract NI. Thus, applied affixes are associated with the following two related but logically separate properties:

(139) (i) Assigns a theta role to an NP
(ii) Spells out the occurence of an N Incorporation

This is directly parallel to the functions of independent prepositions, as discussed above:

(140) (i) Assigns a theta role to an NP
(ii) Assigns Case to an NP

The first of these is a fundamental property; the second is the specific Case theory property that the element needs to have in order for it to

occur in grammatical structures given property (i), together with the independent fact that it is an affix or a morphologically independent item, as the case may be. There is an asymmetry between the two in that the NP mentioned in the two parts of (140) is always the same, whereas the N mentioned in (139ii) will not be the (head of the) NP mentioned in (139i). This asymmetry follows from general principles, however: the NP that a P assigns Case to must be the NP that it theta marks, because both relations require government; whereas the N whose incorporation the applied affix signals cannot be from the NP that it theta marks, since its incorporation would be blocked by the trace of the affix (see 4.4 below). Thus, we maintain that the notion the Ps and applied affixes are fundamentally two instances of the same category, with particular differences merely being consequences of the basic difference that one of them is an affix while the other is not.

The final step is to observe that applied affixes can be 'grammaticalized' so that they can appear because of their (ii) property even when their (i) property is not relevant, just as independent prepositions can. Thus, consider the Possessor Raising structure once again:

(141) a. Fisi a-na-dy-a nsomba za kalulu.
hyena SP-past-eat-asp fish of hare
'The hyena ate the hare's fish.'

b. Fisi a-na-dy-er-a kalulu nsomba.
hyena SP-past-eat-appl-asp hare fish
'The hyena ate the hare's fish.'

According to my analysis, (141b) differs from (141a) in that an abstract N Incorporation has taken place. But as discussed above, we expect that a morphological realization of this abstract process must appear, in order

for the Condition of Morphological Identification to be fully satisfied. Thus, the applied affix is inserted to perform this function in accordance with its property (139ii), even though it assigns no theta role. Hence, (141b) is to the canonical applied affix use (138) exactly what (136b) is to the canonical P use (135b). In the canonical case, the P-type element performs the morphological identification needed to allow its own argument to surface; in the extended case, the P-type element performs the same morphological identification for some other item's argument. Thus, the applied affix in Possessor Raising constructions is the same affix as that in (say) benefactive applicative constructions in exactly the same sense that kwa is the same preposition in (135b) and (136b). Thus, this crosslinguistically valid association is accounted for; the appearance of applied affixes in Possessor Raising constructions is rendered unmysterious. Parallel to independent preposition case-markers, I assume that the prepositional affix is inserted in place after D-structure, rather than being incorporated from some other position.

The fact that the same morpheme tends to appear in what I have been calling Possessor Raising structures and in what I have been calling benefactive applicative structures leads to systematic ambiguities. Thus, one sentence form can rather generally have either interpretation: (141b), for example, can mean 'The hyena ate fish for the hare' as well as its stated gloss. This raises the possibility that 'Possessor Raising' in the sense in which I have used the term really does not exist at all; rather there is only the benefactive applicative construction and it is part of the range of interpretation of the benefactive applied object that it is the one who possesses the theme NP. Indeed, this is a rather classical view. It is rather natural, in that the core meaning of the benefactive

theta role as discussed in section 4.1 was 'NP (intentionally) affected by the action'. Since the 'patient' NP is typically the primary recipient of the action, the owner of the patient will generally be affected by that action.

Undoubtably there is truth in this observation, and I appeal to it as the explanation that it is always the benefactive applied affix that appears in Possessor Raising constructions, and not an instrumental or locative applied affix, in languages where these exist and are morphologically distinct.[60] Nevertheless, in the framework developed in this work, there is no reason not to expect Possessor Raising to occur: Possessor Raising is exactly the expected side-effect of N-V Reanalysis, and N-V Reanalysis is expected to exist given that V-V Reanalysis and V-P Reanalysis are both attested. Thus, it would be more awkward to explain why Possessor Raising does not exist (in the limited way that it does) than to explain why it does, given these assumptions. Thus, we can at no cost maintain that a structural difference underlies the (admittedly subtle) difference between the two readings of a sentence like (141b). Moreover, it seems likely that if one is very careful with choosing lexical items with the proper subcategorization and selection properties, that differences between the two could be teased out.

In this light, I will briefly mention two kind of arguments that Possessor Raising does exist independently of benefactive applicatives. The Iroquoian languages include an applicative morpheme which generally appears with both benefactive and possessor raising readings (Mithun 1984):

MOHAWK:
(142) Wa-hi-'sereht'-óhare-'se.
past-3MS/1sO-car-wash-appl
a. 'He washed the car for me.' OR
b. 'He washed my car.'

(The argument Case marked by the verb triggers object agreement and is 'pro-dropped' in this sentence.) However, there is a certain class of verbs in which the Possessor Raising reading does not require the applied morpheme to appear, whereas the benefactive reading does:

ONEIDA: (M. Doxtator, via Michaelson p.c.)
(143) a. Wa?-hi-nuhs-ahni:nu: John.
past-1sS/3MO-house-buy John
'I bought John's house.'

b. Wa?-hi-nuhs-ahni:nu:-se? John.
past-1sS/3MO-house-buy-appl John
'I bought a house for John.'

This contrast can be understood if we assume that the morphological identification of incorporation does not require a marking in and of itself with these verbs for some reason.[61] Then, for the possessor reading, no applied morpheme will be necessary. However, for the benefactive reading, the morpheme is still present to assign a theta role to its argument, thereby accounting for its appearance in (143b). This strongly suggests that the two structures are distinct.

This conclusion is reinforced in the Muskogean language of Choctaw, by an argument due to Munro (ms). She observes that Choctaw contains idioms which have the form of possessed NPs, such as naahollo i-tobi 'white-man's beans' meaning 'green peas'. The possessor part of this idiom then freely 'raises', such that it is case marked by the verb and triggers agreement on it rather than on the 'possessed' noun:

(144) a. Naahollo i-tobi-ya apa-li-tok.
white-man agr-bean-ns eat-1sS-past
'I ate the white man's beans.' OR
'I ate the green peas.'

b. Naahollo-ya tobi i-m-apa-li-tok.
white-man-ns bean 3s-appl-eat-1sS-past
'I ate the white man's beans.' OR
'I ate the green peas.'

The idiomatic interpretation present in the non-possessor-raised structure (144a) is still available in the possessor raised structure. This shows that the NP in question can be dependent on the head noun of the object for its semantic interpretation, instead of just on the prepositional affix. This confirms my approach to such structures in general, and to the nature of the applied affix in particular.[62]

4.2.5.2 Missing applied affixes: dative shift

Now, I turn to consider the cases where no applied affix appears, even though one might be expected. Thus, the following paradigms seem completely parallel--except that (146b) lacks one small morpheme which is present in (145b):

(145) a. ngombe zi-na-tumiz-a mitolo ya udzu kwa mbuzi.
cows SP-past-send-asp bundles of grass to goats
'The cows sent bundles of grass to the goats.'

b. ngombe zi-na-tumiz-ir-a mbuzi mitolo ya udzu.
cows SP-past-send-appl-asp goats bundles of grass
'The cows sent the goats bundles of grass.'

(146) a. Joni a-na-pats-a nthochi kwa amai ake.
John SP-past-give-asp bananas to mother his
'John gave the bananas to his mother.'
(Trithart (1977); *Mchombo (p.c.))

b. Joni a-na-pats-a amai ake nthochi.
John SP-past-give-asp mother his bananas
'John gave his mother bananas.'
(Trithart (1977); Mchombo (p.c.))

NPs receive the same theta roles in the same configurations in both (145b) and (146b): a goal argument is immediately postverbal and the theme argument also appears unmarked in the VP. Thus, it seems that these two sentences should be associated with the same syntax in order to capture these generalizations in a transparent way. This conviction grows when one realizes that the two behave identically with respect to their interactions with other syntactic processes. Thus, we saw in sections 4.2.1 and 4.2.4 that the goal argument in a sentence like (145b) can trigger object agreement, can 'pro-drop', and can become the subject when the verb is passivized. In contrast, the theme object has none of these properties. Exactly the same characteristics hold true of the goal and theme NPs in a structure like (146b) (Mchombo, personal communication):

(147) a. ngombe zi-na-zi-pats-a mbuzi nsima.
cows SP-past-OP-give-asp goats cornmush
'The cows gave the goats cornmush.'

b. ngombe zi-na-zi-pats-a nsima.
cows SP-past-OP-give-asp cornmush
'The cows gave them cornmush.'

c. mbuzi zi-na-pats-idw-a nsima ndi ngombe.
goats SP-past-give-pass-asp cornmush by cows
'The goats were given cornmush by the cows.'

(148) a. *ngombe zi-na-i-pats-a mbuzi nsima.
cows SP-past-OP-give-asp goats cornmush
'The cows gave the goats cornmush.'

b. *ngombe zi-na-i-pats-a mbuzi.
cows SP-past-OP-give-asp goats
'The cows gave the goats it.'

c. *nsima i-na-pats-a mbuzi ndi ngombe.
cornmush SP-past-give-asp goats by cowa
'Cornmush was given the goats by the cows.'

Thus, it would seem to be a theoretical failure not to capture these generalization by assigning the same syntactic descriptions in both cases.

The case for this is still incomplete,[63] but more striking evidence will be found in its favor in later sections, where it will be seen that the two structures behave alike with respect to wh-extraction (section 4.3.1) and with respect to interactions with other incorporation processes (section 4.4).

This situation also is not an isolated idiosyncracy of Chichewa, but rather the normal case in languages of the world. As another example, Chamorro (Austronesian, Gibson (1980)) has a productive applicative construction, in which the prepositional affix has the phonological forms -i/-yi/-gui, depending on the (morpho)phonological context:

(149) a. Hu tugi' i kätta pära i che'lu-hu.
1sS-write the letter to the sibling-my
'I wrote the letter to my brother.'

b. Hu tugi'-i i che'lu-hu ni kätta.
1sS-write-appl the sibling-my obl letter
'I wrote my brother the letter.'

However, there is a small class of verbs which appear in sentence configurations identical (149b), but which do not have the applied morpheme on the verb. In fact, they also do not appear in a structure like (149a). Examples of this class are the verbs na'i 'give', fa'nu'i 'show', and bendi 'sell':

(150) a. In nä'i si tata-n-mami nu i babui.
1pex-give PN father-lk-our obl the pig
'We gave our father the pig.'

b. *In nä'i i babui pära si tata-n-mami.
1pex-give the pig to PN father-lk-our
'We gave the pig to our father.'

Once again, sentences like (150a) have the same syntactic behavior as

sentences like (149b) in nontrivial ways, as Gibson demonstrates. Again, there is a generalization to be captured here.

The only way to account for this generalization and yet maintain the explanatory value of the P Incorporation account of applicative constructions is to claim that sentences like (146b) and (150a) are derived by P Incorporation as well. The only difference is that with a very limited set of verbs, the affix is simply invisible. In fact, this is natural enough, if we keep in mind the nature of the morphological side of Incorporation. As discussed in section 1.4.5, X-o movement creates a complex structure consisting of more than one X-o level item; it is then the task of the morphological subcomponent of the grammar to determine what the phonological shape of the combination will be. Now, in the cases we have been focusing on, this task is fairly transparent; it has only involved prefixation and suffixation of productive morphemes, plus perhaps a few simple cyclic phonological rules. Nothing in the framework, however, requires that it always be this easy. In particular there can be--and sometimes is--morphological selection for a particular form of a syntactically incorporated affix by the specific root, just as there is morphological selection between roots and affixes in non-syntactic affixation. The relation can even be morphophonologically irregular in some way, or even suppletive. These possibilities will be discussed and illustrated again in section 6.2. One other possibility that fits in with this range of phenomena is that the morphophonological shape of the combination of two items is identical to the morphophonological shape of one of these items on its own. With some types of morphology, this is uncontroversial. For example, the formation of past participles in English shows this entire range of morphological realization. The most common and

productive way of forming past participles is to added the productive affix -d to the verb, which may undergo general phonological rules of voicing assimilation and epenthesis, thereby deriving forms such as like/liked, advise/advised, omit/omitted. Nevertheless, some verbs select for a special, unproductive morpheme -en (e.g. give/given); others are suppletive (e.g. sing/sung, buy/bought). Finally, a small class of verbs have a past participle which is morphologically identical to the stem itself: cut/cut, split/split, hit/hit. Yet in spite of this morphophonological variation, all of these past participles are equivalent in terms of syntactic properties and distribution. The claim, then, is that the morphological forms that arise from syntactic incorporation show exactly the same range of variation. This is as expected given the nature of the morphological component of the grammar and how it fits into the grammar as a whole. Thus, the Chichewa applied affix -ir is morphophonologically similar to the English past participle affix -ed; it is productive, relatively invariant in shape, and is subject to simple phonological rules--in this case, Vowel Harmony. The Chamorro applied affix -i is similar, but it can appear with an extra consonant, which is usually phonologically conditioned, but which may be morphologically conditioned as well. The Tuscarora applied marker, on the other hand, has forms that cannot be explained by phonological rules; rather the form is to some degree selected by the verb and the aspect (Williams (1976:87)). Williams gives the following summary of forms:

(151)

ASPECT / V-TYPE	Serial/ Perfective	Punctual/ Imperative
Class I	-?θe	-?θ
Class II	-(a)ni	-ahθ
Class III	-ani	-v

This sort of form selection/morphological conditioning is similar to English selection for an _-en_ past participle morpheme. Nevertheless, the syntax of applicatives in Tuscarora is essentially identical to that of applicatives in Chichewa. Suppletive forms also exist in certain languages. Given this context, it is not not surprising that the combination of verb and applied affix is sometimes identical in form to the verb itself, just as _cut_ plus the past participle is still _cut_. I claim that it is exactly this which underlies the apparent disappearance of the applied morpheme in sentences like (146b) and (150a); for the small and semi-idiosyncratic set of verbs the applied affix is syntactically present but is simply not seen. Here again, there are two cases: in Trithart's Chichewa (Chichewa-B) the verb _patsa_ 'give' appears in both an applicative (146b) and a nonapplicative (146a) frame and hence is both a basic verb and a verb + applied affix; in Chamorro the verb _na'i_ 'give' appears only in the applicative frame (150a) and hence is only the form of a verb + applied affix. There is then a gap in the paradigm; Chamorro assigns no morphological form to the straight verb 'give'. To return to the participle analogy, the Chichewa-B case is directly parallel to the case of English past participles of verbs like _cut_; the Chamorro case is parallel to the case of verbs with defective paradigms, which do not appear in all tenses in a language. Mchombo's Chichewa (Chichewa-A) is similar to Chamorro in this regard; (146a) is ungrammatical in this dialect.

Unsurprisingly, this type of null applicative morphology is tolerated only with a limited number of verbs in any given language, and they are always the verbs which one might think of as canonical applicative type verbs, in that they naturally include and focus on a goal or benefactive argument. Thus, although the class of verbs that allow a null applicative in a given language is always idiosyncratic to a degree, the verb meaning 'to give' has a null applicative more often than not, and 'to show' and 'to send' are very common members of this class, while verbs like 'to hit' or 'to like' are probably never in this class. Undoubtably, this is what solves the learnability problem posed to a child by the existance of null syntactic affixes. As always, the theoretical justification for positing such null affixes is the need to capture significant syntactic generalizations in an appropriate way.[64]

Here a comment is in order concerning the dialectal difference between Chichewa-A and Chichewa-B. As discussed in section 3.3, these dialects differ both in their type of causative construction and in that the later but not the former has morphologically unmarked 'double object' constructions. This correlation was shown to be systematic in languages of the world, and was explained by saying that in languages like Chichewa-B verbs can assign an inherent accusative Case, whereas in languages like Chichewa-A they cannot. In section 4.2.4, this characterization was replaced by one which says that the first type can 'abstractly incorporate' (i.e. Reanalyze) an NP, while the other cannot. This covers every language that I know enough about--except Chichewa-A. As we have seen, Chichewa-A must in fact have NP reanalysis in its applicative constructions and in its Possessor Raising constructions. Why then does is it not

available in causative constructions as well? The answer must be related to the fact that the morphologically unmarked 'dative shift' alternation in (146) is also lost in the change from Chichewa-B to Chichewa-A. We can say that Chichewa-A is a hybrid system in transition, and that it allows N-V reanalysis, but crucially only if that Reanalysis is morphologically represented by (say the applied affix). The sole exception to this in the language is patsa 'give', and even this item ceases to alternate and is frozen into the (146b) frame. Then, it would be impossible for a language with this stipulation as part of its particular Case marking system to have a causative identical to that of Chichewa-B; at least the necessary Reanalysis would require a special insertion of -ir in addition. However, Chichewa-A's idiosyncratic P insertion rule in causatives happens to insert the independent preposition kwa rather than the prepositional affix -ir, as seen in section 3.3.3.3. Nothing about Universal Grammar would block inserting the applied affix instead; in fact the applied affix is obligatory in Tzotzil (Mayan) in just such circumstances (Aissen 1983). This is simply an instance of low-level crosslinguistic variation.

Finally, it is consistent with our set of assumptions that a language may have only the phonologically null applicative affix form. This would be similar to languages which have only phonologically null passive forms (cf. Lawler (1977)) or phonologically null deverbal nominalizing 'affixes'. Presumably, the restriction of the process to a semantically/selectionally defined subclass of 'canonical' applicative verbs will hold in this case as well, thereby making the process much less general across the class of verbs than in a language with an overt applied morpheme. This scenario describes the famous class of dative shift constructions in English almost perfectly. Examples of this include:

(152) a. Joe gave a computer to his girlfriend for her birthday.

b. Joe gave his girlfriend a computer for her birthday.

(153) a. I sent my resume to this accounting firm last week.

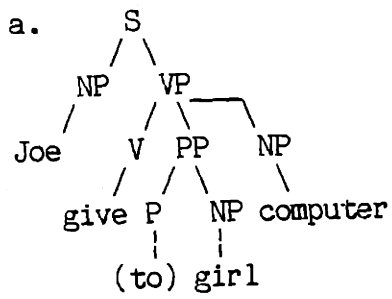
b. I sent this accounting firm my resume last week.

(154) a. Picasso carved that figurine on the mantle for Mary Harvey.

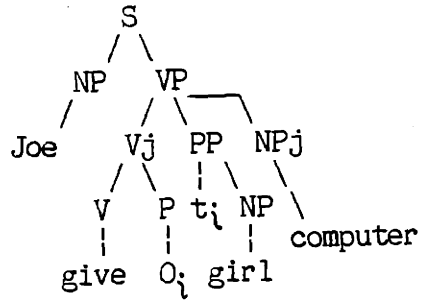
b. Picasso carved Mary Harvey that figurine on the mantle.

Thus, I will claim that P Incorporation occurs in English as well, thereby assigning to a sentence like (152b) the following set of descriptions:

(155) a.



b.



Besides being allowed by no more than a minor extension of the theory, this approach gives an analysis with some explanatory depth to this intractable construction. First of all, the D-structure (125a) is parallel to the D-structure (and S-structure) of the non-dative-shifted counterpart (152a), thereby accounting for the fact that the two are thematic paraphrases in consonance with the Uniformity of Theta Assignment Hypothesis. Moreover, the Case theory puzzles posed by these structures with two bare NPs are solved by this analysis: it accounts immediately for the fact that it is the goal/benefactive argument that must appear adjacent to the verb in dative shifted structures, since it is this agrument which can only be morphologically identified by receiving accusative Case from the verb, parallel to the case with applicatives, as discussed at length in sections

4.2.1 and 4.2.4:

(156) a. *I sent my resume this accounting firm last week.

b. *Picasso carved the figurine on the self Mary Harvey.

These sentences are Case Filter violations, since the second NP is not adjacent to the V as a realization of accusative Case, nor can they be reanalyzed with the verb since this is blocked by the intervening trace of the empty preposition. Thus, 'Marantz's Generalization' holds in English as well.[65] This also explains correctly the fact that (in general)[66] the goal/benefactive argument may become the subject of the sentence when the verb is passivized, whereas the theme NP may not:

(157) a. This accounting firm was sent 100 resumes last week.

b. ?*100 resumes were sent this accounting firm last week.

(158) a. Mary Harvey was carved a figurine by Picasso.

b. *This figurine was carved Mary Harvey by Picasso.

In all of these ways, the syntax of dative shift is identical to the syntax of applicatives in other languages--a crosslinguistic generalization which is also captured by giving them similar structures. In section 4.3 it will be shown that this hypothesis also accounts for the properties of wh-extraction from dative shifted structures. In this way, the syntax of dative shift is explained. Moreover, it is well known (cf. Oerhle (1975), Stowell (1981), Czepluch (1982)) that there are lexical idiosyncracies in dative shift, so that some verbs seem to dative shift optionally (as seen above), some verbs obligatorily, and some cannot dative shift at all, in spite of being semantically plausible candidates. Examples of these last two cases are:

(159) a. Jerry donated his butterfly collection to the church.

b. *Jerry donated the church his butterfly collection.

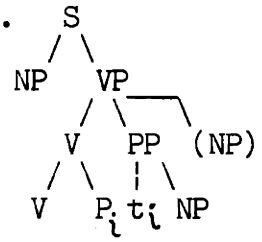
(160) a. *The orange socks cost two dollars to/for Linda.

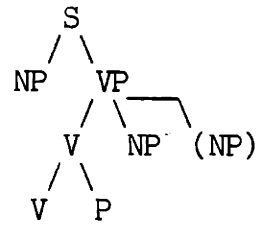
b. The orange socks cost Linda two dollars.

This range of apparent lexical idiosyncracy can be accounted for in the same terms as the Chamorro/Chichewa difference in the optionality of 'dative shift' discussed above--by appealing to morphological idiosyncracy. Thus, instead of abandoning a syntactic account of dative shift and falling back on multiple subcategorization frames, one can simply say that give is the morphological form for both 'give' and 'give-to'; donate is the morphological form for 'donate', but there is no valid morphological form for 'donate+to'; and cost is the morphological form for 'cost+to' but there is no morphological from for simply the 'cost' which takes a 'benefactive' argument. Then the combinations of lexical items that are morphologically well-formed will act as a filter, eliminating improper PIs or sentences in which PI improperly failed to occur. Thus, the explanatory syntactic account of dative shift is preserved, and the lexical idiosyncracy is reduced to a relatively familiar (albeit abstract) type of morphological idiosyncracy.[67] In this way dative shift constructions receive a new and in some ways more adequate explantion, and we find evidence that Preposition Incorporation and Noun Incorporation (in the form of Reanalysis) appear even in English.

4.3 Preposition Incorporation and Wh-movement

Applicative sentences are commonly thought to be formed by a Grammatical Function changing process of some kind, in which an oblique phrase comes to be the direct object of the clause it appears in. I claim, however, that there are no GF changing processes per se; rather, applicatives appear as a result of moving a preposition out of the PP phrase which it heads at D-structure and incorporating it into the verb that governs it. This movement then causes the derived verb complex to govern the NP object of the moved P (by the GTC) and forces it to Case mark that NP, as discussed at length in the preceding section. Since the thematically oblique NP is governed and assigned structural Case by the verb, it behaves like a standard direct object in many ways; in particular, in the ways which are dependent on government and Case theory. In this way, the 'GF changing effect' illustrated in the literature is accounted for. This is short of saying that the thematically oblique NP becomes a full-fledged direct object in every sense, however. In fact, the theory of Incorporation implies that it will <u>not</u> become a structural object in the X' theory sense of being an [NP, S]. The Projection Principle implies this by requiring that thematically relevant categorial structure be preserved. Hence, the moved P must leave a trace, which continues to head a PP that contains the thematically oblique NP. In other words, the structure is (161a) and not (161b):

(161) a. 

b. 

The retained preposition trace and PP node are 'invisible' for many purposes given the Government Transparency Corollary. Nevertheless, we still expect that its presence will be detectable with respect to some subtheory of the grammar, thereby causing differences between 'applied objects' and standard direct objects to appear in that realm. The issue here is directly parallel to the one in section 3.4, where I argued on the basis of wh-movement facts that the original biclausal thematic structure of causatives is maintained in Verb Incorporation sentences, in accordance with the Projection Principle. In this section, I seek to establish the corresponding point for P Incorporation sentences. Once again, this will empirically distinguish the syntactic Incorporation account of applicatives which I have been developing from alternatives which derive applicatives in the lexicon or in the syntax but in a way which does not obey a strong Projection Principle (see the introduction to section 3.4 for discussion).

As with Verb Incorporation, crucial data which distinguishes applied objects from standard direct objects comes from wh-movement constructions in Chichewa. Thus, it is perfectly acceptable to extract the object of an ordinary transitive verb:

(162) a. Ndi-ku-ganiz-a kuti Mavuto a-na-on-a mfumu.
1sS-pres-think-asp that Mavuto SP-past-see-asp chief
'I think that Mavuto saw the chief.'

b. Iyi ndi mfumu imene ndi-ku-ganiz-a kuti a-na-on-a.
This is chief which 1sS-pres-think-asp that 3sS-past-see-asp

'This is the chief that I think that she saw.'

However, the benefactive applied object cannot be extracted in this way, in spite of its many surface similarities to a standard direct object:

(163) a. A-ku-ganiz-a kuti mu-phik-ir-a mfumu nsima.
3sS-pres-think-asp that 2sS-cook-appl-asp chief cornmush
'He thinks that you cooked cornmush for the chief.'

b. *Iyi ndi mfumu imene a-ku-ganiz-a kuti
This is chief which 3sS-pres-think-asp that
mu-phik-ir-a nsima.
2sS-cook-appl-asp cornmush
'This is the chief which he thinks that you cooked the cornmush for.'

(163a) is similar to (162a), but this time the wh-movement in (163b) is simply ungrammatical. In the sections that follow, I will show that this contrast can only be explained if there is indeed an extra PP node in (163) which is not present in (162) and which blocks the extraction. This then will establish the Incorporation theory, which predicts that exactly this difference in structure should exist. Furthermore, we will find that there is a difference between the different types of applicative constructions with respect to extraction, which confirms this analysis in a surprising way.

4.3.1 Benefactive and dative applicatives

4.3.1.1 The basic data

First, let us focus on benefactive and dative applicative structures. Here, the core effect is the one which has already been illustrated: it is impossible to move the benefactive argument to form (say) a relative clause. Further examples of this are:

(164) a. Ndi-na-nen-a kuti Mavuto a-na-thyol-er-a mfumu mpando.
1sS-past-say-asp that Mavuto SP-past break-appl chief chair.
'I said that Mavuto broke the chair for the chief.'

b. *Iyi ndiyo mfumu i-mene ndi-na-nen-a kuti Mavuto
this is chief which 1sS-past-say-asp that Mavuto
a-na-thyol-er-a mpando.
SP-past-break-appl-asp chair
'This is the chief which I said that Mavuto broke the chair for.'

(165) a. Mavuto a-na-umb-ir-a mfumu mtsuko.
Mavuto SP-past-mold-appl-asp chief waterpot
'Mavuto molded the waterpot for the chief.'

b. *Iyi ndiyo mfumu imene ndi-ku-ganiz-a kuti Mavuto
this is chief which 1sS-pres-think-asp that Mavuto
a-na-umb-ir-a mtsuko.
SP-past-mold-appl-asp waterpot
'This is the chief which I think that Mavuto molded the waterpot for.'

In order to find the correct explanation for the ungrammaticality of wh-moving this nominal, we must know something about the generality of the prohibition that seems to be in effect. Interestingly, the inability to wh-move holds only of the applied object, and not of the basic patient object. This 'second object' can move quite freely:

(166) Uwu ndi mpando u-mene ndi-na-nen-a kuti Mavuto
this is chair which 1sS-past-say-asp that Mavuto
a-na-thyol-er-a mfumu.
SP-past-break-appl-asp chief
'This is the chair which I said that Mavuto broke the for the chief.'

(167) Uwu ndiwo mtsuko u-mene ndi-ku-ganiz-a kuti Mavuto
This is waterpot which 1sS-pres-think-asp that Mavuto
a-na-umb-ir-a mfumu.
SP-past-mold-appl-asp chief
'This is the waterpot that I think that Mavuto molded for the chief.'

These examples contrast minimally with the corresponding examples in (164b), (165b), suggesting that whatever makes the latter cases bad is a property specifically of the applied object, and not of the construction as

a whole.[68]

Dative applicative constructions pattern together with benefactive applicative constructions in these respects. Thus, pereka 'to hand over' is a Chichewa verb which obligatorily subcategorizes for a goal argument. This argument can appear either as an independent PP or as an applied object:

(168) a. Atsikana a-na-perek-a chitseko kwa mfumu.
girl SP-past-hand-asp door to chief
'The girl handed the door to the chief.'

b. Atsikana a-na-perek-er-a mfumu chitseko.
girl SP-past-hand-appl-asp chief door
'The girl handed the chief the door.'

In the applicative form, the second object may be extracted freely, but the dative applied object may not be extracted at all:

(169) a. *Iyi ndi mfumu imene ndi-na-nen-a kuti atsikana
this is chief which 1sS-past-say-asp that girl
a-na-perek-er-a chitseko.
SP-past-hand-appl-asp door
'This is the chief which I said that the girl handed the door to.'

b. Ichi ndi chitseko chimene ndi-na-nen-a kuti atsikana
this is door which 1sS-past-say-asp that girl
a-na-perek-er-a mfumu.
SP-past-hand-appl-asp chief
'This is the door which I said that the girl handed to the chief.'

Moreover, whatever factor is in effect here has some cross-linguistic generality. Thus, a similar difference between applied objects and basic objects shows up in a particular question formation strategy in Chamorro (Austronesian; Gibson (1980), Chung (1982)). (170a) shows a typical applicative construction from this language:

(170) a. Hu tugi' i kätta pära i che'lu-hu.
1sS-write the letter to the sibling-my
'I wrote the letter to my brother.'

b. Hu tugi'-i i che'lu-hu ni kätta.
1sS-write-appl the sibling-my obl letter
'I wrote my brother the letter.'

From the applicative structure, questioning the theme 'second object' is grammatical, but questioning the goal 'applied object' is not:[69]

(171) a. *Häyi t-in-igi'-i-n-niha ni katta?
who nom-write-appl-1k-their obl letter
'Who did they write the letter to?'

b. Häfa t-in-igi'-i-n-niha as Rosa?
what nom-write-appl-1k-their obl Rosa
'What did they write to Rosa?'

Furthermore, Gibson shows that this effect carries over into 'double object' structures which have the same structural configuration of NPs but where no (overt) applied affix appears on the verb. Na'i 'give' is a verb that appears in such configurations in Chamorro:

(172) Ha nä'i yu' si Antonio nu i floris.
3sS-give me PN Antonio obl the flower
'Antonio gave me the flowers.'

The possible wh-extractions from this structure are exactly the same as those from the overtly applicative structure (170b):

(173) a. *Häyi ni-nä'i-na si Antonio nu i floris?
who nom-give-his PN Antonio obl the flower
'Who did Antonio give the flowers to?'

b. Häfa ni-nä'i-na si Antonio nu hagu?
what nom-give-his PN Antonio obl you
'What did Antonio give you?'

This identity of behavior strongly confirms the hypothesis of 4 2.5.2 that

'dative shift' constructions where there is no change in verbal morphology are to be assimilated to applicative constructions in which there is overt and productive verbal morphology. In particular, both involve P Incorporation, visible or not, thereby accounting for the fact that the two constructions have the same syntax.

Finally, these examples bring to mind another language in which the ban on extracting benefactive/dative applied objects is operative--namely English. It is a well-known fact that the 'inner', thematically oblique NP cannot be questioned from an English dative shift construction, while the 'outer', basic object NP can (data from Stowell (1981)):

(174) a. Wayne sent a telegram to Robert.

b. Wayne sent Robert a telegram.

c. *Who did Carol say that Robert sent - a telegram?

d. What did Carol say that Robert sent Wayne - ?

(175) a. Greg baked a birthday cake for his mother.

b. Greg baked his mother a birthday cake.

c. *Whose mother did Greg bake - a birthday cake?

d. What did Greg bake his mother - ?

The similarity between the English, Chamorro, and Chichewa cases is obvious, and it would be highly desirable to have the same account cover all three.

Before continuing, I digress briefly to discuss the question of whether the constraint against the extraction of datives and benefactives which we are seeking should be universal or not. Clearly it would be desirable from the point of view of learnability for the answer to be 'yes', since the

data needed to learn the difference directly would not be easily available to the child. On the other hand, the literature seems to point to the opposite; benefactives/datives are said to be wh-extractable in Kinyarwanda (Kimenyi 1980), Chimwiini (Kisseberth and Abasheikh (1977)), Bahasa Indonesian (Chung (1976)--but see her fn. 11!), and other Bantu languages such as Mashi, Luyia, and Kimeru (Hodges (1977)). There are two factors that may hide what is going on, however. First, in Chichewa if the lower verb shows object agreement with the extracted benefactive, the sentence becomes perfect. For example:

(176) Iyi ndiyo mfumu imene ndi-na-nen-a kuti Mavuto
This is chief which 1sS-past-say-asp that Mavuto
a-na-i-umb-ir-a mtsuko.
SP-past-OP-mold-appl-asp waterpot
'This is the chief which I said that Mavuto molded the waterpot for.' (compare (167), etc.)

When the agreement is present, island effects also disappear (cf. 3.4 fn. 42), so there is evidence there is no real wh-movement in this construction; rather the agreement acts as a resumptive pronoun. The second interfering effect is that sentences are much improved in both Chichewa and English (for many dialects) if the extracted benefactive phrase appears in the COMP of the same clause from which it was extracted:

(177) ?Iyi ndiyo mfumu imene Mavuto a-na-umb-ir-a mtsuko.
This is chief which Mavuto SP-past-mold-appl-asp waterpot
'This is the chief which Mavuto molded the waterpot for?'

These sentences are still noticeably deviant, but to a much milder degree--presumably for some parsing or analogical reason (Stowell (1981), Hornstein and Weinburg (1981))--to the point that they can be essentially acceptable. These two factors together make most of literature useless for deciding whether the extraction of benefactives is universally forbidden or

not, since putative examples of benefactive extractions are invariably only 'short' extractions, and often (in the Bantu literature) optional object agreement appears as well. Hence, none of these examples are conclusive with respect to the issue at hand. Thus I leave open the question of whether the constraint which we are seeking should be parameterized (and parameterizable) or not.

4.3.1.2 Theoretical approaches

The association between Chichewa and Chamorro applicatives and English dative shift constructions established above provides a link to a rich body of literature. A number of researchers have tried to account for the difficulty of wh-moving the dative shifted 'inner' NP in an Extended Standard Theory framework, and any of their solutions would potentially be available to account for applicatives crosslinguistically as well. I will (very briefly) survey some of the most important possibilities. To this end, consider an abstract, possibly derived, dative shift structure as schematized in (178):

(178) $\ldots[_{VP}\ V\ \ NP^*\ \ NP^{\sim}\ \ldots]$

Why should it be that NP~ can be wh-moved from such a configuration, but NP* cannot be? One obvious idea in this regard, which reoccurs in different forms, is that it is simply bad to take out the first or innermost of two formally identical categories (here NP), either for purely perceptual reasons (Jackendoff and Culicover (1971)), or as a general, formal constraint on rule application (Oehrle (1975), (1983)).

Two somewhat more subtle variants of this basic notion are those of

Kayne (1983) and Stowell (1981), both of whom argue that the structure of (178) must be further articulated because of deep theoretical reasons. Thus, Kayne's 'unambiguous path' condition on theta role assignment (plus Case theory) implies that 'double object' constructions must have an embedded 'small clause' structure such as:

(179) $\ldots[_{VP}\ V\ [_{sc}\ (P)\ NP^*\ \ NP^{\sim}]\ \ldots]$

He then proceeds to rule out the extraction of NP* by his version of the ECP, which blocks movement from a 'left-branch' (in a phrase structure tree) in general. In this way, he relates the impossibility of extracting NP* to the impossibility of extracting (say) from the subject of a normal clause. Stowell's approach is very different; he appeals to a principle that says that Case assignment can only take place under strict adjacency in English, and then points out that in order for NP~ to get Case, it must be strictly adjacent to the verb. This, he claims, is only consistent if NP* has been 'incorporated' (in sense of the term somewhat different from mine) into the verb, giving the following structure:

(180) $\ldots[_{VP}\ [\ V + NP^*\ ]_V\ NP^{\sim}\ \ldots]]$

Then, NP* cannot be wh-moved in this construction, for the simple reason that syntactic movement rules never apply to the subparts of words (compare my 1.4.5 (86)).

Finally, there are two approaches which focus not so much on NP*'s configurational relationship to V and NP~, but on inherent properties of NP* itself. One such is that of Hornstein and Weinberg (1981), who assume that dative shift verbs such as 'give' (somewhat exceptionally) mark the

first NP (NP*) with oblique Case, and the second (NP~) with objective Case. Then, they propose a general filter which rules out obliquely Case-marked traces, thereby making NP* unextractable. In this way, they relate the extraction fact under consideration to the general ban on Preposition Stranding in languages of the world. Finally, Czepluch (1982) argues for reasons having to do with Case theory that there must be a phonologically empty preposition present and associated with NP* in double object constructions (cf. Kayne (1983, chapter 9).

(181) $\ldots[_{VP}\ V\ [\ e_P\ NP^*]\ \ NP^{\sim}\ldots]$

Then, extraction of NP* is prohibited by a general constraint against configurations with embedded empty categories, such as *[e [t]]. Any of this wealth of ideas is potentially available for being extended to cover the cases of applicatives in Chichewa and Chamorro.

4.3.1.3 The Non Oblique Trace filter

However, by relating the Chichewa and Chamorro structures to the English dative shift structures, we also gain strong counterarguments against most of these proposals. Each view has conceptual weaknesses in its own right (see references for discussion), but a wider cross-linguistic perspective shows them to be simply untennable. To begin with, we have seen that the benefactive applicative in Chichewa, unlike dative shift in English, is fully productive. In particular, we have seen (section 4.2.2) that benefactive applicatives can be formed with (unergative) intransitive base verbs under certain conditions. An example is repeated here:

(182) Mavuto a-na-vin-ir-a mfumu.
Mavuto SP-past-dance-appl-asp chief
'Mavuto danced for the chief.'

Now, if one extracts the benefactive applied object 'chief' out of this construction, the result is as bad as the analoguous extraction from the applicative of a transitive verb:

(183) * Iyi ndi mfumu imene ndi-ku-ganiz-a a-na-vin-ir-a.
This be chief which 1sS-pres-think-asp 3sS-past-dance-appl-asp
'This is the chief which I think that she danced for.'

This fact is of great importance, because it single-handedly shows that all approaches which crucially single out the 'inner object' of a double object construction as being unextractable are on the wrong track; the reason is simply because the same prohibition appears when the applicative object is the only object, as in (183). There is no 'second object' to confuse a language perceiver (Jackendoff and Culicover (1971)) or to block rules from applying to the applied object (Oehrle (1975)); thus on any such views (183) would be expected to be as good as extracting a standard, direct object, contrary to fact. Thus, compare (183) with (184), which is possible:

(184) Iyi ndi mfumu imene ndi-ku-ganiz-a a-na-on-a.
This is chief which 1sS-pres-think-asp 3sS-past-see-asp
'This is the chief which I think that she saw.'

These facts also argue against the analysis of Kayne (1983); the benefactive NP cannot plausibly be taken to be on the 'left branch' of a small clause in (182), (183), since there is no other NP to be the head of this small clause. Thus, there are two possibilities: either the benefactive is not on a left branch at all, and its extraction should prove acceptable; or--if a small clause structure is necessary for assigning a

benefactive interpretation--sentences like (182) should be impossible in the first place. The combination of (182) and (183) shows that neither of these possibilities is the case.[70]

Finally, (183) also tells against the analysis of Stowell (1981), since if there is no second object which needs to receive Case under adjacency to the the verb, there is no reason why it should be obligatory to 'incorporate' the benefactive NP into the verb. If it is not obligatory to 'incorporate' the benefactive, there is no clear reason why it cannot extract from a thematic position outside of the verb. Even if this problem can be patched up, we have already found strong reasons to be skeptical of Stowell's approach to incorporation in double object construction in the first place, based on the observed properties of overt incorporation in languages like Mohawk and Southern Tiwa: it is a universal fact that the 'basic object' can incorporate and the 'applied object' cannot.

Significantly, extending the applied object extraction paradigm to intransitive verbs is valid not only for Chichewa; similar examples occur in Chamorro. Thus, wh-movement of the goal direct object is equally ungrammatical with or without a theme second object in the structure (Gibson (1980:161)):

(185) a. *Häyi t-in-igi'-i-n-niha ni kätta?
who nom-write-appl-1k-their obl letter
'Who did they write the letter to?'

b. *Häyi t-in-igi'-i-n-niha?
who nom-write-appl-1k-their
'Who did they write to?'

In fact, I believe that this can even be demonstrated in English by exploiting one very particular sentence type. In general in English,

dative shift can only take place with transitive uses of verbs: for example read a story for me, read me a story, read for me but *read me. There is, however, one exception to this general rule: the verb to write:

(186) a. Britta wrote a letter to her mother last week.

b. Britta wrote her mother a letter last week.

c. Britta wrote to her mother last week.

d. Britta wrote her mother last week.

Here, the (d) sentence is plausibly a case of (invisible) P Incorporation with an intransitively used verb. When the goal/benefactive is extracted from each of these sentences, the following pattern of judgments emerges, although there is some dialectal variation:[71]

(187) a. Who do you hope that Britta wrote a letter to last week?

b. ?*Who do you hope that Britta wrote a letter last week?

c. Who do you hope that Britta wrote to last week?

d. ?*Who do you hope that Britta wrote last week?

Here again, the correct generalization is that benefactive and dative applicative objects cannot wh-move, not merely that the first NP of a double object construction cannot wh-move.

Thus, we abandon the accounts based on the structural relation between the middle NP and the V and second NP, and turn to those accounts which are based more directly on properties of the thematically oblique NP itself. Hornstein and Weinberg's (1981) analysis fares no better with the crosslinguistic evidence. They claim that the applicative object cannot extract because the verb assigns it oblique Case, rather than structural

Case. This can be extended simply enough to cover the examples of the last paragraph. However, it depends in a very strong way on an assumption about Case marking which is not readily confirmed or falsified in English, because English makes no overt morphological distinction between what they call 'objective' and 'oblique' Case. In languages which do make a distinction, it is clear that Hornstein and Weinberg if anything get the situation backwards: it is the applied object which gets structural, objective Case and the second object that is in some sense oblique. Thus, as we have seen before, in Chichewa the applied object triggers object agreement on the verb, and the second object does not:

(188) a. Mavuto a-na-wa-umb-ir-a ana mtsuko.
Mavuto SP-past-OP-mold-appl-asp children waterpot
'Mavuto molded the waterpot for the children.'

b. *Mavuto a-na-i-umb-ir-a ana mtsuko.
Mavuto SP-past-OP-mold-appl-asp children waterpot
'Mavuto molded the waterpot for the children.'

Throughout, I have assumed that (the possibility of) this kind of object agreement is a reflex of the objective Case assignment relation holding between the verb and the agreed-with NP (cf. section 2.3.2). The situation is even clearer in Chamorro, which does have overt Case marking; here, the applied object clearly appears with unmarked, objective Case and the second object with a morphological oblique Case:

(189) Hu tugi'-i [i che'lu-hu] [ni kätta].
1sS-write-appl the sibling-my obl letter
'I wrote my brother the letter.'

Thus, it seems clear that Hornstein and Weinberg's oblique Case filter will not do for ruling out the extraction of applied objects in these languages,[72] and whatever else blocks such extractions in these languages

should presumably cover the English cases as well.

This leaves us with a Czepluch (1982) type analysis, where extraction is blocked from inside a phrase headed by a prepositional empty category. In fact, I have throughout this chapter given strong and principled reason to believe that there is in fact a prepositional empty category that governs the 'applied object' in all of these structures, namely the trace of a Preposition Incorporation movement. Here, the addition of the crosslinguistic data rather improves the appeal of the analysis, rather than degrading it. Thus, Czepluch's (and Kayne's (1983)) original motivations for positing an empty preposition in English dative shift structures are rather abstract and theory internal, having to do with particular assumptions about the theory of Abstract Case; however, the correctness of a PI analysis for applicative constructions is perhaps clearer and more solid, given that the process is productive, morphologically visible, and has a natural place in a broader range of Incorporation phenomena. Moreover, the predictions implied by the empty P stranding analysis are the only ones that have any cross-linguistic validity; the only true generalization about the class of seeming direct objects which cannot be extracted is that they are the NPs which (in a plausible analysis) are governed by traces of Ps. Competing generalizations, in terms of Case or configurational environment are simply not borne out, as we have seen. Thus, I have argued for a version of Czepluch's basic idea.

Unfortunately, Czepluch (1982) is none to clear about the precise nature of the constraint against moving out of a PP headed by an empty P (for discussion and criticism, see Oehrle (1983)). In particular, he does not

explictly relate this prohibition to a more general context. In the light of the current work, one can go somewhat farther. We have seen that it is ungrammatical to wh-extract the complement of an Incorporated P--what about the complements of other incorporates categories? In fact it also seems to be bad to wh-extract the thematic possessor from a Possessor Raising construction. This is illustrated for Chichewa by the following paradigm (Mchombo, personal communication):

(190) a. Fisi a-na-dy-a nsomba za kalulu.
hyena SP-past-eat-asp fish of hare
'The hyena ate the hare's fish.'

b. Fisi a-na-dy-er-a kalulu nsomba.
hyena SP-past-eat-appl-asp hare fish
'The hyena ate the hare's fish.'

c. *Kodi ndi chiyani chimene fisi a-na-dy-er-a nsomba.
Q is thing which hyena SP-past-eat-appl-asp fish
'Whose fish did the hyena eat?'

Gibson (1980:230) demonstrates similar facts from Chamorro:

(191) a. Ha yulang-guan yu' si Julie ni i relos-su.
3sS-break-appl me PN Julie obl the watch-my
'Julie broke my watch.'

b. *Häyi y-in-ilang-guan-miyu ni i relos-na?
who nom-break-appl-your(pl) obl the watch-his
'Whose watch did you break?'

Thus, the prohibition against extraction extends to the complements of Reanalyzed and Incorporated nouns as well as prepositions. Curiously, it does not extend to the complements of reanalyzed verbs, however. This again is seen both in Chichewa:

(192) a. Alenja a-na-bay-its-a njovu kwa kalulu.
hunters SP-past-stab-cause-asp elephant to hare
'The hunters made the hare stab the elephant.'

b. Iyi ndi njovu imene ndi-na-nen-a kuti alenja

This is elephant which 1sS-past-say-asp that hunters
a-na-bay-its-a kwa kalulu.
SP-past-stab-cause-asp to hare
'This is the elephant which I said the hunters made the hare stab.'

and in Chamorro (Gibson (1980:164)):

(193) a. Ha na'-balli häm i ma'estru nu i satgi.
3sS-cause-sweep us the teacher obl the floor
'The teacher made us sweep the floor.'

b. Häyi i ma'estra ni-na'-ballen-na nu i satgi?
who the teacher nom-cause-sweep-her obl the floor
'Who did the teacher make sweep the floor?'

Thus the ban on moving the NP after an empty category cannot be perfectly general, as Czepluch's discussion suggests. In fact, the filter that seems to be motivated by this class of examples is something like the following:

(194) The Non Oblique Trace Filter

$$*[\ O_i \ldots . X^j \ldots [\ \{-V\}^j \ t_i \ ] \ldots]$$

Here 'O' stands for an operator, {-V} for any nonverbal category--i.e. a P or an N--, and 'X' for a lexical category (usually V) which is coindexed with the {-V} element, through Reanalysis or Incorporation.

Clearly, this is the kind of filter that one wants to derive from general principles of grammar rather than to stipulate independently. I will not attempt to do this here, but will simply note that the mention of N and P as opposed to V suggests that Case theory is involved. Since both N and P typically assign oblique Case to their arguments, while V assigns structural Case, PI and NI will change the type of Case marking on the variable in question in a way that VI will not. Thus, an empty category will appear with a different type of Case than its thematic role would lead

one to expect, and this may block its identification and recoverability in some way. Hence the name of the filter: the trace is bad because it is not obliquely case marked, contrary to expectation. Such an explanation in terms of Case would also account for why wh-movement traces are blocked in these structures, but the NP trace left by passive is not (e.g. cf. 4.2.1, 4.2.4), since the former must be Case marked but the latter is not. It may also explain why the filter holds of traces that are formed by movement in the syntax, but not of traces formed at LF, given that applied objects can be questioned by wh-in-situ in Chichewa (Mchombo, personal communication); Case theory requirements generally hold at the level of S-structure.

Whatever the ultimate nature of (194) proves to be, we have rather conclusively shown that the reason it is ungrammatical to extract the applied object of a benefactive or dative applicative construction is that there is a null preposition governing that object even at S-structure (and LF). This empty preposition gives a structural difference between applied objects and the 'basic' patient objects of either simple transitive verbs or applicatives, thereby making it understandable why the former may not wh-move, while the latter may. Moreover, this is the only type of account for extraction phenomena from applicatives which is valid across languages. Therefore, since the Incorporation theory of applicatives, unlike other approaches, crucially implies that this null preposition must be present as the trace of the incorporated P and gives a restrictive account of its nature, we have strong support in favor of such a theory over the alternatives.

4.3.2 Instrumental applicatives

In this subsection, I will confirm the results of the previous subsection by contrasting instrumental applicative constructions in Chichewa with the benefactive/dative constructions already discussed. Superficially, the two types of applicatives look very similar:

(195) a. Mavuto a-na-umb-a mtsuko.
Mavuto SP-past-mold-asp waterpot
'Mavuto molded the waterpot.'

BENEFACTIVE:
b. Mavuto a-na-umb-ir-a mfumu mtsuko.
Mavuto SP-past-mold-appl-asp chief waterpot
'Mavuto molded the waterpot for the chief.'

INSTRUMENTAL:
c. Mavuto a-na-umb-ir-a mpeni mtsuko.
Mavuto SP-past-mold-appl-asp knife waterpot
'Mavuto molded the waterpot with a knife.'

A difference appears, however, when one tries to wh-move the applied object in the two cases. We have already seen that this gives ungrammatical results in the benefactive case. With the instrumental applied object, on the other hand, the result is fully grammatical. Hence, the following contrast:

(196) a. *Iyi ndiyo mfumu imene ndi-ku-ganiz-a kuti Mavuto
this is chief which 1sS-pres-think-asp that Mavuto
a-na-umb-ir-a mtsuko.
SP-past-mold-appl-asp waterpot
'This is the chief which I think Mavuto molded the waterpot for.'

b. Iyi ndi mpeni umene ndi-ku-ganiz-a kuti Mavuto
this is chief which 1sS-pres-think-asp that Mavuto
a-na-umb-ir-a mtsuko.
SP-past-mold-appl-asp waterpot
'This is the knife which I think Mavuto molded the waterpot with.'

The following is a second minimal pair, illustrating the same point:

(197) a. Ndi-na-nen-a kuti Mavuto a-na-thyol-er-a mfumu mpando.
1sS-past-say-asp that Mavuto SP-past-break-appl chief chair.
'I said that Mavuto broke the chair for the chief.'

b. Ndi-na-nen-a kuti Mavuto a-na-thyol-er-a ndodo mpando.
1sS-past-say-asp that Mavuto SP-past-break-appl stick chair.
'I said that Mavuto broke the chair with the stick.'

(198) a. *Iyi ndiyo mfumu i-mene ndi-na-nen-a kuti Mavuto
this is chief which 1sS-past-say-asp that Mavuto
a-na-thyol-er-a mpando.
SP-past-break-appl-asp chair
'This is the chief which I said that Mavuto broke the chair for.'

b. Iyi ndi ndodo i-mene ndi-na-nen-a kuti Mavuto
This is stick which 1sS-past-say-asp that Mavuto
a-na-thyol-er-a mpando.
SP-past-break-appl-asp chair
'This is the stick which I said that Mavuto broke the chair with.'

As is the case with benefactive and dative applicatives, the 'basic object' (i.e. the patient) can also be extracted:

(199) Uwu ndi mpando u-mene ndi-na-nen-a kuti Mavuto
This is chair which 1sS-past-say-asp that Mavuto
a-na-thyol-er-a ndodo.
SP-past-break-appl-asp stick
'This is the chair which I said that Mavuto broke the with a stick.'

Notice that the grammaticality of sentences like (196b), (198b) is a further strong argument against any theory which rules out the extraction of the first object of a 'double object' construction (e.g. Jackendoff and Culicover (1971), Oehrle (1975), Kayne (1983), Stowell (1981)), since in such a theory it would be highly problematic to correctly distinguish between the 'double objects' formed by instrumental applicatives and those formed by benefactive or dative applicatives. Both the two objects in both types of structures should be equally indistinguishable for the parser or

the grammar, and should have equal need to be assigned Case. Thus, this difference is entirely unexpected on any of the theories of wh-movement developed in the cited references. The correct distinction can be made naturally in terms of the system I have been developing, however, given certain assumptions about thematic role assignment.

Recall that in section 4.1.2, several possibilities for how theta marking takes place in PPs were discussed, two of which were not distinguished. The conceptual difference between the two theta structures was illustrated schematically in a diagram like that in (200), where the links represent theta role assignments:

(200) a. $[_{VP}$ V...$[_{PP}$ P $[_{NP}$ N]...]
__/ _/

b. $[_{VP}$ V...[(P) $[_{NP}$ N]...]
_____/

A closer look at these will help to explain the difference between instrumentals and benefactives which is at hand. One possibility (a) is that the verb theta marks the PP as a whole, and the head of that PP in turn theta marks its complement NP. The other possibility (b) is that the verb theta marks the NP directly, and the preposition is merely inserted to assign Case to the NP (or, perhaps, as a spell-out of inherent Case and theta role assignment to the NP from the verb). In the first case, the P and its projection will necessarily be present because of fundamental requirements of theta role assignment and semantic compositionality; in the second case the P is merely present because of more superficial formal requirements of the structure. In particular, if the precise character of the construction changes, the second type of P but not the first type could

become expendable. Now suppose that both situations are in fact allowed by Universal Grammar; then the difference between the benefactive applicatives and the instrumental applicatives illustrated above could have its root in this fundamental difference in thematic role assignments. In particular, I hypothesize that instrumentals receive their theta roles in the manner of (200b), while benefactives (and datives) receive theirs as in (200a).

This hypothesis is confirmed by certain considerations from English. I have claimed that the benefactive preposition is crucial for an NP to receive a benefactive theta role, whereas the instrumental preposition is not crucial to the actual assignment of an instrumental theta role in the same way. Thus, it is significant that NPs with instrumental theta roles can (in some cases) appear in other syntactic environments such as [NP, S] in a way that benefactives (and datives) never do:

(201) a. John unlocked the door with the brass key (on the first try).

b. The brass key unlocked the door (on the first try).

(202) a. Johnny baked a cake for his Teddy bear (on its birthday).

b. *The Teddy bear baked a cake (on its birthday).
[ok with agentive reading; * with benefactive]

c. Phil gave the church a tenth of his earnings.

d. *The church gave a tenth of his earnings.
[ok as agentive; * as goal]

Here, one can claim that (201b) is acceptable with a pure instrumental reading because such a reading can (under the right circumstances) come directly from the verb, whereas (202b,d) and are bad because the same is not possible with benefactives and goals.[73]

Another consequence of this hypothesis is that the 'instrumental'

preposition with is merely some kind of Case assigner (or 'realizer') when it appears, whereas the benefactive preposition for is a true theta role assigner when it appears. This could be the basis for making noncoincidental the following difference in usage between the two:

(203) a. Tony presented a solid gold trophy to Kevin.

b. Tony presented Kevin with a gold trophy.

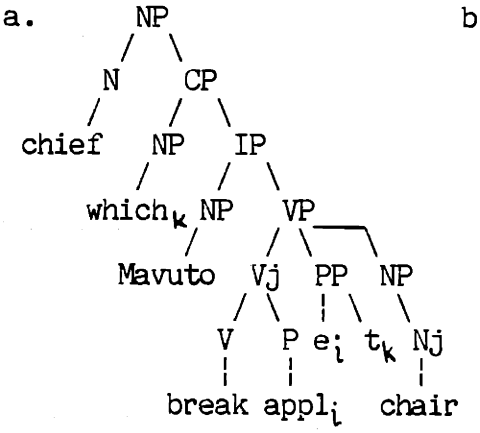
c. *Tony presented Kevin for a gold trophy.

Comparing (203a) with (203b), with in the latter sentence seems to function as a dummy Case assigner, which does not affect the thematic role of its NP, but does allow it to pass the Case Filter (cf. Rappaport and Levin (1985)). For cannot serve this function, however (203c). Nor is this an isolated example; there is a whole semantic class of verbs which alternate between two [__ NP PP] frames, one of which includes a with; for never appears in such alternations. This result can be made to follow from the theory, if, consistent with my hypothesis, for is lexically specified as being a theta-role assigner, whereas with is lexically specified as not being one. Then, the insertion of for as a Case assigner will induce a Theta Criterion violation--either because it fails to assign its benefactive role or because its NP picks up a second theta role in the course of the derivation. Inserting with causes no such problem. Thus, English provides rather straightforward evidence that benefactives and goals have the theta marking structure of (200a), whereas instrumentals have the theta marking structure of (200b).[75]

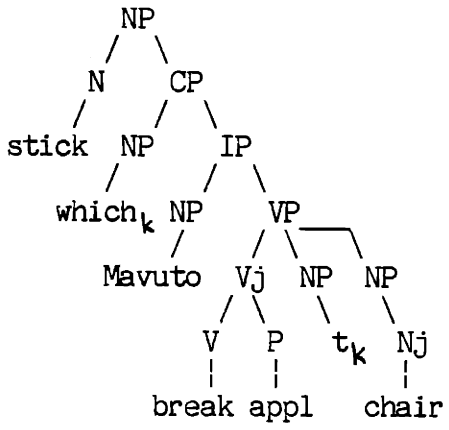
Now, we are ready to return to extraction from instrumental applicatives, and their contrast with benefactive and dative applicatives.

In the preceding section, I showed that the reason it is ungrammatical to wh-move a benefactive applied object is because that object is governed by an an empty preposition node (cf. (194)). However, given that benefactives and datives differ from instrumentals in that a prepositional element is needed for actually assigning the theta role in the former case, but not in the latter, such an empty P node need not exist in instrumental applicatives. In fact, we can now suppose that instrumental applicatives are not (necessarily) cases of P-incoporation at all; instead, both the object and the instrument may be generated as bare NPs at D-structure and still receive there theta roles in the proper way (compare (201b)). Both will need to be morphologically identified in some way, so one receives accusative case and the other is Reanalyzed (= abstract incorporation) with the verb. The applied affix is then inserted as a sign of this abstract NI in the same way that it is in possessor raising structures (see section 4.2.5.1). Thus, there is no preposition, null or otherwise, at any level in this sort of instrumental applicative. Therefore, the wh-extraction of instrumentals, unlike that of benefactives and datives is grammatical. In this way, the contrast introduced in (196), (198) at the beginning of this subsection is explained. The structure of the relative clauses in (198) is as follows (the extra 'bridge verb' clause and the INFL nodes are omitted for simplicity):

(204) a.



b.



(204a), the structure corresponding to (198a) has a PP node which does not appear in (204b), corresponding to (198b); and this extra substructure is ruled out by the 'NonOblique Trace Filter' (194).

Finally, I predict that the contrast between benefactive extraction and instrumental extraction should carry over completely unchanged to the case in which there is no second object. This prediction is correct: it is ungrammatical to extract the benefactive applied object, even if it is the only one, as seen in the preceding subsection; but it is grammatical to extract the instrument under the same circumstances:

(205) a. Kalulu a-na-yend-er-a ndodo.
hare SP-past-walk-appl-asp stick
'The hare walked with a stick.'

b. Iyi ndi ndodo imene ndi-ku-ganiz-a kuti a-na-yend-er-a.
This is stick which 1sS-pres-think that 3sS-pst-walk-appl
'This is the stick which I think that he walked with.'

In this way, the range of extraction facts with applicatives is neatly related to independent facts about the constructions involved.

To conclude, the acceptability of extracting either object from an instrumental double object construction highlights the fact that there is

nothing wrong about extracting one of two similar looking NPs. It is confirmed that the ungrammaticality of extracting the benefactive applied object must be explained in other terms. The trace of the incorporated preposition implied by the PI analysis is exactly the right type of 'other terms', in which not only wh-movement in the benefactive applicative construction, but its contrast with wh-movement in the instrumental construction can be understood.

4.3.3 Conclusion and Implications

In concluding this section, I will highlight a theme of fundamental theoretical importance that emerge out of this analysis of wh-movement in applicatives: it provides very strong evidence for the syntactic nature of P Incorporation. In fact, this section is parallel to section 3.4, which showed that if one looked beyond simple facts of government and Case theory, there was strong evidence that causatives are syntactically derived, based on Binding Theory and Bounding Theory. Here, in order to distinguish benefactive applied objects from instrumental applied objects--not to mention the ordinary objects of simple transitive verbs--the trace of the incorporated P has played a central role, blocking wh-extraction of the benefactive NP by causing the variable left behind to violate the 'NonOblique Trace Filter'. However, in order for the trace of the P to serve this explanatory function, it must exist. In order for this to be true, the Prepositional affix must be generated separately from the verb at D-structure, in accordance with the Uniformity of Theta Assignment Hypothesis. This, then, is an argument against deriving applicative verbs by operations on the argument structure of the verb in the lexicon as would be the case in frameworks like that of Williams (1981, 1984) and the

Lexical-Functional Grammar of Bresnan (1982b, etc.). Furthermore, the P must also be required to leave a trace when it does combine with the verb, in accordance with the strong Projection Principle that I have assumed. This then--in particular the wh-extraction data--is an argument against a framework like that of Marantz (1984) with a weakened Projection Principle, where 'applied objects' are not structural objects in underlying syntactic structure, but they become completely structurally assimilated to ordinary direct objects by surface syntactic structure. In fact, if we gather up the postverbal NPs that we have studied in Chichewa in the last two chapters and consider only the 'surfacey' properties of whether they can receive accusative Case (trigger verbal agreement) and whether they can wh-move, we find that every imaginable combination is systematically attested by some class of NPs. This is represented in the following chart:

(206) CHICHEWA 'OBJECTS':

	may receive acc. Case	may not receive acc. Case
extracts freely	OBJ of trans verb Instr applied OBJ lower OBJ of caus	2nd OBJ of ben-appl
extracts marginally	'Causee' with caus of intrans verbs	'Causee' with caus of transitive verbs
may not extract	Ben/Dat applied OBJ	Oblique arguments of underived verbs

Chamorro 'objects' present nearly as rich a paradigm. Clearly, the is no 'Structure Preserving' Principle which says that arguments of morphologically derived verbs behave like arguments of morphologically underived verbs at work here. Only a theory which can systematically motivate traces of verbs and traces of prepositions in a principled way can

make the distinctions necessary to explain such a pattern of facts in an explanatory way, as has been done in the last two chapters. Thus, we have support for a framework of grammar which included more than one level of syntactic description, where the levels are conceived of in accordance with the Uniformity of Theta Assignment Hypothesis and the strong Projection Principle.

4.4 Preposition Incorporation Interactions

In the final section of this chapter, I again address the issue of the possible interactions and combinations of Incorporation processes, and about how their properties can be derived. As in section 3.5, the goals of this inquiry are twofold. First, the strongest test of the adequacy of an analysis of relatively simple structures is to see if it extends properly to explain the properties of more complex structures. For this reason, I will consider the possiblities of structures that contain Preposition Incorporations plus Noun Incorporation, Verb Incorporation or a second Preposition Incorporation. Second, if and when such multiple incorporations are possible, we have the goal of explaining why the Mirror Principle of Baker (1985) is obeyed in terms of our assumptions about the connection between morphology and syntax established by X-o movement. In fact, we will see that the majority of the potentially possible interactions with P Incorporations are not attested empirically in the languages studied. These gaps can for the most part be explained immediately in terms of the theory of Incorporation. This in turn will provide conclusive evidence in favor of this theory, including the role of

Reanalysis as Abstract Incorporation.

Two conditions will play a special role in accounting for the behavior of Incorporation interactions. In many cases, both rule out a given structure redundantly. Nevertheless, both conditions are independently motivated apart from PI, and there are crucial PI cases where each is needed.

The first condition is that in general only one Noun may be incorporated into a single verbal stem. In chapter 2, we observed that this holds for 'true', morphologically overt NI (cf. Mithun (1984)). For example:

NIUEAN: (Austronesian, Seiter (1980:72))
(207) a. Kua fā fakahū tuai he magafaoa e tau tohi he vakalele.
perf-hab-send-perf erg-family abs-pl-letter on airplane
'The family used to send the letters on an airplane.'

b. Kua fā fakahū vakalele tuai he magafaoa e tau tohi.
perf-hab-send-airplane-perf erg-family abs-pl-letter
'The family used to send the letters by airplane.'

c. *Kua fā fakahū tohi vakalele tuai e magafaoa.
perf-hab-send-letter-airplane-perf abs-family
'The family used to send the letters by airplane.'

Incorporation applies freely to objects in Niuean, as seen in section 2.1. Instrumental/means phrases of certain types may also incorporate, as in (207b). However, in a structure containing both an incorporable object and an incorporable means phrase like (207a), it is ungrammatical to incorporate both at the same time (207c). This ban was related to the generalized Case filter: since Incorporation is a way of morphologically identifying an NP argument to make it visible for theta role assignment at LF, it follows that (in the unmarked case) a single verb will only be allowed to morphologically identify one NP in this way (2.3.3 (102)). This is just like the fact that it is the unmarked case for a verb to only

m-identify one NP by assigning accusative Case. This condition helps ensure that theta role assignments will be recoverable, the intuitive idea behind the formal Case filter. Now, I extend this condition to cover the newly discovered N-V Reanalysis case as well, since this too is a type of morphological identification, unified with NI proper. Thus any structure involving two NIs and only one verb root is ungrammatical, whether the NIs are overt, covert, or one of each. The forbidden configuration can be abstractly represented so:

(208) $*[_{VP}\ V^{j,k} \ldots NP^{j} \ldots NP^{k} \ldots]$

As seen in the previous sections of this chapter, NI of some kind is usually required in PI structures in order to avoid Case theory violations, so if another potentially interacting process involves incorporating a different N as well, the result will be bad because of (208). Thus, certain properties of interactions are determined by this restriction.

Here I will introduce a second condition which will be essential to understanding the properties of PI interactions. This second condition is one that rules out the incorporation of the head of the complement of a category which has previously been incorporated. The forbidden structure can be schematized so:

(209) $*[_{XP}\ [Z_j\text{+}\ [Y_i\text{+}X]]_{X\text{-}o}\ [_{YP}\ t_i'\ [_{ZP}\ t_j \ldots]] \ldots]$

(209) must be stipulated independently, because by the Government Transparency Corollary, we know that the complex category Y+X must govern the embedded phrase ZP, in spite of the intervening head t'. This result has been confirmed in numerous ways through out this work; in particular,

Y+X can case mark ZP and can determine its governing category for the Binding theory. However, if Y+X governs ZP, it must also govern its head Z (section 1.4.3; cf. Belletti and Rizzi (1981)). Hence Z+Y+X should legitimately govern the trace of Z. Nevertheless, the structure is ungrammatical. It would be interesting to explore how this might be related to the ECP,[76] but I will not take the time and space to develop such a line, and in what follows I will simply keep (209) as a filter.

Empirically, condition (209) redundantly (with (208)) eliminates incorporating the head of the possessor of a noun that has already been incorporated into the verb, even though the verb comes to govern that possessor:

(210) a. I like [[that baby's] house]

b. I house-like [[that baby's] t]

c. *I baby$_i$-house$_j$-like [[that t$_i$] t$_j$]

More importantly, this condition was used to block an undesirable VI-NI interaction in section 3.5.1 (fn. 53), in which the verb incorporates first into the higher verb, and then the complement of the lower verb incorporates into the resulting verb complex. The correct connection between morphological structure and surface syntax follows only if the N is forced to incorporate into the lower V first, after which the combination jointly incorporates into the higher verb. Moreover, this condition uniquely rules out a whole class of structurally similar but more exotic incorporation interactions, such as those sketched below:

(211) a. I burned [the letter to John]

b. I letter-burned [t [to John]]

c. I burned-for [t John] [the letter]

d. *I [[letter$_i$-burned]-to$_j$] [t$_i$[t$_j$John]]

(212) a. Amy made [the claim [that cheese rots]]

b. Amy claim-made [t [that cheese rots]]

c. Amy rot-made [cheese t]

d. *Amy [rot$_j$-[claim$_i$-made] [t$_i$[cheese t$_j$]]

Incorporations of the kind in the (b) and (c) sentences are possible, but as far as I know, those in the (d) sentences are completely impossible in every language. Thus, there is broad empirical support for (209).

Finally, I claim that, like (208), constraint (209) restricts both overt Incorporation and Reanalysis in the same way. We will see its effects to be many.

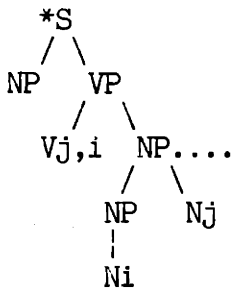
With these notions firmly in mind, we can look at the specific interaction possiblities. At this point, we have identified three superficially independent manifestations of Noun Incorporation, including NI proper, antipassive (2.4), and N-Reanalysis as revealed by the appearance of 'Possessor Raising' effects (4.2.4). Two slightly different types of Preposition Incorporation have been discovered: benefactive/dative applicative constructions with overt morphology, and dative shift verbs with no overt morphological changes (4.2.5.2).[77] Finally, there are two types of Verb Incorporation: those that have V movement to COMP as a preliminary step to Incorporation proper, and those that have VP movement to COMP as this preliminary step (3.3). In the subsections that follow, I will discuss each of the possible interactions among these processes which was not discussed in section 3.5.

4.4.1 Double NI Revisited

This chapter has introduced a new type of NI--the abstract Reanalysis NI which is involved in Possessor Raising structures. Thus, before going on to interactions with PI proper, I first check the interactions between this new type of NI and the other types.

Superficially, Possessor Raising seems to create a new direct object; that is, an NP which is governed and potentially Case marked by the verb of the clause but which was not so governed at D-structure. Therefore, all things being equal, one might expect that this process would feed Noun Incorporation proper, antipassivization, or even Possessor Raising itself, since each of these processes is known to link the verb and an N(P) that it governs. As usual, however, all things are not equal. According to my theory of Possessor Raising, the possessor does not become structurally an [NP, VP], but rather remains a subconstituent of the NP headed by the N which the possessor is thematically related to. The verb comes to govern this possessor because it Reanalyzes with the head N of the NP containing the possessor, and therefore governs it by the Government Transparency Corollary. Given this, the verb is predicted to be unable to enter into any of the NI relations with the possessor, because to do so would violate both of the conditions set out at the beginning of this section: the single verb would have received a Noun Incorporation twice, contra (208); and the second NI would involve incorporating an argument of a category that has already incorporated, contra (209):

(213)



Thus, I predict that the raised possessor should not overtly incorporate, trigger antipassive, or allow its possessor to raise in turn.

I have no language which is appropriate for checking the interaction of overt NI and N-Reanalysis in this way, since those languages which have overt NI only show Possessor Raising effects with overt NI (Southern Tiwa, Allen, Gardiner, and Frantz (1984)); Mohawk (Postal 1962); see 2.2 for examples). Nevertheless, at this level it does seem to be true that the possessor of an incorporated noun cannot itself incorporate. Sentences with the form of (214) are not attested, either in the grammars of the Iroquoian languages, or in the texts of Hewitt (1903):

(214) *I agr-[baby-[car-stole]]
='I stole the baby's car.'

This is as expected.

Chamorro is a language which has both Possessor Raising constructions and an antipassive, as we have seen. Gibson (1980:231) shows that the antipassive morphology on the verb cannot in fact correspond to a raised possessor, even when the conditions appear to be right:

(215) *Man-akkeng-guan si Juan nu i famagu'un nu i salappi'-niha.
Apass-steal-appl PN Juan obl the children obl the money-their
'Juan stole the children's money.'

This too is according to prediction.

Finally, Kimenyi (1980:99-100) discusses the situation with respect to double Possessor Raising in the Bantu language Kinyarwanda:

(216) a. Umukooba a-ra-som-a [igitabo [cy'uumwaana w'umugore]].
girl SP-pres-read-asp book of-child of-woman
'The girl is reading the book of the child of the woman.'

b. Umukoobwa a-ra-som-er-a [umwaana w'umugore] igitabo.
girl SP-pres-read-asp child of-woman book
'The girl is reading the book of the child of the woman.'

c. *Umukoobwa a-ra-som-er-(er)-a umugore ¦ igitabo cy'uumwanna.
¦ umwaana igitabo.
girl SP-pres-read-appl-appl-asp woman...
'The girl is reading the book of the child of the woman.'

(216a) is a structure with nested possessors of the right type to check the prediction. (216b) shows that possessor raising can take place once, as usual. The possessor of the possessor cannot be 'raised' to (behave like) the direct object of the verb, however--neither directly from the structure in (216a), nor by repeating the process of Possessor Raising to the structure in (216b). This is indicated by the ungrammaticality of the options in (216c). Again, this is exactly what we expect: since the possessor itself cannot Reanalyze with the verb by constraints (208) and (209), the Government Transparency Corollary will not be able to help the verb govern the possessor of the possessor. Thus, this paradigm also is explained.[78]

Thus the predictions about the interactions of Possessor Raising with other NI type processes that follow from the Noun Incorporation analysis are confirmed, and another slice of crosslinguistic data is explained in the process. In particular, this section gives strong confirmation that

Possessor Raising is abstract NI, because a generalization is captured between the impossibility of double overt NI (cf. (214)) and the impossibility of double covert NI in (216c).

4.4.2 NI and PI Interactions

Next we consider the possibilities for having both some variety of Noun Incorporation and some variety of Preposition Incorporation occur in the same clause. Here there are two cases to consider: (i) when NI occurs incorporating the basic object (usually the patient), presumably applying before PI, and (ii) when NI occurs after PI, incorporating the NP that becomes object-like as a result of the Preposition Incorporation itself. These two possibilities yield quite different results.

It is clear that neither condition (208) nor condition (209) will block incorporation of the theme/patient N(P) before PI takes place. Rather the contrary; we have seen in sections 4.2.4 that some type of Noun Incorporation is generally obligatory under these circumstances, because of the Case filter. The NP stranded by the P Incorporation will need to receive the verb's accusative Case, so the basic, underlying direct object must be identified in some other way. Usually some type of Noun Incorporation is the only way. This applies equally to unmarked 'dative shift' type Preposition Incorporation structures, and to morphologically overt, applicative type Preposition Incorporation structures. Thus, to recap earlier results somewhat, overt NI of the basic object NP is not only allowed but required with dative shift verbs in Southern Tiwa (Allen, Gardiner, and Frantz 1984):

(217) a. Ti-'u'u-wia-ban i-ay.
1sS:A-baby-give-past 2s-to
'I gave the baby to you.'

b. Ka-'u'u-wia-ban.
1sS-2sO|A-baby-give-past
'I gave you the baby.'

c. *'U'u-de ka-wia-ban.
baby-suf 1sS:2sO|A-give-past
'I gave you the baby.'

A comparison of (217a) and (217b) shows that wia 'give' is a dative shift verb in this language; in (217a) the goal NP 'you' appears as the object of a postposition; in (217b) the same argument appears as the (pro-dropped) direct object. The verb has no applied affix in this second structure, but it must be an instance of PI none the less. (217b) shows that in such a dative shifted structure, the theme NP may be incorporated into the verb; (217c) shows that in fact it must be, in order to be morphologically identified. The Iroquoian languages show the same possibilities[79] with true applicative constructions, in which there is an overt prepositional affix that is incorporated. The following sentences illustrate this from Tuscarora (Williams (1976:55f)):

(218) a. wa?-k-nvhs-atya?t-(?).
past-1sS-house-buy-punc
'I bought a house.'

b. wa?-khe-ta?nar-atya?t-hahθ.
past-1sS/3FO-bread-buy-appl/punc
'I bought her some bread.'

(218a) is a normal transitive structure, with the theme NP incorporated into the verb; (218b) is an applicative structure based on the same verb. Here the prepositional affix -hahθ is added to the verb, and the argument associated with it becomes the object which triggers agreement on the verb. Nevertheless, the same theme argument can still appear incorporated

into the verb, as (218b) also demonstrates. Thus, the interactions between overt NI of this type and PI are free as expected. Unfortunately, in each of these languages the incorporated N root appears before the verb stem and the incorporated P affix is suffixes after the verb stem. Thus, no Mirror Principle type predictions can be checked in these cases.

N-V Reanalysis of the theme NP followed by PI is also possible, although here the evidence is necessarily indirect. In fact, I have argued in section 4.2.4 that this is exactly what underlies apparent double object constructions in the majority of the languages of the world that have them. The justifications for this hypothesis were given at length in that section, and will not be repeated here. The fundamental evidence is straightforward enough, however: it is the fact that the basic object does not seem to be dependent on the verb for accusative Case. An illustrative example is:

CHICHEWA:
(219) a. mbidzi zi-na-perek-a msampha kwa nkhandwe.
zebra SP-past-hand-asp trap to fox
'The zebra handed the trap to the fox.'

b. mbidzi zi-na-perek-er-a nkhandwe msampha.
zebra SP-past-hand-appl-asp fox trap
'The zebra handed the fox the trap.'

In the applicative construction (219b), the basic object 'trap' cannot get Case from the verb because the applied object necessarily gets this Case from the verb; note that the basic object is not adjacent to the verb, nor can it trigger object agreement. Given this, the only way that this sentence can be grammatical is if this basic object is morphologically identified by Noun Incorporation, here in the form of abstract Reanalysis. This is confirmed by the fact that this NP cannot move into the subject

position of a passive:

(220) *Msampha i-na-perek-er-edw-a nkhandwe.
trap SP-past-hand-appl-pass-asp fox
'The trap was handed to the fox.'

This fact is explained if 'trap' is reanalyzed with the verb; then moving to the subject position breaks the required government link between the verb and the N reanalyzed with it. Section 4.2.5.2 shows that these facts hold true of dative shift structures in exactly the way that they do of applicative structures such as these.

Here it is worth pointing out that our strongest test for N-V Reanalysis--Possessor Raising effects--cannot usually be checked in these structures. Thus, even though I claim that msampha 'trap' is reanalyzed with the verb in (219b), if it had a possessor, this NP would still not show the properties of a direct object, as one might expect. The reason is simply that the verb can only assign one accusative Case, and in such a structure both the applied object and the possessor would need this Case in order to be visible for theta role assignment at LF. Thus, we do not see interactions of applicatives and possessor raising of this kind in general. The one way out of this Case predicament is if verbs are allowed to assign two accusative Cases in a particular language. Kinyarwanda is our standard example of a language with this property (cf. sections 3.3.3.1, 4.2.4.1). In fact it is possible to combine possessor raising and applicative type constructions in this language (Kimenyi 1980:101):

(221) a. Umugore a-r-eerek-a abaana [ibitabo by'umukoobwa].
woman SP-pres-show-asp children books of-girl
'The woman is showing the girl's books to the children.'

b. Umugore a-r-eerek-er-a umukoobwa ibitabo abaana.
woman SP-pres-show-appl-asp girl books children

'The woman is showing the girl's books to the children.'

(221a) is a dative shift type structure, in which the head of the basic object has a possessor; (221b) shows that this possessor can raise to appear before its head with unmarked structural case rather than with the prepositional genitive case assigned by nouns. In this structure, both 'girl' and 'children' are assigned accusative Case, as allowed by the special property of Kinyarwanda, while the NP headed by 'books' is exempt from the Case filter by virtue of the reanalysis of the head with the V which is implied by the Possessor Raising effect. Thus, PI and N-Reanalysis interact in the way we expect given the structure of Incorporation Theory.

The final type of NI to be considered in this regard is antipassive. Here there is a difference between antipassive and the other types of NI considered: it generally cannot precede P Incorporation by applying to the underlying direct object. Aissen (1983:297f) makes this point clearly for Tzotzil (Mayan):

(222) a. Č-i-?ak'-van.
asp-A1-give-Apass
'I'm giving [someone].' (a daughter, in marriage)

b. *Taš-Ø-k-ak'-van-be li Šune.
asp-A3-E1-give-Apass-appl the Sun
'I'm giving [someone] to Sun.' (a daughter, in marriage)

(222a) is a non-applicative structure, and the antipassive morpheme on the verb represents an animate human theme argument. (222b) is the corresponding applicative structure, with the prepositional affix -be incorporated onto the verb and its thematic argument NP li Sune triggering absolutive agreement on the verb. Yet in this structure, unlike the parallel (217b) in 'true' NI, the antipassive morpheme is ungrammatical as

an expression of the theme argument of the verb. A similar situation is suggested for antipassives with unmarked dative shift verbs by the following Chamorro example (Gibson 1980:166):

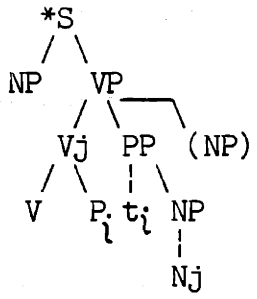
(223) a. Man-man-nä'i häm salappi' pära i gima' yu'us.
plur-Apass-give we money to the church
'We gave money to the church.'

As discussed in section 4.2.5.2, nä'i 'give' in Chamorro is ordinarily an obligartory dative shift verb, in which the recipient cannot appear in a PP, but only as an applied object. In (223), the antipassive morpheme does in fact appear with such a verb, expressing the theme role, which then is doubled by the oblique NP 'money'. However, in this construction, the goal appears in a PP after all. This suggests that the antipassive blocks the invisible P Incorporation usually obligatorily associated with this verb, which in turn suggests that antipassive plus PI is indeed ungrammatical.[80] However, this difference between antipassive and the other types of NI with respect to interaction with PI is easily explained. I observed in section 2.4 that antipassive differs from full NI in Iroquoian and Southern Tiwa in that it usually absorbs the accusative Case marking property of the verb it attached to inside the X-o projection, thereby making the verb morphologically intransitive (although not logically monadic). This accounts for why NI in Iroquoian and Southern Tiwa is possible with unaccusative verbs but antipassive is not (cf. 2.3.4). This property also accounts for the difference noted here: we have said that it is usually obligatory to incorporate the theme NP in a PI construction, so that the stranded argument of the P will be able to receive Case. If, however, that NI absorbs the accusative Case assigning powers of the verb, the incorporation does no good; the applied object still cannot get Case. Thus

sentences like (223b) are ruled out by the Case filter, since the only Case available to identify the goal applied object is taken up by the antipassive morpheme.

Thus, we have seen that N Incorporation from the basic object NP is generally grammatical, in accordance with my analysis. N Incorporation of the applied object following P Incorporation is quite another matter. This would have the structure as in (224):

(224)



Clearly, such a structure always violates the condition against incorporating the complement of something that has already been incorporated (209). In addition, it may also violate the constraint against incorporating two Ns into a single verb, depending on how the NP in parentheses in (224) is treated. Thus, all of the kinds of NI are predicted to be uniformly ungrammatical when they are fed by PI in this way, even though PI seems on the surface to create the sort of direct object NP which would be incorporable.

This prediction is strongly confirmed for overt NI. In fact, this ties down the loose end left over from section 2.1.2, where it was stated (in potential support of a lexical analysis of Noun Incorporation) that 'direct objects' with dative/goal theta roles never incorporate into the verb. Allen, Gardiner, and Frantz (1984) show this to be true in Southern Tiwa:

(225) a. Ta-'u'u-wia-ban hliawra-de.
1sS:A|A-baby-give-past woman-suf
'I gave the woman the child.'

b. *Ta-hliawra-wia-ban.
1sS:A|A-woman-give-past
'I gave him to the woman.'

c. *Ta-hliawra-'u'u-wia-ban.
1sS:A|A-woman-baby-give-past
'I gave the woman the baby.'

(225a) shows a dative shifted version of the verb wia 'give', in which the goal NP 'woman' is Case marked like a direct object (compare (217a)). Nevertheless the head of such an NP cannot be incorporated into the verb, regardless of whether the theme N root is incorporated into the verb as well (225c), or not (225b). The same holds true across the Iroquoian languages. Thus, Williams (1976:56) reports for Tuscarora that 'datives are not incorporated.' Thus consider the following sentence:

(226) wa?-khye-at-wir-ahninv-?-θ
past-1sS/3O-refl-child-buy-asp-appl
'I sold him children.'
NOT *'I sold him to the children.'

This sentence contains both an incorporated P -θ and an incorporated noun wir 'child'; nevertheless the reading in which the incorporated noun is interpreted as the argument of the incorporated preposition is impossible. A sentence like (226) can only have the meaning where the incorporated noun is the basic object NP (i.e. the theme) allowed in accordance with the discussion above. The incorporation of the applied object must (the goal) is thereby seen to be impossible.[81] Now, we have an explanation of this fact, since we know that these goals and benefactives are not structural [NP, VP] objects, but rather objects of empty prepositions, regardless of

whether the incorporated P has an overt realization on the verb (as in the Tuscarora example) or not (as in the Southern Tiwa example). In fact, if the arguments in section 4.3 are correct, a P node must be present here for strong reasons based on the Theta Criterion, because it is required for the assignment of a goal or benefactive theta role to be possible. The fact that these NPs trigger object agreement on the verb and so on is explained by the Government Transparency Corollary, which allows the verb to govern and assign Case over the empty P; nevertheless the empty P still blocks incorporation of the N that heads its complement in accordance with condition (209). Therefore, structures in which a benefactive or goal NP appears inside the verb are always impossible for strong syntactic reasons. In particular, there is no argument here for the lexical derivation of NI structures, but rather the contrary. Allen, Gardiner, and Frantz (1984) show that this empirical restriction on incorporation is independent of the status of the 'basic object' with the following paradigm:

(227) a. Te-t'am-ban seuanide-'ay.
1sS:C-help-past man-to
'I helped the man.'

b. Tow-t'am-ban seuanide.
1sS:A|C-help-past man
'I helped the man.'

c. *Tow-seuan-t'am-ban.
1sS:A|C-man-help-past
'I helped the man.'

A comparison of (227a) and (227b) suggests that t'am 'help' in Southern Tiwa is a dative shift verb; the two sentences are thematic paraphrases, yet 'man' appears as the object of a postposition in (227a) and as the unmarked NP agreeing with the verb in (227b). Certainly, this analysis is

consistent with the fact that 'man' receives a kind of benefactive thematic role in this sentence. This verb is somewhat unusual, however, in that it is a dative shift verb without a basic theme NP direct object (cf. 4.2.2, but also 4.3.1). Therefore, there will be no direct object which needs to compete with the applied object for the verb's accusative Case, or for the status of being the N incorporated into the verb. Nevertheless, the incorporation of the dative shifted benefactive is still ungrammatical, as shown by (227c). Such a structure is ruled out not by any difficulties involved from having two objects in the structure (cf. condition (208)), but nonredundantly because it violates the ban on incorporating the argument of an incorporated element (condition (209)).

This same effect is predicted to appear with antipassives, since these too are derived by Noun Incorporation. Thus, the antipassive morpheme should be unable to represent the applied object in an applicative or dative shift construction. This is confirmed across languages as well. Aissen (1983:292) establishes the point for Tzotzil (Mayan):

(228) a. Ta-Ø-š-čon-be čitom li Maruče.
asp-A3-E3-sell-appl pig the Maruc
'He's selling the pigs to Maruc.'

b. *Taš-Ø-čon-be-van čitom.
asp-A3-sell-appl-Apass pig
'He's selling pigs [to people].'

(228a) is an applicative structure, with an overt human goal applied object; (228b) shows that it is ungrammatical to have this human goal appear as antipassive morphology on the verb. Eskimo (Central Arctic) is similar, given the data presented by Johns (1984):

(229) a. anguti-up titiraut nutarar-mut tuni-vaa.
man-erg pencil(abs) child-all give-3sS/3sO
'The man gave the pencil to the child.'

b. anguti-up titirauti-mik nutaraq tuni-vaa.
man-erg pencil-instr child(abs) give-3sS/3sO
'The man gave the child the pencil.'

c. *angut titirauti-mik nutarar-mik tuni-si-vuq.
man(abs) pencil-instr child-instr give-Apass-3sS
'The man gave the child the pencil.'

(229a,b) illustrates a standard dative shift alternation in Eskimo: in the (a) sentence the goal NP 'child' is in the oblique allative case; in the thematic paraphrase (b), the same argument appears in the absolutive case characteristic of direct objects. (229c) attempts to represent this goal with antipassive morphology on the verb, doubled by an oblique instrumental phrase, according to the usual pattern in the language. The result, however, is ungrammatical. As a final example, Gibson (1980) illustrates the same effect in Chamorro, both with dative shift verbs and with 'true' applicative constructions:

(230) *Man-man-nä'i häm ni i gima' yu'us ni salappi'.
plur-Apass-give we obl the church obl money
'We gave the church the money.'

(231) *Man-angan-i si Carmen (ni) famagu'un ni i estoria.
Apass-tell-appl PN Carmen obl children obl the story
'Carmen told the story to (the) children.'

Here nä'i 'give' is an obligatory dative shift verb, and angan-i is the applicative form of the verb 'to tell'; both generally have superficial direct objects which are goals (cf. 4.2.5.2). However, neither can be antipassivized. Thus, our predictions with regard to the interactions between antipassive and PI are confirmed. Moreover, a comparison between the facts of this paragraph with the directly parallel facts concerning full NI in the preceding paragraph strongly supports the hypothesis that

antipassive is indeed a special case of Noun Incorporation.

Finally, I predict that covert NI--N-V Reanalysis--will not be able to apply after PI to reanalyze the applied object with the verb. Again, the evidence is indirect, but very strong. The basic reason is that if the benefactive or goal applied object were allowed to reanalyze with the verb, it would no longer need Case from the verb, and the accusative Case of the verb could be assigned to the basic object patient instead. In fact, the situation would become symmetrical: either the basic object or the applied object would be able to incorporate with the verb, and either would be able to receive Case from the verb. The result would be that the asymmetries of behavior between the basic object and the applied object would be washed out: either NP would be able to trigger object agreement, either would be able to become the subject of a passive, and so on--contrary to fact, as we have seen. The applied objects in these structures must get the accusative Case from the verb as expressed by Marantz's Generalization (4.2.1), which implies that they can never escape the Case Filter by undergoing Reanalysis with the verb. Thus the prediction is confirmed, and a gap in our explanation of the properties of applicatives is filled at the same time.

Before leaving this section, notice that the prediction that an applied object cannot incorporate into the verb hinges directly on the fact that this object is governed by a phonetically empty preposition at S-structure. This P (or the PP it heads) blocks the incorporation given filter (209). However, in section 4.3.2, I argued on the basis of wh-movement that there is an asymmetry between instrumentals on the one hand and benefactives and goals on the other hand in this regard: there need be no preposition in instrumental applicatives to assign the

instrumental theta role. If this is correct, then there is nothing to block instrumental phrases from incorporating into the verb that governs them, producing another contrast between them and benefactives. In fact, this is exactly what happens: instruments can in some languages incorporate, just as direct objects do. For example, this is possible in the Austronesian language Niuean (Seiter (1980)):

(232) a. Ne fā kai tūmau a mautolu aki e tau lima.
pst-hab-eat always abs-we(ex) with abs-pl-hand
'We would always eat with the hands.'

b. Ne fā kai lima tūmau a mautolu.
pst-hab-eat-hand always abs-we(ex)
'We would always eat by hand.'

In (232a), the instument 'with (the) hands' appears as a PP outside of the verb; in (232b), it has been incorporated into the verb, in exactly the same way that an object can be in Niuean (see 2.1). A similar process can take place in Nahuatl, according to Merlan (1976), who includes the following examples:

(233) a. Ne? Ki-tete?ki panci ika kočillo. (constructed)
he 3sS/3O-cut bread with knife
'He cut the bread with a knife.'

b. Ne? O-panci-tete?ki ika kočillo.
he 3sS-bread-cut with knife
'He cut the bread with a knife.'

c. Ya? ki-kočillo-tete?ki panci.
he 3sS/3O-knife-cut bread
'He cut the bread with the knife.'

From the same basic thematic structure (233a), either the object (233b) or the instrument (233c) may be incorporated. These examples contrast directly with (225)-(227), which establish the fact that this sort of incorporation is never possible with benefactives or with dative goals.

This result seems to be quite general accross languages. Thus, Mithun (1984) states the following generalization about the semantic roles of incorporates, based on her extensive cross-linguistic investigation of Noun Incorporation (emphasis mine):

> If a language incorporates only two types of arguments, they will be patients of transitive and intransitive verbs, again, regardless of the basic case structure of the language. The majority of incorporating languages follow this pattern. Many languages additionally incorporate instrument and/or locations, such a Nahuatl (Andrews 1975), Takelma, a language isolate of Oregon (Sapir 1922), and So:ra:, a South Munda language of India (Ramamurti 1931)...

Thus, I conclude that instrumental incorporation is not an uncommon phenomenon, whereas benefactive and goal incorporation do not exist. This fact is explained on this analysis. Thus, we have striking independent support for the basic elements of the analysis, including the theta marking difference between benefactives and instrumentals introduced in section 4.3.2, and the assumption that there is a trace of a moved preposition present in benefactive applicative constructions.

To summarize, we have seen that the entire space of possible NI and PI interactions can be fully accounted for in terms of the theory of X-o Incorporation, as I have developed them. Here are many confirmations of the basic assumptions and analyses, in that they provide explanations of why many potential interactions are impossible in a way would be surprising given a framework in which explicit grammatical function changing rules account for the basic changes. Furthermore, we have gathered more support that there is a true generalizations to be captured between the morphologically visible forms of Incorporation and the morphologically invisible ones, since the two interact with one another in identical ways.

4.4.3 Double PI Interactions

Next, I turn attention to the possibilities of structures with more than one instance of Preposition Incorporation. Here there are few possibilities to check, since there are only two types of PI--dative shift and productive applicatives. Furthermore, the dative shift type is not productive and hence other processes will not feed it. Thus, the only two interactions to investigate are whether applicative structures can be formed based on dative shift structures, and whether they can be formed based on other applicative structures.

As a matter of empirical fact, neither interaction is possible. For example, Gibson (1980) observes that benefactive PPs are perfectly acceptable with dative shift verbs in Chamorro:

(234) Si Juan b-um-endi i che'lu-hu lähi ni edyu na kareta
PN Juan EF-sell the sibling-my male obl that lk car
para si Maria.
for PN Maria
'It was Juan who sold my brother that car for Maria.'

Meanwhile, benefactive P Incorporation is productive in the language. Yet in spite of this, PI cannot take place in a structure like (234) in order to form a corresponding benefactive applicative construction:

(235) *Si Juan b-um-endi-yi si Maria ni edyu na kareta
PN Juan EF-sell-appl PN Maria obl that lk car
ni che'lu-hu lahi.
obl sibling-my male
'It was Juan who sold my brother that car for Maria.'

A similar effect occurs in Chichewa. This language (Mchombo's dialect) includes exactly one morphologically unmarked dative shift verb, patsa 'to

give', as discussed in section 4.2.5.2:

(236) mbidzi zi-na-pats-a nkhandwe msampha.
zebra SP-past-give-asp fox trap
'The zebra gave the fox the trap.'

This verb also cannot appear in a benefactive applicative construction:[82]

(237) *mbidzi zi-na-pats-ir-a kalulu nkhandwe msampha.
zebra SP-past-give-appl-asp hare fox trap
'The zebra gave the trap to the fox for the hare.'

This extends to applicatives in this language as well; in fact there is no such thing as a double applicative in Chichewa. Possible examples of this are the following:

(238) a. mbidzi zi-na-perek-a msampha kwa nkhandwe.
zebras SP-past-hand-asp trap to fox
'The zebras handed the trap to the fox.'

b. mbidzi zi-na-perek-er-a nkhandwe msampha.
zebras SP-past-hand-appl-asp fox trap
'The zebras handed the fox the trap.'

c. *mbidzi zi-na-perek-er-er-a kalulu nkhandwe msampha.
zebra SP-past-hand-appl-appl-asp hare fox trap
'The zebra handed the trap to the fox for the hare.'

(239) a. Ndi-na-phik-a nsomba.
1sS-past-cook-asp fish
'I cooked fish.'

b. Ndi-na-phik-ir-a mbuzi nsomba.
1sS-past-cook-appl-asp goats fish
'I cooked fish for the goats.'

c. *Ndi-na-phik-ir-ir-a mbuzi nsomba anyani.
1sS-past-cook-appl-appl-asp goats fish baboons
'I cooked the goats fish for the baboons.'

This constraint against double instances of PI is easily explained in our terms. One glance at the string of unmarked NPs following the verb in a sentence like (238c) suggests a breakdown in morphological

identification, given that applied affixes do not actually increase the Case assigning potential of the verb (see 4.2.1, 4.2.2). The verb has only one accusative Case to assign, and as we have seen, this must go to the benefactive applied object. This leaves two NPs in need of incorporating into the verb in order to escape the Case Filter, yet to incorporate or Reanalyze both would violate the constraint against incorporating more than one N per Verb (208). Hence, double PI structures are ungrammatical. In fact, the sentences we have seen so far are redundantly ruled out by condition (209) as well, since even if there were no basic object in competition, the first applied object would be unable to Reanalyze with the verb anyway, due to the intervening trace of the first PI. This redundancy can be eliminated, however, by considering the interaction of benefactive applicatives with instrumental applicatives in Chichewa. The resulting sentences are just as ungrammatical as those we have already seen:

(240) a. Mbuzi zi-ku-dy-er-a mipeni udzu.
goats SP-pres-eat-appl-asp knives grass
'The goats are eating grass with knives.'

b. *Mbuzi zi-ku-dy-er-er-a nkhosa mipeni udzu.
goats SP-pres-eat-appl-appl-asp sheep knives grass
'The goats are eating the grass with knives for the sheep.'

It was shown in the last section that the Incorporation of an instrumental is not blocked by condition (209) (or anything else). Therefore, an instrumental could legitimately abstractly incorporate (= Reanalyze) as well. Therefore, this class of sentences is nonredundantly ruled out by the constraint against having NI of more than two Ns which are arguments of a single verb (208).

Finally, if this approach is on the right track, we predict that the facts will again be different in Kinyarwanda. Once again, its property of

allowing verbs to assign two accusative Cases should allow it to handle a structure such as (238c) without being driven to trying to incorporate two NPs. Rather, the basic object will be incorporated, and two accusative Cases are left over for the two NPs stranded by Preposition Incorporation. This prediction is confirmed; in particular, benefactive applicatives can be formed out of dative shifted structures freely in this language (Kimenyi (1980)):

(241) a. Umugabo y-a-haa-ye umugore igitabo.
man SP-past-give-asp woman book
'The man gave the woman a book.'

b. Umugore a-ra-he-er-a umugabo imbwa ibiryo.
woman SP-pres-give-appl-asp man dog food
'The woman is giving food to the dog for the man.'

Example (241a) has the structure of what I have been calling a dative shift, with the goal appearing immediately after the verb and unmarked by any prepositional element. Example (241b) shows that a benefactive applicative can be formed based on such a structure, unlike in Chichewa (compare (237)).[83] Similarly, combinations of dative and instrumental applicatives are possible in this language as well, as are any of these combined with locative applicatives. Furthermore, this explanation of the difference in status of double applicatives in terms of variation in Case assigning abilities seems to generalize across the Bantu languages correctly. Thus, the assumptions of the Theory of Incorporation succeed in accounting for the range and behavior of structures involving more than one instance of Preposition Incorporation.

4.4.4 VI and PI Interactions

The last type of Incorporation interactions to be considered are those involving combinations of Preposition Incorporation and Verb Incorporation. Here again, a number of possibilities present themselves a priori, most of which are not actually allowed by Universal Grammar.

First of all, there are two basic types of causative constructions which involve Verb Incorporation, as discovered in section 3.3: the 'type 1' causatives, which are derived by moving the embedded VP to the COMP of the lower clause before incorporating the V into the matrix verb; and the 'type 2' causatives, which are derived by moving only the embedded V to the COMP of the lower clause before the final incorporation. Which type of VI structure a language will permit depends on the Case marking properties of that language. Thus, we should in principle check the ways in which Preposition Incorporation interacts with each of these types of causative constructions. However, if a language contains Preposition Incorporation at all, it must contain the Case Theory resources to allow PI structures to surface. This in turn requires that the language be able to morphologically identify two NPs: the original thematic direct object NP, and the NP that is stranded by the moved preposition. This is required, given that traces of moved categories never assign Case themselves. Most commonly, this means that the language must permit abstract NI as a method of morphological identification, since a single morphological verb can usually only assign one accusative Case.[84] However, if the language permits abstract NI in applicative constructions derived by PI, the option of abstract NI will also be available to resolve the Case theory pressures of

VI constructions in that language. Thus, the lower verb will be able to reanalyze with its direct object, thereby morphologically identifying it, and then move by itself into the matrix clause. This derives a 'type 2' causative. It thus follows that, in the unmarked case, languages with applicative constructions will also be languages with 'type 2' causatives and not 'type 1' causatives (for the details of this argument, see 3.3.3.2 and 4.2.4).[85] Thus, there will usually be no interaction between PI structures and 'type 1' causatives. In this way, the combination of Case theory and the Theory of Incorporation reduces the number of possible types of interactions between PI and VI permitted by core grammar.

In order to check the interactions between applicative constructions (PI) and 'type 2' causative constructions (VI), we need a language that contains both in their unmarked form. A language which qualifies and which is for the most part similar to those already covered in this work is the Bantu language Swahili. Here, I will primarily follow the presentation of data in Vitale (1981). Basic examples of applicative constructions are:

(242) a. Ni-li-pik-a chakula.
1sS-past-cook food
'I cooked some food.'

b. Ni-li-m-pik-i-a Juma chakula.
1sS-past-OP-cook-appl Juma food
'I cooked some food for Juma.'

(243) a. Badru a-li-andik-a barua.
Badru SP-past-write letter
'Badru wrote a letter.'

b. Badru a-li-mw-andik-i-a Ahmed barua.
Badru SP-past-OP-write-appl Ahmed letter
'Badru wrote a letter to Ahmed.'

(242b) illustrates a benefactive applicative construction of the kind we

are familiar with; (243b) illustrates a goal applicative of the same type. Note that the applied objects (Juma in (242), Ahmed in (243)) govern the object prefix on the verb; Vitale (1981:47) observes that this is always the case--the applied object may be agreed with, but the basic object may not. This is evidence that the applied object receives accusative Case from the verb, while the basic object undergoes abstract NI with this verb. This is confirmed by the fact that the applied object but not the basic object may become the subject when the verb is passivized:

(244) a. Ahmed a-li-andik-i-w-a barua ya kuchukiza na Juma.
Ahmed SP-past-write-appl-pass letter of hate by Juma
'Ahmed was written a nasty letter by Juma.'

b. *Barua ya kuchukiza i-li-andik-i-w-a Ahmed na Juma.
letter of hate SP-past-write-appl-pass-asp Ahmed by Juma.
'A nasty letter was written to Ahmed by Juma.'

Thus, Swahili allows N-V reanalysis, but not double accusative Case marking by a single verb. As expected, these properties also determine the type of morphological causative construction that Swahili allows, in accordance with our principles:

(245) a. Ahmed hu-m-pig-a mke wake.
Ahmed hab-OP-beat wife his
'Ahmed beats his wife.'

b. Asha hu-m-pig-ish-a Ahmed mke wake.
Asha hab-OP-beat-cause Ahmed wife his
'Asha causes Ahmed to beat his wife.'

(246) a. Wanawake wa-na-pik-a chakula.
women SP-pres-cook food
'The women are cooking the food.'

b. Sudi a-li-m-pik-ish-a mke wake uji.
Sudi SP-pres-OP-cook-cause wife his gruel
'Sudi made his wife cook some gruel.'

In the morphological causative sentences (245b), (246b), both the 'causee'

and the lower object are unmarked by a preposition, and it is the 'causee' that may trigger object agreement on the verb, as indicated in (246b). These are typical characteristics of 'type 2' causatives, the type Swahili is predicted to have given that it is known independently to allow N Reanalysis.[86] This is further confirmed by the fact that only the 'causee' can become the subject of the clause when a causative verb is passivized:

(247) a. Mke wake a-na-pik-ish-w-a uji na Sudi.
wife his SP-pres-cook-cause-pass gruel by Sudi
'His wife was made to cook gruel by Sudi.'

b. *Uji u-li-pik-ish-w-a mke wake na Sudi.
gruel SP-past-cook-cause-pass wife his by Sudi
'The gruel was caused to be cooked by his wife by Sudi.'

Thus, Swahili provides the unmarked paradigm case of a language which allows N Reanalysis, and includes both PI and VI constructions.

When we turn to consider structures in which both PI and VI take place, we find that there is exactly one acceptable possibility:

(248) a. Juma a-li-m-chem-sh-e-a mtoto maji.
Juma SP-past-OP-boil-cause-appl child water
'Juma boiled some water for the child.'

b. Haji a-li-m-pik-ish-i-a mke wake chakula rafiki yake.
Haji SP-past-OP-cook-cause-appl wife his food friend his
'Haji made his wife cook some food for his friend.'

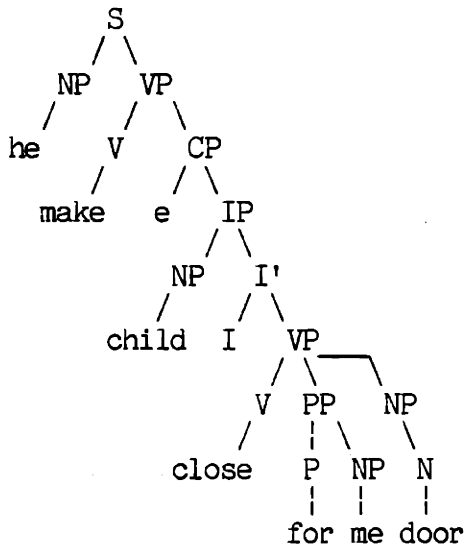
c. A-li-ni-fung-ish-i-a mtoto wangu mlango.
3sS-past-1sO-close-cause-appl child my door
'He had my child close the door for me'

d. Ni-li-mw-ony-esh-e-a mgeni wangu rafiki yake
1sS-past-OP-see-cause-appl guest my friend his
njiaya kwenda Temeke.
road toward Temeke
'I showed his friend the road to Temeke for my guest.'

All of these cases (and the others in the sources mentioned) have the same structure: the applied affix appears outside of the causative affix in the complex verb structure, and the benefactive applied object appears as the NP that receives Case from the verb. This latter fact is established because it is this argument alone that triggers object agreement on the verb (see (259c)). The other NPs--the causee and the lower object--appear unmarked by a preposition and without triggering object agreement in the manner of NPs that have been reanalyzed by the verb.

In fact, this configuration of properties for VI+PI sentences can be explained on the basis of the theory of incorporation. A priori, there are two base structures to consider, depending on which verb the PP in question is an argument of at D-structure. One possibility is that it is the argument of the lower verb:

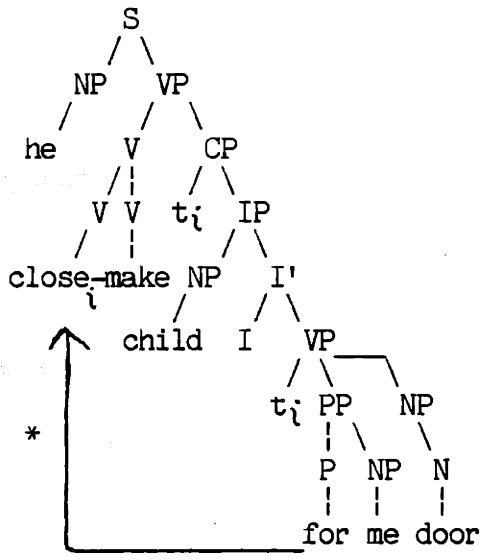
(249)



Here there is a Verb Incorporation and a Preposition Incorporation which must take place in order to satisfy the morphological subcatergorization frames of the items involved. The Verb Incorporation cannot happen first,

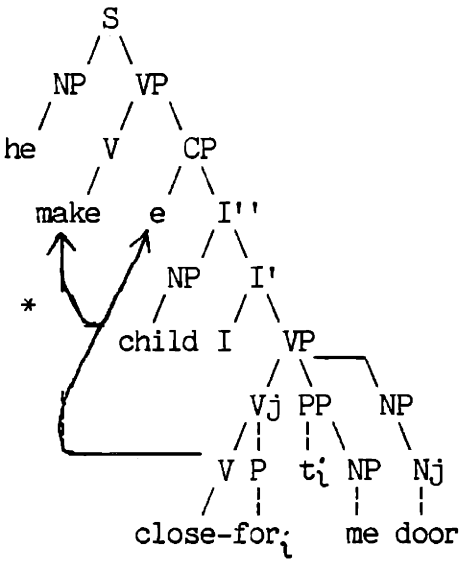
because if it does, the P Incorporation will be blocked; the only V that the P could incorporate into is the matrix one, but this is too far a movement for the P to be able to properly govern its trace:

(250)



Thus the benefactive prepositional affix will be doomed to violate its morphological subcategorization frame. Therefore, the only possibility is for PI to take place first, yielding a structure like the following:

(251)



This time, however, the V is stuck. It could move along the path indicated without violating the ECP, but to do so would create a Case filter violation. The reason is that there are now two NPs in the lower VP which need to be morphologically identified--the basic lower object and the applied object. Neither can receive Case from the matrix verb or Reanalyze with this verb, because it does not govern into the lower VP. The lower verb can Reanalyze with one of these NPs before it moves as usual, but to Reanalyze with both would violate condition (208) against double NI with a single verb. Even with intransitive lower verbs where there is no competing basic object, the verb cannot Reanalyze with the applied object before moving, because to do so would violate condition (209) against incorporating the argument of an element that has already incorporated. Thus, the verb must stay in place to assign accusative Case to the applied object. Finally, the VP cannot move as a whole, because languages of this type lack the Case theory resources to allow Case assignment to the embedded subject in such a structure. Therefore, the causative verb root is doomed to violate its morphological subcategorization frame by failing to affix to a V. Thus, there is in general no grammatical output for a structure like (249), whether the lower verb is transitive or not. Thus we have an explanation for why sentences like those in (252) are unacceptable, even though they are a plausible alternative to those in (248) if causative and applicative are simply formulated as explicit grammatical function changing rules:[87]

(252) a. *Juma a-li-chem-e-sh-a maji mtoto.
Juma SP-past-boil-appl-cause water child
'Juma boiled some water for the child.'

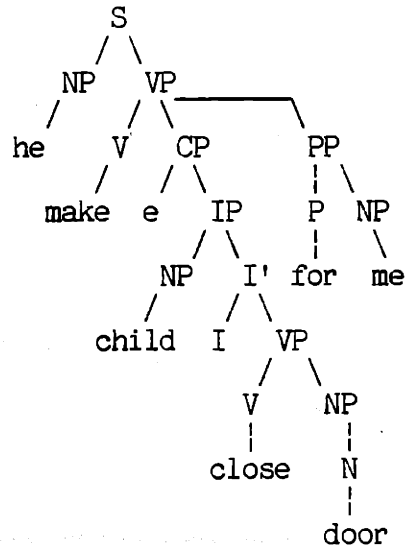
b. *Ni-li-mw-ony-ey-esh-a rafiki yake mgeni wangu
1sS-past-OP-see-appl-cause friend his guest my

njiaya kwenda Temeke.
road toward Temeke
'I showed his friend the road to Temeke for my guest.'

These sentences differ from there counterparts in (248) in that the applied affix precedes the causative, and the causee is the NP that receives Case from the complex verb--the logical pattern if, contrary to fact, PI were allowed to feed VI.

Next, we consider the other possible source for VI-PI combinations: a D-structure in which the PP in question is a thematic argument of the higher causative verb rather than of the embedded verb:

(253)



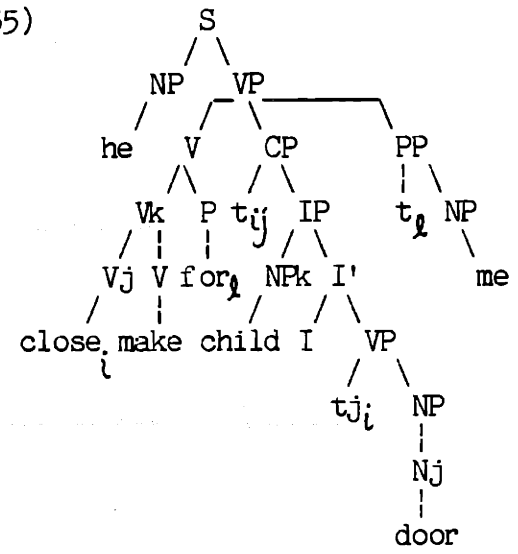
Here, clearly, there will never be any ECP problems with either the V Incorporation or the P Incorporation, since the two 'source' phrases are essentially independent of each other; each incorporation will properly govern its trace in the same way that it does in simpler structures. The thing to be careful about is that all NP get properly morphologically identified. The lower object 'door' can enter into the Reanalysis relationship with the lower verb before it moves. Then the causee and the

applied object will both need to be m-identified by the final matrix verb complex. This will only be possible if one of the two undergoes Reanalysis. We know independently that an applied object can never be incorporated into a verb, whether overtly or covertly (section 4.4.2 above). However, we also know independently that a causee can incorporate into the causative verb; in fact a causative verb can incorporate both the lower object and the causee, being freed from the ban against double NI because there are two V roots involved, one for each N root to be incorporated. This possibility is seen overtly in Southern Tiwa, as discussed in section 3.5:

(254) Ti-seuan-p'akhu-kumwia-'am-ban wisi te-khaba-'i.
1sS:A-man-bread-sell-cause-past two 1sS:C-bake-subord
'I made the man sell the two breads I baked.'

The rule is that what is allowed with overt Incorporation is allowed with covert Incorporation. Therefore, it is possible to get a grammatical output from the structure in (253) if (and only) if the causee is Reanalyzed with the verb and the applied object receives accusative Case. More exactly, a grammatical sentence will result if and only if the following things happen in the following order: (i) the lower verb reanalyzes with the lower object; (ii) the lower verb moves first to the embedded COMP, then incorporates into the matrix verb; (iii) the complex verb reanalyzes with the causee which it now governs by virtue of the V Incorporation; (iv) the P incorporates into the verb complex; and finally (v) the verb complex assigns accusative case to the NP stranded by PI at S-structure. This results in the following S-structure representation:

(255)



This derivation implies the 'Mirror Principle' type prediction (see section 1.1.3, Baker (1985)) that the applied affix must appear morpologically outside of the causative affix, and that it will be crucially the applied object that acts like the surface object of the verb with respect to reflexes of accusative Case assignment, such as word order and triggering object agreement on the verb. The causee and the thematic lower object, on the other hand, will have the relatively inert behavior of NPs which have been reanalyzed. These are exactly the properties of the Swahili VI+PI construction as laid out above. These are also the essential properties of causative-applicative construction in another Bantu language, Kimeru, as described by Hodges (1977). Thus, the theory of Incorporation explains all the properties of such constructions, as well why they are in general the only PI+VI construction allowed.[88, 89]

To conclude, I observe that the syntactic Incorporation theory of these so-called Grammatical Function changing processes has met the challenge of explaining interactions of different processes with an explanatory depth

well beyond that of any other theory brought forth so far. In particular, many gaps which are unexpected if these processes are thought of in terms of freely ordered explicit rules have been accounted for crucially in terms of the assumptions of Incorporation.

CHAPTER FOUR: FOOTNOTES

1. Of course, English has direct counterparts of (3) in which the verb is not morphologically complex--the so-called 'dative shift' construction. This perhaps makes it less obvious that the verbs in (3) are doing the work of two items. However, dative shift with morphologically simple verb does not exist in many languages, including Chichewa. Its analysis will be taken up in section 4.2.5.2.

2. This is no doubt related to the fact that prepositions differ from nouns and verbs in that they are a 'closed class' category: it contains a relatively small and semantically impoverished set of items, which usually cannot be increased by productive word formation processes. Affixes similarly constitute a 'closed class'. Thus there is a natural affinity between the two.

3. But see footnote 1.

4. For example, see Chung (1976), Kimenyi (1980), Dryer (1983), Aissen (1983), etc.

5. Recall that no (morphological) identity between an independent preposition and a semantically similar prepositional affix is necessarily expected; both need not even exist in a given language. Chamorro and Bahasa Indonesia are like Chichewa in having an independent P form; Tuscarora is like Tzotzil in lacking one.

6. There are a handful of potential cases of PP subjects in English, mostly of the form of those in (i):

(i) a. [Under the awning] is a comfortable place to sit.

b. [On the table] was put the book.

c. [In the courtyard] appeared a sorcerer.

Similar structures are possible in the Bantu languages Kinyarwanda (Kimenyi (1980)) and Chichewa (Trithart (1977)). Nevertheless they are so limited that one would not necessarily expect to find P Incorporations based on them in any case.

7. Sentence (18a) has not been checked with a native speaker.

8. Again, whether or not a language has an independent prepositional form that overlaps with the Prepositional affix uses is idiosyncratic. Chichewa and Kinyarwanda have no independent benefactive preposition, even thought the former has an independent dative preposition. Tzotzil, on the other hand, has an independent benefactive oblique but no independent dative. Chamorro and Indonesian have independent preposition forms for both dative and benefactive--in Chamorro the same preposition is used for both; in Indonesian two different prepositions are used. Clearly, there is no deeper generalization to be captured here.

9. There are some syntactic differences between instrumental applicative constructions and the benefactive ones illustrated above. See section 4.3.2 and 4.4.2 below (cf. also Marantz (1984)).

10. Gibson (1980:64, fn. 7) states that a lexical analysis rather than a syntactic analysis may be appropriate for these cases.

11. These Kinyarwanda examples are interesting from the point of view of morphology: in this case, unlike in the others we have seen, there is a morphological relationship between the independent preposition and the

prepositional affix. Thus, -ho is a phonologically reduced form of ku and -mo is the corresponding reduced form of mu. If this relationship is part of the synchronic grammar, then these are the true minimal pairs reflecting the basic optionality of Preposition Incorporation.

12. Some care is necessary here: Chichewa also has affixes at the end of verbs which are cognate both with Chichewa's locative Ps and with the Kinyarwanda morphemes discussed here. It is clear that these do not play the same role as there Kinyarwanda counterparts, however; they are always optional on the verb, and their presence has no real effect on the syntactic behavior of the external locative phrase they are associated with. Trithart (1977:20) calls them 'optional adverbial agreements'.

13. It should be pointed out that the truth or falsity of this assumption is not immediately crucial for Marantz, as it is for me. In fact, in Marantz (1984), it is also permissible to merge the head of a subject phrase into the head of the main predicate--a position that is certainly too weak, as we have seen.

14. This simplifying assumption will be modified in section 4.3.2, where I argue that all three types of V-P-NP relationships exist.

15. (37b) can also have a straight benefactive reading, where the leopards steal the bicycle from someone else in order to give it to the lion.

16. This point is less clear in English than in Chichewa, because the benefactive preposition for has more solid positive connotations, regardless of the governing verb. Romance PPs with a are perhaps closer to Chichewa applied verbs in this regard.

17. Or by a Case assigner, as in Lasnik and Saito (1984).

18. Another potential argument for the hypothesis that verbs theta mark PPs of the class we have been considering might come from Romance clitics. It has often been hypothesized that the class of elements that can appear as clitics on a verb in (for example) the Romance languages is roughly (a subset of) the class of arguments of that verb (e.g. Borer (1983)). In the Romance languages, benefactives, instrumentals, and locatives can all appear as verbal clitics:

BENEFACTIVES: (French, Rouveret and Vergnaud (1980:170))
(i) Elmer lui a devalisé deux banques le mois dernier.
'Elmer robbed two banks for him last month.'

INSTRUMENTALS: (Italian, Rizzi (personal communication))
(ii) a. Gianni ha aperto la porta con la chiave.
'Gianni opened the door with the key.'

b. Gianni ci ha aperto la porta.
'Gianni opened the door with it.'

LOCATIVES: (French)
(iii) a. Jean a dormi dans ce lit.
'Jean slept in this bed.'

b. Jean y a dormi.
'Jean slept there.'

These facts are strongly suggestive, but they are not a full argument since we may not be able to maintain that all clitics in Romance are theta marked by the verb (e.g. certain uses of en in French).

19. The traditional distinction here is between PPs under VP and PPs under S, rather than between theta marked and non-theta-marked PPs. However, this distinction implies mine, given that a V cannot theta mark a phrase outside of its maximal projection.

20. There is one exception to this generalization in the literature that I

know of: Kimenyi (1980) describes a class of 'manner applied' verbs in Kinyarwanda. One of his examples is:

(i) a. Umugabo a-ra-som-a ibaruwa n'-iibyiishiimo
man SP-pres-read-asp letter with-joy
'The man is reading a letter with joy'

b. Umugabo a-ra-som-an-a ibaruwa ibyiishiimo
man SP-pres-read-with-asp letter joy
'The man is reading a letter with joy'

Something similar is apparently true in Chichewa with 'reason' phrases:

(ii) a. nsima iyi ndi-ku-dy-er-a njala
cornmush this 1sS-pres-eat-appl-asp hunger
'I am eating this cornmush because of hunger.'

My information about such structures is very sparse, and I have nothing to say about them. I have no examples of temporal applicatives at all.

21. There is one famous case of 'oblique voices' which I omit in this work: that found in the Philippine languages (e.g. see Bell (1983) and references cited there). Clearly, the facts from these languages are rather different from the ones I have presented. Many properties of these constructions are highly controversial, such as which whether the thematically oblique NP is a subject or a topic, and whether the structures are derived in the syntax or the lexicon. For these reasons, I leave them aside. If it turns out that these oblique NPs are syntactically derived and become subjects, this might be accounted for by claiming that the Philippine voice markers are suppletions for a combination of an incorporated preposition and a passive marker (cf. Marantz's (1984) analysis of an instrumental construction in Chichewa (section 7.1.2)).

22. In fact, this is true of dative and benefactive (and, as far as I know,

locative) applicative constructions--but not necessarilly of instrumental applicative constructions. See section 4.3.

23. These word order effects are valid if there is no object agreement on the verb; if object agreement appears with the benefactive, the preferred word order is reversed (cf. (54a). Mchombo (1984) uses facts like this to argue that Chichewa object prefixes are not true object agreement after all, but rather clitics. I accept this result, but will ignore it for simplicity.

24. Marantz himself proposes that applicatives result from the 'merger' of a V and a P, and accounts for this generalization in terms of a principle of morphological feature percolation. Basically, the idea is that the P is an affix and the V is a root, and properties of affixes generally take precedence over properties of the root in determining the properties of the complete word (cf. Lieber 1980). Then, the oblique nominal is the object of the P and the basic object is the object of the V, so the object of the P takes precedence in becoming the object of the combined word.

25. More generally, it must be 'morphologically identified': see section 2.3.2.

26. In Kinyarwanda, there is independent Binding Theory evidence that supports the hypothesis that P Incorporation changes government relations. Consider the following pair of sentences (Kimenyi (1980:94-95)):

(i) a. Abaana ba-ra-shyir-a igitabo kuri bo
children SP-pres-put-asp books on them
'The children are putting books on themselves.'

b. Abaana ba-r-ii-shyir-a-ho igitabo.
children SP-pres-refl-put-asp-on books
'The children are putting books on themselves.'

In (ia) the [NP, PP] is a lexical pronoun, which may be coreferent with the matrix subject. This suggests that, for whatever reason, PPs of this class can count as 'Complete Functional Complexes' and hence binding domains in Kinyarwanda (cf. English examples such as 'He(i) saw a snake near him(i)/*himself.'). However, when the P is incorporated into the verb as in (ib), an independent pronoun referring to the location cannot be coreferent with the subject; instead morphological reflexivization must apply. This implies that the binding domain of the location NP has been expanded by incorporation. This follows if incorporation causes the [NP, PP] to be externally governed by the verb, such that its binding domain must include that matrix verb--and hence the matrix subject--as well. This is parallel to the NI case of possessor stranding discussed in 2.2.2.

27. Of course, if the benefactive NP 'zebras' gets Case from the verb, there arise serious questions about the patient NP 'shoes' with respect to the Case Filter. These will be addressed in section 4.2.4.

28. Many researchers on applicative constructions point out that the 'applied object' also becomes available for wh-movement (questions, relative clauses, clefts, etc.) in a way which oblique NPs normally are not (e.g. Chung (1976), Trithart (1977), Kimenyi (1980)). Clearly, good groundwork is in place for an explanation of this fact in terms of government and Case assignment by the verb; however it is beyond the scope of this work to give an account of the restictions on wh-movement in these languages in such terms. There is also a factor complicating the data in an interesting way--see 4.3.

29. Probably, a verb's particular Case assigning properties are related in

to its thematic role assigning properties by various principles (e.g. 'Burzio's Generalization' (Burzio 1981), [illegible] 1984)). In fact, the Case properties of items may prove to be [illegible] eliminable in these terms, although there seems to be an idiosyncratic residue still (cf. Pesetsky (1982)).

30. This is so that the notions of c-command and government work properly, among other things.

31. In the same way, elements that correspond to canonical adjectives in English are (stative) verbs in Chichewa--e.g. -da, 'be dark'; -fiira, 'be red', etc.

32. Idiosyncratic, lexicalized reading derived by attaching -ir in the lexicon also appear with these verbs, as with the unaccusative verbs. Thus, (78b) means 'The lion inspected the baboons'; (80b) means 'The journalist ran toward the beatiful woman.' Sek-er-a in (79b) does not happen to be a lexicalized combination of this type.

33. Marantz's (1984) discussion of applicatives assumes that it is a matter of cross-linguistic variation whether applicatives are possible with intransitive verbs or not. In fact, he cites only one example of an applicative based on an intransitive verb, from the Bantu language Chimwiini:

(i) Muti u-m-tuluk-il-ile mwa:limu
tree SP-OP-fall-appl-asp teacher
'The tree fell on the teacher'

Since 'fell' is an unaccusative type verb, I am forced to claim that this tuluk-il is an instance of lexical affixation of the applied affix rather

than syntactic (as Marantz assumes). Thus, I claim that (i) must be analyzed in the same way as (75b) in Chichewa.

34. In the light of this section, it is potentially useful to return to the odd Chichewa 'reason' applicatives, mentioned in fn. 20. An example of this is repeated here:

(i) nsima iyi ndi-ku-dy-er-a njala
cornmush this 1sS-pres-eat-appl-asp hunger
'I am eating this cornmush out of hunger'

In fn. 20, it was pointed out that such an applicative should not exist, since it seems to involve P Incorporation out of an adjunct in violation of the ECP. Of course the construction does exist, but there may be independent evidence that it is not a PI construction after all. Thus, these 'reason applicatives' are grammatical even if the verb they are based on is strongly intransitive:

(ii) a. Mavuto a-na-fik-ir-a njala.
Mavuto SP-past-arrive-appl-asp hunger
'Mavuto came out of hunger.'

b. nsima i-na-phik-idw-ir-a -nji?
cornmush SP-past-arrive-pass-appl-asp what
'Why was the cornmush cooked?'

(iia) is based on an unaccusative verb; (iib) on a passive verb. As we have seen this is never possible with true applicatives.

It is possible that this 'reason applicative' construction is really what underlies the one available reading for applicatives of the unergative verbs in (78)-(80).

35. Perhaps there is a principled reason for this difference between French and English, having to do with how prepositions assign Case--see Kayne

(1983).

36. Unfortunately, English has no other properties that will clearly reveal when P Reanalysis has taken place. Hornstein and Weinburg (1981), Stowell (1981), and Kayne (1984) have all tried to attribute the possibility of P-stranding with wh-movement in English to the existence of Reanalysis as well. This approach is open under my analysis, but it seems to create as many problems as it solves, due to the many asymmetries between the class of possible psuedopassives and the class of possible P-strandings. (cf. Van Reimsdijk (1978); for responses, see Hornstein and Weinburg (1981), Stowell (1981)).

37. It is immaginable that there could be applicative constructions in such a language, but only with intransitive base verbs, where there is no second object to violate the Case Filter. Here, however, there would be problems with Case-marking the applied object itself, as discussed in section 4.2.2.

38. In some of these languages there are other types of constructions which are at some level similar: the Romance languages use dative clitics in some ways which are strikingly like the range of uses of applicatives in (say) the Bantu languages; while Malayalam uses conjunct verbs to a somewhat similar effect (cf. Mohanan (1983)). It is quite clear that these are not P Incorporation structures in any sense, but looking for deeper relationships among them would be an interesting topic for further research.

39. The exception here is the dialect of Chichewa that I termed 'Chichewa-A'. On its hybrid status, see 4.2.5.2 below.

40. Or, to mention another classical analysis that may or may not prove

distinct, either object may cliticize to the verb when it is pronominal.

41. In their terminologies, influenced by Relational Grammar, they say that these languages all may have more than one direct object per verb.

42. Marantz (1984) too notices this generalization concerning object behaviors across applicatives, causatives, and morphologically underived 'double object' constructions, and gives an account of it in terms of syntactic role assigning potentials--the closest analogue to Case assignment in his system.

43. The 'B' dialect of Chichewa, as described in Trithart is perhaps a hybrid, transitional case with respect to this generalization; apparently its double object and applicative constructions show double accusative properties, but its causative construction has only a single accusative (see 3.3.1). 44. Or, more likely, this preposition is the realization of genitive case assigned by the head noun (cf. Manzini (1983), Chomsky (1984)).

45. The adjacency requirement must be extended slightly because, as we have seen, Kinyarwanda verbs can assign two accusative Cases and clearly both recipients cannot be strictly adjacent to the verb. Perhaps the relevant notion is that of 'Case Domain' from Travis (1984).

46. Kimenyi's specific example (117) is somewhat odd in that the possessed noun which he uses is a relational one, used as a locative. His discussion implies that the same is true in more usual cases as well. On questions about the NP/PP status of locatives in Bantu, see fn. 53 below.

47. At a more marked stylistic level, the possessive PP constituent can be

extraposed to clause final position in this structure.

48. See McCloskey and Hale (1984) for illustration and analysis of pro-drop in NP in Modern Irish.

49. Languages which have nouns agree with their possessors seem to differ in whether that agreement is maintained in a Possessor Raising construction. Thus, it is usually omitted in similar cases in Western Muskogean (Munro (ms).

50. Because of the type of object agreement that it triggers on the verb, Davies analyzes the Possessor as being raised to an indirect object of the matrix clause. I believe, however, that this case is properly made parallel to those illustrated in the text by reanalyzing the 'dative' agreement marker to be a complex form consisting of the 'accusative' agreement marker, plus an element which is essentially an applied affix. See 4.2.5.1.

51. In fact, there is some evidence that it is wrong to take the 'raised' possessor to be structurally a [NP, VP]: see 4.3.2.3

52. Massam (to appear) also discusses Possessor Raising constructions in a GB-framework very similar to mine, although from a different angle. She also considers a somewhat broader range of constructions than those discussed here. I thank her for useful discussion of the topic, as well as for making available to me some of her data.

53. Possessors of locatives can sometimes be 'raised' in Kinyarwanda, contrary to expectation. However, locatives in some Bantu languages seem to have an intermediate status between PPs and NPs, as the prepositions are

apparently reanalyzed as nominal classifiers in some instances (see Trithart (1977) for discussion of this in Chichewa (B); similar effects appear in Kinyarwanda). If locatives can be consistently analyzed as NPs when they are involved in Possessor Raising in Kinyarwanda, the generalization is preserved.

54. Actually, these constructions are more like English dative shift than Chichewa applicatives, in that there is no applied affix attached to the verb. I will argue that the two constructions are syntactically identical in section 4.2.5.2.

55. Unlike Southern Tiwa, the second object need not incorporate in applicative constructions in the Iroquoian languages. Thus, I must claim that the Iroquoian languages (unlike Southern Tiwa) have both N Incorporation and N Reanalysis processes.

56. It is significant that there are no alternations of exactly this type in Mchombo's dialect of Chichewa--see section 3.3 and below.

57. Including Choctaw in this generalization presupposes the correctness of the morphological reanalysis of so-called 'dative agreement' mentioned in fn. 50.

58. Chomsky (1984) has recently proposed that these prepositions are actually S-structure 'realizations' of an inherent Case assigned by the theta role assigner itself at D-structure. This perspective is perfectly compatible with my discussion here.

59. There is an interesting constrast here between N-Reanalysis on the one hand and P- and V-Reanalysis on the other. As far as I know, the latter

two never need some overt morphological sign that they have occurred, even though they are just as invisible in and of themselves. This difference is rooted in the fact that Ns head categories (NPs) which are subject to the m-identification visibility requirement for theta role assignment at LF, whereas Ps and Vs do not (i.e., the Case Filter applies to NP but not PP and VP).

60. Also in case of independent Prepositions inserted as Case markers, the P inserted is generally not random, but rather the one whose normally assigned theta role most closely matches that of the NP which it is inserted to Case mark--cf. Chomsky (1984).

61. The class of verbs seems to be those which involve change of possession inherently in their semantics. A similar point can be made--with nonovert incorporation--in Kinyarwanda (cf. section 4.2.4 above, Kimenyi (1980)).

62. See Munro (ms) for other arguments that possessor raised structures are not equivalent to benefactive applicative structures.

63. In particular, all that is necessary here is to assume that the theme NP is reanalyzed with the verb, while the goal receives accusative Case from it, without positing a null prepositional affix. Even so, if there is no null prepositional affix that theta marks the goal, we lose the generalization that it is always the theme that must reanalyze and the goal which must get accusative Case, and never the other way around--cf. 4.4.2.

64. Marantz (1984: chapter 5) takes a different approach here, arguing that 'dative shift' alternations like (146) are not derived in the same way as cases in which the productive applicative morphology appears. Rather, he claims that dative shift verbs simply have two distinct lexical entries,

one that underlies each syntactic frame. This approach becomes inadequate once a wider range of syntactic similarities between 'dative shifts' and 'applicatives' is considered, such as that in section 4.3.1 and 4.4.

65. The idea also exists in Kayne (1983) and Czepluch (1982) that there is a phonologically null P present and governing the goal NP in English dative shift constructions. Furthermore, this P somehow 'transmits' accusative Case from the V to the NP. My account develops of this idea, specifying that this empty P is in fact the trace of a Prepostion Incorporation. This is an improvement is that the rather obscure relation of 'government transmission' in these cases is seen to be a special case of the GTC, which has rich independent motivation and a fairly clear status (thereby answering Oerhle (1983)). Moreover, assuming that the empty P is in fact the trace of incorporation automatically allows the process to be governed by potentially idiosyncratic morphological considerations. The advantages of this are discussed immediately below.

66. Here the data is rather idealized and much speaker variation appears; see Stowell (1981) and Czepluch (1982) for more refined discussion.

67. Stowell (1983) makes the intriguing claim that it is not so idiosyncratic which verbs allow dative shift and which do not; rather there is a <u>morphological</u> generalization to be captured. Thus, he claims that <u>give</u> allows dative shift crucially because it is a [+ native] word, whereas dative shift is barred with <u>donate</u> because it is [+ latinate]. The (grammaticalized) distinction between native and latinate vocabulary is independently known to play a role in morphological word formation (e.g. Fabb (1984)), but does not play a role in syntax. Thus, Stowell argues that this characterization of the class of verbs which can dative shift is

a sign that morphological word formation is crucially involved in it. This suggestion can be immediately incorporated into my framework by making it a condition on the morphological rule V+P ---> V that V be [+ native].

68. According to Mchombo, extracting the second object is perhaps slightly less felicitous than extracting the object of a simple transitive verb. I must claim that such extractions move a NP Reanalyzed with the verb. We have already seen (section 4.2.4) that certain kinds of movement rules may disrupt the locality between two reanalyzed elements (or an incorporated element and its trace); thus verbs can move after Reanalyzing with their object in the derivation of causative constructions. Here there seems to be a difference between wh-movement and NP-movement, where the former can apply to reanalyzed and incorporated NPs (166), (167), but the latter cannot (cf. (112), (113)). The same asymmetry appears in Italian ne-cliticization structures, which were related to NI structures in chapter 2 (Burzio (to appear)):

(i) a. (pro) Ne_i saranno invitati [molti t_i]
'Many of them will be invited.'

b. *[Molti t_i]$_j$ ne_i saranno invitati t_j
'Many of them will be invited.'

c. [Quanti t_i]$_j$ (pro) ne_i saranno invitati t_j
'How many of them will be invited.'

I know of no satisfying account of this difference.

69. In fact, there are two ways of questioning NPs which seem to be direct objects in Chamorro (Chung (1982)): one in which the clause takes on nominalized morphology when the question word preposes and one in which it does not. The ban against extracting the applied object holds for the

first type of question formation, but not for the second. I have no account for this difference. It could be explained if the second type of question formation is not derived by movement at all (cf. the discussion of (176) below).

70. One could try salvaging Kayne's analysis by positing some kind of phonologically empty but syntactically present 'second object' in sentences like (182), which would be able to head the necessary small clause, but at least at first glance this seems to raise more questions than it solves.

71. Oehrle (1983) gives a sentence parallel to (187d) as grammatical, but the majority of my informants find it deviant to a degree (although perhaps slightly better than (187b). The example that he cites is one in which the wh-word is in the local COMP, and this may affect his judgment.

72. Unless one is willing to pay the price of distinguishing between abstract and morphological case and then claiming that the abstract Case assignments in a language like Chamorro are exactly the opposite of the morphological case assignments. This would seem to be a theoretical artifice.

73. Compare Marantz (1984), who makes a similar distinction between instruments and benefactives.

75. Ultimately it would be desirable to find a fundamental semantic motivation that underlies this apparently systematic theta marking distinction between instrumentals and benefactives. That difference between the two is real will be confirmed independently in section 4.4.2.

76. We might speculate about why (209) is true by observing that if this

configuration is modified minimally by incorporating Z into Y first, and then incorporating the combination into X, the result is grammatical (for examples, see 3.5.1, 5.4). Here, the intermediate trace t' is coindexed with the lowest trace, thereby properly governing it. In this case, the structure is grammatical. The (209) case then differs minimally in that t' is not so coindexed with t, and hence does not properly govern it. Thus, we might suppose that the contrast somehow arises because this potential proper governor which is not an actual proper governor blocks proper government between the antecedent and the embedded trace. This could come down to putting a minimality condition of the proper sort on the notion of 'proper governor'.

77. Locative applicatives would also qualify, but I do not have a wide enough range of data on them to check predictions systematically.

78. The discussion in the text is valid for the alienable Possessor Raising construction in Kinyarwanda. There is also a construction which Kimenyi calls 'alienable Possessor Raising', and this process can raise the possessor of a possessor. There are other indications in Kimenyi's discussion that this type of Possessor Raising is a different construction subject to somewhat looser constraints than the construction discussed in the text.

79. Although not the same necessities--see fn. 55.

80. This example confirms the analysis of obligatory dative shift given in 4.2.5.2, in which <u>na'i</u> is taken to be a root which does not occur without further affixation. Normally this affixation is a (null) prepositional suffix, but here we see that it can be an antipassive morpheme instead.

Thus it is not that dative shift is obligatory syntactically, but that some kind of affixation is necessary morphologically with this sort of verb.

81. See also Mithun (1984) for Mohawk.

82. The verb form of (237) is acceptable with a lexicalized meaning and one less NP argument; here it has the reading 'pass X to Y' (i.e. pass the salt at a dinner party).

83. This example also shows that incorporating two Ps into a single verb is permitted by Universal Grammar, even though incorporating two Ns into a single V is not (208). This asymmetry confirms the suggestion (2.3.3 (102)) that the ban against incorporating two Ns is related to the Case filter and the need to morphologically identify NPs for theta role assignment. PPs are not subject to the Case filter, or the more general identification requirement. Therefore it follows that the ban on double Incorporation will not generalize to this category.

84. In this section I will not consider languages like Kinyarwanda, which can assign two accusative Cases with one verb.

85. Chichewa-A is a marked case in this regard; see section 4.2.5.2.

86. Moreover, Swahili is not like Chichewa-A in that this N Reanalysis need not always be morphologically identified; there is a class of unmarked dative shift verbs in the language (Vitale (1981:45)).

87. The examples in (252) are constructed and have not been checked with a native speaker. The fact they represent is inferred from the discussion of Vitale (1981), who is generally quite careful to illustrate all possible combinations of the processes he discusses.

88. Gibson (1980) gives one sentence in the Austronesian language Chamorro which is problematic on this account. As we have seen, Chamorro has the same properties as Swahili with regard to the current topic: it allows N Reanalysis, and has both applicative constructions and 'type 2' causatives. The analogues of the acceptable Swahili sentences are acceptable in Chamorro as well, as seen in (i):

(i) Hu na'-punu'-i yu' nu i babui as Juan.
1sS-cause-kill-appl me obl the pig obl Juan
'I made Juan kill the pig for me.'

(ii) Si tata-hu ha na'-sangan-i yu' as Joaquin nu i estoria-mu.
PN father-my 3sS-cause-tell-adv me obl Joaquin obl the story-your
'My father made me tell Joaquin your story.'

However, Gibson also gives (ii), which has a structure similar to (252) in the text. I have no explanation for this.

89. As discussed in section 4.2.5.2, Chichewa (A) is a marked case in that it has applicative constructions but a 'type 1' causatives. PI applying after VI, leaving the applied object as the superficial object should be grammatical in this type of language as well, as in fact it is:

(i) Fisi a-na-b-ets-er-a mkango njinga kwa kambuku.
hyena SP-past-steal-cause-appl-asp lion bicycle to leopard
'The hyena caused the leopard to steal a bicycle for the lion.'

On the other hand, one might expect that a language would allow PI to apply to a PP in the downstairs clause as well, feeding VI, since (as the discussion in the text shows) the Case theory problems presented by such a structure can be solved in a VP-to-COMP language. In fact, such structures are highly marginal:

(ii) ??kadzidzi a-na-b-er-ets-a mkango njinga kwa kambuku.
owl SP-past-steal-appl-cause-asp lion bicycle to leopard
'The owl caused the leopards to steal a bicycle for the lion.'

Certainly, these sentences are much rarer than those in (i). My informant vacilated between saying that they were acceptable but unusual and saying that they were unacceptable. This may be the signs of a language in the process of change from a Swahili type system in which (ii) is bad for theoretical reasons, and a system in which (ii) would be acceptable.

Chapter 5

PASSIVE INCORPORATION

In the preceding chapters we have seen that the majority of the core Grammatical Function changing processes introduced in section 1.1 receive an explanatory analysis in terms of syntactic X o movement. In fact, there is only one major Grammatical Function changing process left to be accounted for, and that the most famous GF changing process of them all: the Passive. Perhaps no single construction has received more attention throughout the history of generative linguistics Certainly, any work which has the ambition of eliminating all GF changing rules but which gives no insight into this one is incomplete. Moreover, we have already seen throughout this work that passive interacts in such a way with the Incorporation sentences already considered that a unified account is desirable. Thus the question arises: does the passive have at its heart a type of X-o movement, thereby allowing it to be a part of the Incorporation pattern?

In fact there is good initial reason to believe that the passive involves incorporation as much as Noun Incorporation and morphological causative constructions do. Consider the following sentences in English:

(1) a. Something bit my hand.

b. My hand was bitten (by something).

These two sentences are essentially thematic paraphrases. Certainly, the patient NP my hand has the same thematic relationship to the verb in both structures. More than that, there is also a fairly solid intuition that the agent thematic role, assigned to someone in (1a), is still somehow present in (1b), even when the optional by-phrase is not there. If this theta role is in fact present, it must be assigned to some semantically rather similar element (see section 5.1 for solid evidence to this effect). Then, according to the Uniformity of Theta Assignment Hypothesis, the two sentences must have parallel D-structures, in which the similarity in thematic structure between (1a) and (1b) is directly represented.

Perhaps the situation can be seen somewhat more easily in a language like Chichewa. In this language, the passive is expressed morphologically by adding a unique affix to the verb, rather than by a periphrastic auxiliary plus participle construction as in English; otherwise, the construction is much the same:

(2) a. Kalulu a-na-b-a mkazi wa njovu.
hare SP-past-steal-asp wife of elephant
'The hare stole the elephant's wife.'

b. Mkazi wa njovu a-na-b-edw-a (ndi kalulu).
hare of elephant SP-past-steal-pass-asp by hare
'The elephant's wife was stolen (by the hare).'

Most current analyses of the passive alternation assume that it is to be accounted for either entirely in the lexicon (Bresnan (1982a)), or partially in the lexicon by affixing the passive morpheme to the verb at that level, thereby changing certain grammatically relevant features of the verb (Chomsky (1981), Williams (1981), Marantz (1984), etc.). If there is any truth in the results we have reached to this point, any such analysis is untenable, as the following examples show:

(3) a. Birimankhwi a-na-meny-ets-a kalulu kwa anyani.
chameleon SP-past beat-cause-asp hare to baboons
'The chameleon had the baboons beat the hare.'

b. Kalulu a-na-meny-ets-edw-a kwa anyani (ndi birimankhwi).
hare SP-past-beat cause-pass-asp to baboons by chameleon
'The hare was caused to be beaten by the baboons (by the chameleon).'

(4) a. Makoswe a-na-sem-er-a mbewa mitondo.
rats SP-past-carve appl-asp mice mortars
'The rats carved some mortars for the mice.

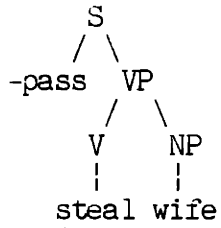
b. Mbewa zi-na-sem-er-edw-a mitondo (ndi makose).
mice SP-past-carve-appl-pass-asp mortars by rats
'The mice were carved mortars by the rats.'

In (3b) the passive applies to a verb form which has already been causativized; in (4b) it applies to a verb form which has become applicative. In chapter 3 it was argued that morphological causatives in Chichewa are derived by a syntactic process of V Incorporation; in chapter 4 a similar point was made for applicatives, except that in this case it is a P that is incorporated. However, if active forms like (3a) and (4a) are syntactically derived, their passive forms can hardly be lexically derived. Such a situation would violate the usual assumption that syntactic processes cannot feed processes that are lexical in a true sense. Therefore, passive must be a fully syntactic phenomenon.[1]

Moreover, these examples give evidence as to the true D-structure of passive sentences. On the one hand, the causative and applicative morphemes are known not to appear on the verb at that level (by the UTAH). On the other hand, these affixes must attach to the verb before the passive does based on morphological evidence: they both appear closer to the verb stem than the passive morpheme does, and neither shows any signs of being an infix (see Baker (1985) for discussion). It follows that the passive

morpheme must not appear on the verb at the level of D-structure. This in turn means that there is nothing--morphological or otherwise--that distinguishes the basic verb form of an active sentence from the basic verb form of a passive sentence at the level of D-structure. Now a basic transitive verb root such as -meny- 'beat' or -sem- 'carve' in Chichewa obligatorily assigns a thematic role to an external argument (subject) at D-structure. This follows from the Theta Criterion given that both the verbs have external theta roles which they can assign and there will always be a position available to assign it to (by Predication theory) (cf. Chomsky (1981)). Since the verb form is the same in the passive case as in the nonpassive one at this level, the same conclusion should hold in for it as well. Therefore, there must be an external argument which receives the external (often agent) thematic role in the D-structure of the passive verb. Now, completely deleting a theta marked argument in the course of a derivation should be impossible, ruled out by the Theta Criterion and the Projection Principle. However, there is no overt agent NP in an argument position in the S-structure of sentences like (2b), (3b), (4b). Thus, if nothing more is said, we are left with the following peculiar situation: an external argument seems to disappear illicitly on the way to S-structure, while a passive morpheme seems to appear along the same route. Consistent with our framework, there is one conclusion that can be drawn from this situation: the argument appearing outside of the VP at D-structure and the morpheme appearing on the V at S-structure are one and the same item. Thus, the D-structure of a simple passive sentence such as (2b) must be something like:

(5)



This is also in accordance with the requirements that the Uniformity of Theta Assignment Hypothesis puts on the D-structure of passives, as discussed above. The facts that motivate this line of reasoning are also present in Chamorro (Austronesian, cf. Gibson 1980), Swahili (Bantu, cf. Vitale 1981), Huichol (Uto-Aztecan, Comrie 1982), Kinyarwanda (Bantu, Kimenyi 1980), and many other languages. Indeed, it can even be seen in English in part:

(6) a. Kim gave Joe chocolate cookies for his birthday.

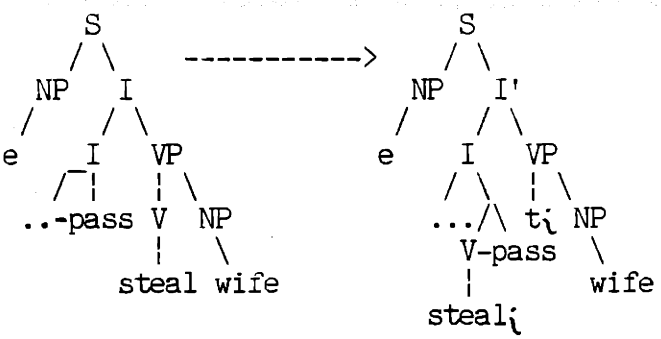
b. Joe was given chocolate cookies on his birthday.

Given that the dative shift construction in (5a) is to be subsumed to a P Incorporation structure such as the Chichewa (4a), it must be derived syntactically (see section 4.2.5 2). Since it may crucially feed the passive (5b), the passive in English must also be syntactic, and similar conclusions follow.

The fact that a (nominal) morpheme representing one of the verb s arguments appears morphologically attached to that verb on the surface is not in itself surprising; that this is possible was the basic result of the discussion on Noun Incorporation in chapter 2. The fact that such a morpheme should bear the external, subject thematic role <u>is</u> unexpected, however. In fact, in chapter 2 I took pains to rule out exactly this possibility by way of the Head Movement Constraint: a subject cannot

incorporate onto a verb because it would fail to govern its trace. This was interpreted as evidence that incorporation involves syntactic movement since it obeys syntactic constraints. Now, however, we see that under special circumstances, something like this seems to be possible. In order to unify passive with the other cases of Incorporation, I put forth the hypothesis that the passive morpheme actually appears in the INFL node of the clause, and the verb moves to Incorporate with it, rather than the other way around. This gives a (partial) set of structures such as the following for a passive sentence:[2]

(7)



The X-o movement in (7) is consistent with the Head Movement Constraint (ultimately the ECP; see section 3.3.2). In the D-structure of (7), the verb (via the VP) is taken to assign its external theta role to the argument '-pass' in INFL, rather than to the [NP, S] position proper. This assignment relation satisfies the requirements that the external theta role be assigned outside of the maximal projection of the V (Williams (1981)) and that the theta role receiving argument be a structural sister of the assigning VP at least as well as assignment of the theta role to the [NP, S] position does. This option has been explored in the Government-Binding literature as a part of an account of 'Null Subject phenomena, as well as in other constructions (e.g. Rizzi (1983), Belletti (1982)). If it is

thought to be desirable to unify external theta role assignment beyond this, we may follow Levin and Massam (1984) and claim that the VP always assigns the theta role to the INFL node first. If this node is (contains) an argument, nothing further will happen; if it does not, it will transmit the theta role on to an argument in the subject position proper, possibly by way of the subject-INFL agreement relation. Thus, (7) represents a viable theoretical option for the analysis of passive constructions.

Moreover, the association of passive with the INFL node implied by (7) is promising for a variety of superficial reasons. First, it accounts for why 'subject incorporation' is limited to at most a handful of nominal items in any language, in contrast to object incorporation in, for example, the Iroquoian languages. Object incorporation involves a full NP node under which a full range of Ns can potentially be generated; 'subject' incorporation involves not a full NP node, but rather the INFL node, where only a small number of special nominal elements can be generated in accordance with special lexical properties. Furthermore, it makes understandable why passive morphology is fairly often represented by an auxiliary plus a verbal participle in languages of the world--including English, Russian, Hindi and Luiseno (Keenan (1975)). Such morphological devices canonically represent tense and aspect, categories that are associated with INFL. The passive morphology can be represented in the same way because it too resides in the INFL node. Indeed, in many languages the passive itself has aspectual overtones; this may be the case in English in a residual way (cf. Langacker (1982), who claims that English passives are perfective in a certain sense) and it is clearly so in Standard Russian (Timberlake (1976)) and Tewa (Kroskrity (1985)), where passives are necessarily in a perfective aspect Finally in many

languages, the passive morpheme suppletes with or infixes into the tense/aspect morphology of the verb (e.g. Kinyarwanda (Kimenyi (1980)), Chimwiini (Kisseberth and Abasheikh (1977)), Fula (see Marantz (1984)). All of these relationships are natural if in fact the passive morpheme bears a special relationship to the INFL node in Universal Grammar

The remainder of this chapter will be devoted to developing and defending the analysis of the passive sketched in (7). On this topic, the relevant literature is enormous both in English and crosslinguistically (for recent especially important examples, see Perlmutter and Postal (1977), Chomsky (1981), Bresnan (1982a), Marantz (1982b), (1984), Jaeggli (1984), Keenan and Timberlake (1985), and so on). Rather than attempting to cover every aspect of the passive, I will focus on its core properties, on the specific evidence in favor of the characteristic aspects of the analysis in (7), and on possible interactions between the passive and other constructions we have discussed.[3]

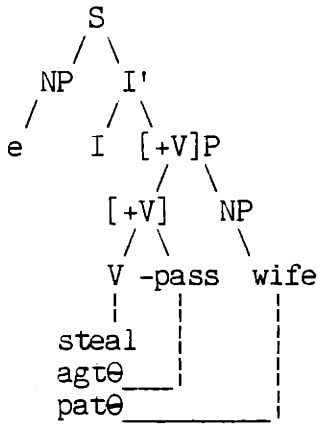
5.1 The External Argument

One characteristic property of the analysis in (7) which is not shared by many analyses of the passive--in particular, those in Government-Binding theory--is that the passive morpheme itself counts as the external argument of the verb at D-structure. For example, Chomsky (1981), Williams (1981), and Marantz (1984) associate no argumental properties of any kind with the passive morpheme; for them, this morpheme is simply part of a lexical process which eliminates the ability of the verb root to assign an external

theta role via some mechanism. To use familiar terminology, the passive morpheme 'absorbs' this theta role. Thus, the external theta role that is normally assigned by a verb is left completely unassigned in the passive.[4]

Much closer to my view is that expressed by Jaeggli (1984). Jaeggli claims that rather than saying that the passive morpheme 'absorbs' the verb's external theta role in some semimysterious way, it is preferable to say that the verb's external theta role is actually assigned to the passive morpheme in more or less the usual way. Thus, the concept of 'absorption' is reduced to the more familiar concept of 'assignment'. This much agrees with the view expressed in (7). Jaeggli, however, does not push this assimilation of theta role absorption to theta role assignment to its logical limit. The D-structure that he associates with a passive is something like (8) (cf. 1984:7), with links representing the theta role assignments:

(8)



Jaeggli then makes the lexical stipulation that a passive morpheme must receive an external theta role. Now, this is an unusual type of stipulation to have to make for a lexical item: one never stipulates that a true noun such as chameleon can only receive an external theta role (or,

for that matter, an internal theta role). Rather, it can be generated in any position which is consistent with its categorial specification as a Noun, as long as its properties with respect to Case theory, Theta theory, and Binding theory are satisfied. Moreover, Jaeggli claims that the passive morpheme is not a nominal element (p. 11), making it mysterious why it should require a theta role at all.

On my account, Jaeggli's stipulation is eliminated. The passive affix must receive a theta role because it is a full-fledged nominal argument and therefore subject to the Theta Criterion. It must receive an external theta role, because it is generated under the INFL node and therefore outside of the maximal projection of the V, and Theta theory requires that the external argument and only the external argument of a given item can be assigned outside the maximal projection of that item (see Williams (1981)). The only stipulation that remains is that the passive morpheme is (part of) an INFL, and surely categorial information of this type must be represented in the lexicon for each item under any theory.[5] I have already given some argument in favor of such a view in the introduction to this chapter; this section will supply further evidence for the specific point that the verb's external theta role is in fact assigned to the passive morpheme in passive structures.

5.1.1 Morphological Forms

The most direct evidence that the passive morpheme is in fact the external argument of the verb is that it represents features which are interpreted as features of the external argument in some languages Thus, the Austronesian language Chamorro is described as having two passive

morphemes: an infix -in- and a prefix ma- (Gibson (1980:31ff)). The distribution of these morphemes depends (at least in part) on the number of the interpreted agent of the clause. Thus, if the agent is singular, the morpheme -in- appears; if the agent is plural or unspecified (i.e. if there is no by-phrase), the morpheme ma- is chosen. Gibson illustrates this with the following minimal pairs:

(9) a. I famagu'un ma dulalak si Jose.
the children 3pS-follow PN Jose
'The children followed Jose.'

b. Ma-dulalak si Jose nu i famagu'un.
pass-follow PN Jose obl the children
'Jose was followed by the children.'

(10) a. Si Juan ha dulalak si Jose.
PN Juan 3sS-follow PN Jose
'Juan followed Jose.'

b. D-in-ilalak si Jose as Juan.
pass-follow PN Jose obl Juan
'Jose was followed by Juan.'

In (9a), the agent/subject of the sentence is plural, and the morpheme ma- appears in the corresponding passive (9b); in (10a) the agent/subject of the sentence is singular and the morpheme -in- appears in the corresponding passive (10b). Further examples of this are.[6]

(11) Ma-na'-fa'gasi si Henry ni kareta nu i famagu'un.
pass-caus-wash PN Henry obl car obl the children
'Henry was made to wash the car by the children.'

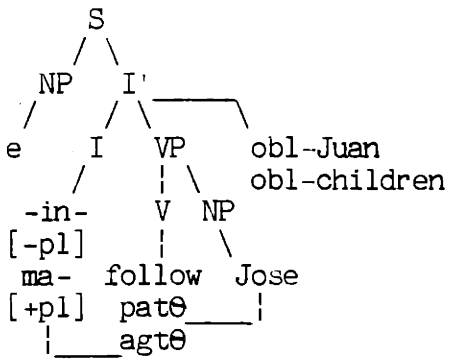
(12) Ni-na'-fata chung si Jose ni ma'estru gi ringkon.
pass-cuase-sit PN Jose obl teacher loc corner
'Jose was made to sit in the corner by the teacher.'

How are we to account for this data? It would be very odd to say that the Chamorro verb shows agreement with an optional oblique case adjunct, which is what the by-phrase appears to be. Such agreement processes are

almost unknown in languages of the world. Even so, one would then have to claim that this agreement morphology 'merges with the passive affix to create suppletive forms, which surface in the indivisible shapes of ma- and -in-. This is odder still.

Given the analysis of the passive being investigated here, however, this situation is perfectly natural. Passive morphemes are taken to be arguments which receive the external theta role and later combine with the verb. As arguments, they generally have the meaning of a kind of semidefinite or indefinite pronoun, rather similar to someone or something in English. Now suppose that this is exactly the case in Chamorro, except that Chamorro has two such semipronominal elements which differ in their inherent number features: ma- is a [+ plural] referential element, and -in- is a [- plural] such element. English, of course, represents such inherent number differences in the definite third person pronouns he and they, but not in the definite second person pronoun you. Chamorro simply extends the overt marking of such a distinction to the semantically somewhat similar passive morpheme(s). Thus, the D-structures of (9b), (10b) have the following form:

(13)



The verb later combines with the passive morpheme by incorporating into the

INFL node. However, it is now clear why the passive morphology in Chamorro reflects the semantic features of the interpreted external argument--because it is in fact the external argument. If the passive morpheme happens to be 'doubled' by a by-phrase, this phrase will simply be required to match the passive morpheme in features (see section 5.1.4). This is the most natural possible situation, and I interpret it as direct evidence that the external theta role of the verb is assigned to the passive morpheme. In fact, given our account, it would be surprising if this situation illustrated in Chamorro did not arise in some language.[7]

5.1 2 Binding theory

It has become clear in recent years that the apparently unexpressed agent of a passive sentence is more 'syntactically real' than it should be if the agent theta role truly is not present at all. In particular, this agent seems to be able to be the antecedent for lexical anaphors and the controller of PRO under certain circumstances, in ways which are parallel (at least in part) to the behavior of true NP arguments. Such agents have been studied quite extensively in recent years under the term 'implicit arguments', and they have some rather complex and mysterious properties: see Roeper (1984), Jaeggli (1984), Zubizarreta (1985), Baker, Johnson, and Roberts (1985), Roberts (to appear) (cf. also Rizzi (1985) for discussion of object 'implicit arguments'). Rather than recapping these discussions here, I limit myself to two rather simple points. First, I will show that these 'implicit argument' facts are associated with passives cross-linguistically, appearing in very similar ways in a variety of languages In particular, I will cite three: English, Italian, and North

Russian. The Italian data comes from Rizzi (personal communication); the North Russian data from Timberlake (1976). The second, more central point is that my analysis of passives in which the external theta role of the verb is explicitly assigned in the syntax to an overtly represented item--the passive morpheme--has the right form to provide a framework for a full analysis of implicit argument effects. Finally, in the interests of space, I will only consider the implicit argument effects related to Binding theory, since these are the best understood theoretically and give the clearest implications.

The agent in a passive shares with overt NPs the property that it can be the antecedent for lexical anaphors which appear in the verb phrase. This is possible, although somewhat marginal in English:

(14) a. Such a privilege cannot be kept to <u>oneself</u>.

b. Boats shouldn't be sunk (only) for <u>oneself</u>.

In Italian, similar sentences are apparently almost completely grammatical:[8]

(15) a Un simile privilegio non puo essere riservato a <u>se stessi</u>.
'Such a privilege cannot be kept to onself.'

b. Certe verità non devono essere nascoste a <u>se stessi</u>.
'Certain truths should not be hidden from oneself.'

c. Una simile domanda deve essere rivolta prima di tutti a <u>se stessi</u>.
'Such a demand must be first asked of oneself.'

Finally, the same sort of thing takes place in North Russian. In this language, the reflexive possessive pronominal adjective <u>svoj</u> 'one's own must generally take a subject as its antecedent; however, in a passive

clause the agent (implicit or represented in a by-phrase) suffices for this:

(16) a. [Odezki svoej] svezeno.
clothes-gen self's brought/pass-neut/sg
'There have been gathered together one's clothes.'
='There's been bringing together some of my clothes (by me).'

b. U Surki privedeno [svoja staraja nevesta].
by Surki brought/pass-neut/sg self's old bride-nom/fem/sg
'There was brought around his own old bride by Surki.

In each of these languages, the underlined anaphor must generally be c-commanded by an antecedent within its clause in order to be grammatical, in accordance with the Binding Theory (see Chomsky 1981). When they appear in nonpassive sentences with no overt antecedent the results are significantly worse than the sentences in (14)-(16):

ENGLISH:
(17) a. *Such privileges can easily disappear on oneself.

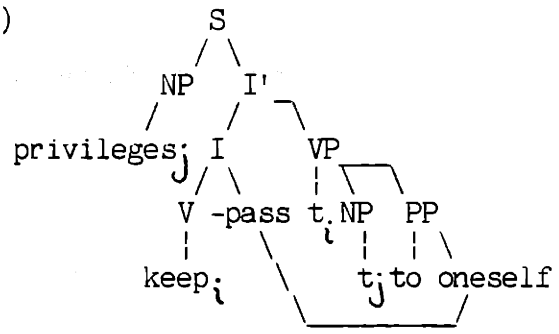
b. *Boat's shouldn't sink for oneself.

ITALIAN:
(18) *Questo puo capitare a se stessi
'This can happen to oneself.'

Nor can such sentences be greatly improved by embedding them in a favorable discourse environment. This suggests that the anaphors in (14)-(16) are not instances of pragmatic interpretation or discourse binding, since there is no good reason why the anaphors in (17), (18) could not be interpreted in the same way. The obvious conclusion is that the anaphors in the passive sentences must in fact be bound by a c-commanding antecedent in the LF structure. Furthermore, this antecedent must receive the agent (or external) theta role from the verb in order to get the proper interpretation for these sentences. This antecedent cannot be in the

subject position (at least in the English and Italian examples) because that position is filled by the thematic object of the verb at LF. Virtually the only possibility left is the one which is made available by the Incorporation analysis of the passive: the anaphor is bound by the nominal passive morpheme in the INFL position:

(19)



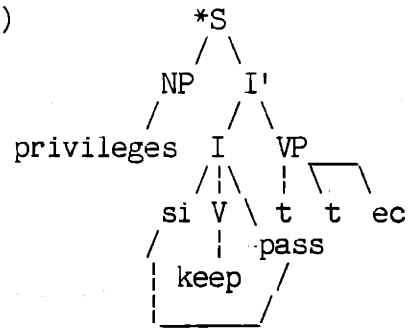
Here the link represents a grammatically determined referential dependency. The passive morpheme in these structures c-commands the anaphor and is not c commanded by it, satisfying the conditions of the Binding theory. Moreover, the passive morpheme receives the external theta role from the verb, thereby leading to the correct semantic interpretation of the anaphor in these sentences. Thus, this range of data can is explained in terms of my analysis, which in turn gains strong support from it.

Rizzi (personal communication) points out another fact from Binding theory which is relevant to determining the structure of passives. Italian contains two types of reflexive elements for indirect objects: the full NP anaphor se stessi and the clitic anaphor si. We have already seen that the passive morpheme can be an antecedent for the full NP anaphor (15); it can never be the antecedent for the clitic anaphor, however:

(20) *Simile privilegio non si puo essere riservato.
'Such a privilege shouldn't be kept to oneself.'

This asymmetry between the two types of anaphors can be explained in terms of the fundamental difference them--namely the fact that si unlike se stessi cliticizes. Hence, it appears in a different structural position from se stessi, and thus has a correspondingly different c-command domain. Suppose si is in fact in the INFL position (as in Belletti (1982)). Then the structure of (20) will be something like:

(21)



Here, not only does -pass c-command si, but si also c-commands -pass. The second of these relationships is illicit. As an argument -pass clearly does not need to have an antecedent in a sentence; therefore it cannot be an anaphoric element, but must be either pronominal or an R-expression (cf. Chomsky (1982)). However, neither a pronominal nor an R-expression may be c-commanded by a referentially coindexed element within their clause (conditions B and C of the Binding theory). Thus, whichever status we take -pass to have, the structure in (21) will be ruled out by Binding Theory In this way, the ungrammaticality of (20) can be explained. Thus, we have c-command evidence that the 'implicit argument' of a passive must be higher in the structure than VP constituents but not higher in the structure than the (final) site of clitics, which is presumably INFL. This converges rather narrowly on the INFL node as the location of this argument,

confirming the Incorporation analysis of the passive construction in which the passive morpheme is that argument.[9]

Finally, we can sharpen the above result by showing that it is not simply the presence of overt and characteristic morphology per se that accounts for the grammatical availability of the agent in passives. This can be seen by comparing syntactic passives with another construction which, in English and Italian, has identical morphological shapes to the syntactic passive we have been studying--namely, the adjectival passive. On properties of this passive, together with criteria for distinguishing it from the syntactic or 'verbal' passive, see Wasow (1977), Williams (1981), Jaeggli (1984), Levin and Rappaport (1985), and references cited therein. Many cases are simply ambiguous between these two types, but one syntactic context in which only the adjectival passive can appear but the verbal one cannot is embedded under verbs which subcategorize for adjectival phrases, such as <u>seem</u>, <u>appear</u>, and <u>remain</u>. When we embed a passive structure under such a verb, we discover that the 'implicit argument' effects disappear:[10]

ENGLISH:
(22) *Boats should remain unsunk for oneself.

ITALIAN: (cf. (15a))
(23) Questo privilegio sembra riservato (al direttore/*a se stessi)
'These privileges seem reserved for the director/for oneself.'

These adjectival passives in some sense logically entail the presence of an implied agent, and they, like verbal passives are derived via overt, productive morphology. In fact, the morphology of adjectival passives is identical in form to that of verbal passives. Nevertheless, these examples demonstrate that adjectival passives have no 'implicit argument' agent. In this way, the two cases are truly minimal pairs. Hence, the root cause of

implicit argument effects cannot depend directly on any of these properties. Now Wasow (1977) and others have argued that the core difference between the adjectival passive and the verbal passive is that the former is derived in the lexicon, while the latter is derived in the syntax. This hypothesis fits well with my framework; in fact it is essentially determined by the Uniformity of Theta Assignment Hypothesis. since the verb root in the verbal passive seems to assign the same theta roles as its active counterpart, while the verb root in the adjectival passive does not. Thus, the verb should be an independent constituent at D-structure in the former case, but not in the latter. In other words, the V and '-pass' come together in the syntax in verbal passives, but in the lexicon in adjectival passives (cf. Borer (1984) and section 1.4.5). This in turn implies that at D-structure -pass is an independent item that bears a theta role in verbal passives but not in adjectival passives. Thus, we explain why there is an 'implicit agent' in verbal passives but not in the (often identical) adjectival passives--crucially assuming, that is, that the passive morpheme is indeed the agent argument that we seek. This difference between adjectival and verbal passives thus gives strong support for the specific hypothesis that the verb assigns its external theta role to the passive morpheme.[11]

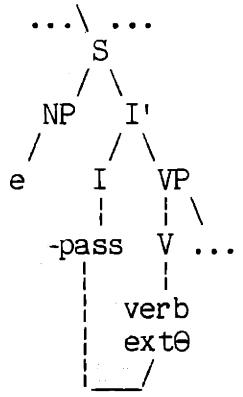
5.1.3 Theta Theory

5.1.3.1 The 1AEX obeyed

Perhaps the simplest and most obvious prediction made by the Incorporation analysis of passives is derived from theta theory. On this

account, passive sentences will quite generally contain the following configuration as part of their D-structure representation

(24)



Here, the passive morpheme appearing in INFL has the status of an argument, and it receives an external theta role from the verb. Consider what happens, however, if the verb has no external theta role to assign. Then the passive morpheme will be an argument which is not assigned a theta role, and the structure is strongly ruled out by the Theta Criterion. Thus, in an elementary way we predict that it will never be possible to passivize a verb which does not assign an external theta role in active structures.

In fact, this prediction is verified by a rich body of facts which are already present in the literature: namely those discussed by the Relational Grammarians as evidence for the principle they call the '1-Advancement Exclusiveness Law' (1AEX) (see especially Perlmutter 1978, Perlmutter and Postal 1984 (henceforth 'P&P')).[12] Let us see how this is so. Essentially, this law says that no more than one phrase can be moved to the subject position in any given clausal structure. In GB terms, what does this statement correspond to? For Relational Grammar, the passive is defined as

(roughly) any process which makes an object become the subject of a clause in which there is already a subject present. Therefore, the 'second advancement' to subject banned by the 1AEX will in practice almost always qualify as a passive, since by hypothesis there is already a subject present. Consider now the first advancement to subject. GB theory in general claims that an NP can move into a position only if that position is not assigned a theta role, by the Theta Criterion (cf. Chomsky (1981)). Therefore, stipulating the 1AEX is essentially equivalent to making the statement that it is impossible to passivize a verb that does not assign an external theta role. Putting this together with the results of the last paragraph, we see that the Incorporation analysis of the passive explains why the passive seems to obey the 1AEX.

The primary evidence for the 1AEX comes from its interaction with the 'Unaccusative Hypothesis' (Perlmutter (1978), see also Burzio (1981) and many others). To review, this hypothesis, as stated in GB terms, claims that there are two distinct classes of intransitive verbs in many (if not all) languages of the world. The first, called the unergative class (Burzio: 'pure intransitive'), consists of verbs that appear in 'traditional' $[_S$ NP V] structures; the second, called the unaccusative class (Burzio: ergative), consists of verbs that appear in a $[_S$ e V NP] D-structure. In this second class, the NP later moves from the object position to the subject position by an application of 'Move Alpha' in the syntax. Examples of the two types from Italian include those in (25):

(25) a. Gianni ha telefonato (unergative)
Gianni has telephoned

b. Gianni e' arrivato (unaccusative)
Gianni is arrived

There is much evidence that these two classes differ: in Italian it includes the distribution of auxiliaries in the perfect aspect (avere 'to have' for unergatives as well as transitives, essere 'to be' for unaccusatives as well as passives); the possibility of partitive ne-cliticization (possible for the postverbal subjects of unaccusative verbs, but impossible for the postverbal subjects of unergative verbs); the possibility of forming certain kinds of adjunct phrases headed by the verb; and so on (Burzio (1981), Rosen (1981)). There is also a semantic correlate to this syntactic distinction: the single NP of an unergative verb tends to be agentive, whereas the single NP of an unaccusative verb tends to be nonagentive. Thus, verbs like run, talk, and smile are generally unergative, whereas verbs like exist, disappear, and boil (intransitive) are generally unaccusative (but see Rosen (1982)). In fact, we have already in this work added to the theory of the Unaccusative Hypothesis, both undergirding it by theoretical considerations (the UTAH, section 1.4.1), and supporting it with further empirical evidence (the distribution of Noun Incorporation, section 2.1.1).

Now consider a language such as Dutch in which intransitive verbs can be passivized as well as transitive verbs (the so-called 'impersonal passive' construction). Assuming that impersonal passives have essentially the same analysis as the personal passives which we have been focusing on (see 5.2.1), we expect that the grammaticality of such a passive will depend crucially on which verb class the verb in question belongs to. Impersonal passives of unergative verbs will be acceptable. Unaccusative verbs, however, are precisedly verbs which do not assign an external theta role. Thus, it should be ungrammatical to passivize them, given our assumptions

(or the 1AEX). Perlmutter (1978) shows that this inference is indeed correct. Some of his examples from Dutch are the following:

(26) a. Er wordt hier door de jonge lui veel gedanst
'It was danced here a lot by the young people'

b. Hier wordt (er) veel gewerkt
'It is worked here a lot'

(27) a. In dit weeshuis groeien de kinderen erg snel
'In this orphanage the children grow very fast'

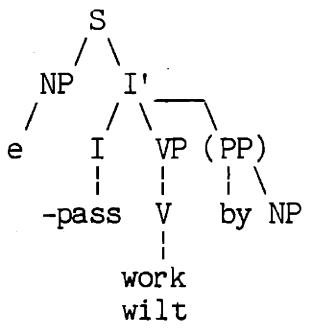
b. *In dit weeshuis wordt er door de kinderen erg snel gegroeid
'In this orphanage is it by the children very fast grown'

(28) a. De bloemen waren binnen een paar dagen verflenst
'The flowers had wilted in a few days.'

b. *Er werd door de bloemen binnen een paar dagen verflenst
'It was by the flowers in a few days wilted'

The sentences in (26) show that impersonal passives are perfectly grammatical when the verb is a prototypical unergative, with an agentive subject. (27b) and (28b), on the other hand, show that impersonal passives of otherwise similar unaccusative verbs with nonagentive sole arguments are solidly ungrammatical. Perlmutter gives many examples of this nature, and demonstrates the same phenomenon in Turkish. This shows the 1AEX in action. Given the Incorporation analysis, these examples are in fact ruled out for two reasons. The D-structure of any of these impersonal passives will have the form:

(29)



If an unergative verb like 'work' appears in this structure, it assigns its lexically specified external theta role to the passive morpheme under INFL, and all is well. If, however, an unaccusative verb like 'wilt' appears in this structure, it has no external theta role to assign to the argumental passive morpheme, thereby violating the Theta Criterion. Moreover, such a verb is lexically specified as theta marking an internal argument NP; there is no such NP in (29), so the structure is redundantly ruled out by the other half of the Theta Criterion and by the Projection Principle. In this way the contrast in (26)-(28), which has since been shown to carry over to many languages is explained in terms of fundamental principles.

In subsequent work, Perlmutter and Postal (1984) show further empirical consequences of the 1AEX which can also be understood in these terms. English, for example, has no impersonal passive construction per se; nevertheless many intransitive verbs can in fact be passivized as long as there is a prepositional phrase in the VP which can supply an NP to fill the subject position. Thus:

(30) a The conference room was exercised in by Spider-man.

b. The bridge was skied under by the contestants.

c. The bed was jumped on by the children.

This is the so-called 'pseudopassive' construction, which was analyzed in part as an instance of LF P Incorporation in section 4.2.3. Certainly some such sentences are more felicitous than others for reasons that are unclear. This notwithstanding, the construction is productive in that it is not limited to a handful of explicitly learned cases, nor is it restricted to specific verbs or prepositions. Nevertheless, there is a set of verbs which systematically never occur in 'pseudopassive' constructions: namely those whose meanings mark them as being unaccusative verbs:

(31) a. *The conference room was leveled off in by the noise

b. *The bridge was existed under by trolls

c. *The bed was fallen on by dust

If sentences like those in (30) are less than beautiful, those in (31) are strikingly worse. P&P attribute this difference again to the 1AEX. Thus, it is reasonable from a semantic viewpoint to claim that the argument of verbs like fall and exist is internal to the VP at D-structure, whereas the NP associated with verbs like jump and ski are generated in the subject position; the latter are agents. while the former are themes and patients. This correlates with the fact that verbs of the former group can (marginally) have their argument actually appear in the VP if it is indefinite, while those in the latter group cannot as well:[13]

(32) a. There exist trolls under that bridge.

b. ?There fell dust on the bed.

(33) a. ?*There skied contestants under that bridge.

b. ?*There jumped children on the bed.

Then given that the verbs in (31) assign an internal theta role but no

external theta role, the passives will be ruled out by the Theta Criterion, since the argument -pass is in the wrong structural position to receive the theta role that the verb has to offer. Again, this problem does not arise with the unergative verbs in (30), which do assign a theta role in the needed position. In all relevant respects, this case is subsumed to the case of impersonal passives discussed above.

Another class of English verbs which do not assign a thematic role to an external argument is the class of 'Raising-to-Subject' verbs. This is seen fairly directly by the fact that expletive elements that receive no theta role at all can appear in the subject position of such verbs:

(34) a. It seems to me that Harry is wrong.

b. It appears to them that Louise is tired.

As these examples show, these verbs can appear with a subcategorized PP complement. Nevertheless, P&P observe that such verbs never allow psuedopassives either:

(35) a. Harry seems to me to be wrong.

b. Louise appears to them to be tired.

(36) a. *I am seemed to by Harry to be wrong.

b. *They are appeared to by Louise to be tired.

This '1AEX effect' has an immediate account in terms of Theta theory as well; once again there is no theta role which can be assigned to the argumental passive morpheme in the INFL of the matrix clause at D-structure, making the sentences ungrammatical.

Perlmutter and Postal also discover a situation in which the

impossibility of an ordinary passive can be accounted for in terms of the 1AEX. These examples involve what they call 'sporadic advancements to 1' ('1'=subject). These are cases in which a noun phrase bearing a thematic role which is generally assigned only in the VP appears in the subject position in place of a more usual agent NP. Instances are shown in (37b, 38b):

(37) a. Melvin bought a lot of heroin for 5 dollars.

b. 5 dollars bought a lot of heroin in 1827.

(38) a. We found the U.S. on the brink of disaster in 1939.

b. 1939 found the U.S. on the brink of disaster.

P&P assume that in these (b) cases there is no subject argument underlyingly, and that the surface subject is moved into that position from the VP. If we maintain this assumption--which is implicated by a strong interpretation of the Uniformity of Theta Assignment Hypothesis--, it becomes understandable why these structures cannot be passivized, as P&P point out. This is true even though their (a) counterparts containing the same verb can be passivized freely:

(39) a. A lot of heroin was bought by Melvin.

b. *A lot of heroin was bought by 5 dollars in 1827.

(40) a. The U.S. was found on the brink of disaster by us.

b. *The U.S. was found on the brink of disaster by 1939.

If the NPs in the (b) sentences are reach the subject position by way of 'Move Alpha', the subject position must be nonthematic at D-structure in these uses of the verbs involved. Then, the Theta Criterion implies that the passive morpheme will not be able to appear in the INFL of the verb

when it is used in this way.

Finally, P&P point out that the 1AEX can account for the apparent generalization that 'double passives'--i.e. sentences in which passive has applied twice--do not exist. This is true even though there are sentences which appear to have two objects, both of which are (at least marginally) passivizable. This is illustrated in (41):[14]

(41) a. John gave Mary the book.

b. Mary was given the book by John.

c. (?)?The book was given Mary by John.

However, even under such favorable circumstances, any kind of double passive structure is hopelessly bad:

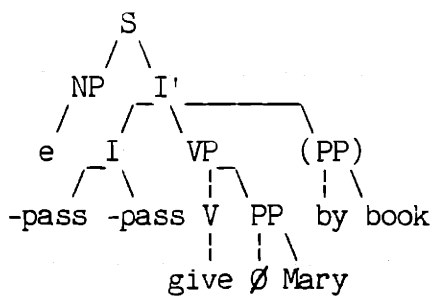
(42) a. **The book was given by Mary (by John)

b. **The book was been been given by Mary by John

c. **Mary was given by the book (by John), etc.

In my terms, this '1AEX effect' translates into a slightly different type of violation from the others. A potential sentence such as (42c) will have a D-structure representation as in (43):

(43)



This time the verb give does have an external theta role which it can

assign to a passive morpheme in INFL. Unfortunately, there are now not one but two passive morphemes in INFL that will compete for this theta role, and the one that does not receive it will cause a Theta Criterion violation. No lexical item ever assigns two external theta roles (cf. Williams 1981); thus double passives will always be impossible. This case shares the common theme of '1AEX effects' that there simply are not enough external theta roles to go around.[15]

Thus, we see that P&P's 1-Advancement Exclusiveness Law is a good descriptive principle, which covers a wide range of interesting and fairly subtle data in a variety of languages with a certain ammount of explanatory depth. Yet, their statement of the principle is as it stands incompatible with the basic assumptions of GB theory. It is therefore a major advantage to the Incorporation theory of the passive that it accounts for this collection of effects in a way that is consistent and even elementary. In fact, this account increases the explanatory depth achieved by eliminating the 1AEX from the grammar as a constraint on the application of a particular class of rules and showing that it is in fact a reflection of a fundamental principle of grammar: namely the Theta Criterion.

In closing, I observe (following Marantz (1984)) that there is another conceivable class of passives of 'unaccusative' structures which are just as ungrammatical as those we have been considering. These are as follows (compare (30) and (31) above):

(44) a. *The noise was leveled off in the conference room

b. *Trolls were existed under the bridge

c. *Dust was fallen on the bed

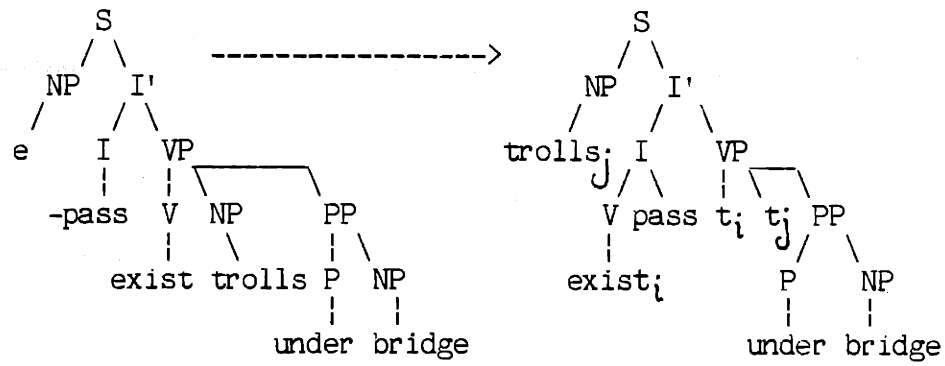
Comparable structures are just as bad in Dutch, where intransitive verbs can be passivized productively (Marantz 1984.148 compare (27), (28)):

(45) a. *In dit weeshuis werden de kinderen erg snel gegroied.
'In this orphanage the children are grown very fast.'
(nonagentive)

b. *De blomen werden binnen een paar verflenst.
'The flowers were wilted in a few days.'
(nonagentive)

In P&P's characterization of the passive, the question of why these cases are impossible does not come up. Given a standard GB account, however, these are in fact the hardest cases to block. These sentences would be with the structures such as those in (46):

(46)



In these structures, as contrasted with that in (41) the subcategorization properties of the verb are no longer violated; trolls and its trace are now in the correct position to properly 'project' the verb's lexical properties. Thus, one of the problems discussed with respect to (38)-(43) does not arise in this case. In fact, under standard GB theories of the passive, in which the passive morpheme is not an argument, there is no obvious problem with these structures whatsoever.[16] If, however, the passive morpheme is taken to be a full fledged argument, the structures are

still ruled out by the Theta Criterion as before: the passive morpheme is still an argument which appears at D-structure in a position where it cannot receive a thematic role from the verb since this verb does not have an external thematic role to assign. Thus, the sentences in (44) and (45) are ungrammatical for the same strong reason that sentences such as '*John seemed that Harold wanted a new car' are ungrammatical--there is one argument to many. From this viewpoint, the ungrammaticality of (44) and (45) is tantamount to proof of a key element of the current analysis of passive--that the passive morpheme is a full argument receiving the external theta role. If it were not an argument, Theta theory would be fully satisfied, and there would be no fundamental reason why such sentences should systematically be completely impossible.

5.1.3.2 Other accounts of the 1AEX

In the last section, I claimed that a certain important range of facts first noticed by Perlmutter and Postal is strong evidence in favor of the Incorporation theory of the passive, in which the passive morpheme counts as an argument with respect to the Theta Criterion. Call this descriptive body of facts '1AEX effects'. In order for the line of reasoning to be valid we must still show two things: (1) that other proposed accounts of the 1AEX are not as adequate as the proposed account in terms of Theta Theory; and (2) that there is in fact a true generalization residing in the 1AEX effects which is to by captured by linguistic theory. I will take up these two issues in turn in this and the following subsections.

---The 1AEX Law proper

The first alternative account of the 1AEX effects to be considered is Perlmutter and Postal's original statement of the 1-Advancement Exclusiveness Law itself. This takes the form of the following statement added as an irreducible principle of Universal Grammar (translated out of P&P's formalism):

(47) It is ungrammatical for two nominals to become the subject in the analysis of a single clause.

Given reasonable auxiliary assumptions, this generalization accounts for a fairly wide range of facts (notably those discussed in the last subsection except for (44) and (45)) in a way which has some elegance and explanatory depth. Nevertheless, the explanatory depth only goes so far. As others have pointed out, the very statement of a law such as this raises a whole collection of new questions about why Universal Grammar should include this particular law, rather than some other that is expressible in the same formal terms. For example, why should UG block having two NPs become the subject in a single clause rather than blocking having two NPs become the direct object instead? Or why should both these situations not be equally blocked? Or, to question along a different dimension, why is the limit on how many NPs can become the subject of a given clause in the course of a derivation set at one? Why is the limit not two instead? Or why is even one allowed? The type of view of Universal Grammar that includes laws such as (47) is not well equipped to answer such questions; yet it is not satisfying to attribute them to quirks of human evolution either. In contrast, the account of the 1AEX effects that I have offered derives them

from the interaction of two very deep properties at the heart of Universal Grammar: the Theta Criterion, as a fundamental constraint on how semantically related relationships can be encoded in linguistic form; and the basic structure of the clause, in which the inflectional tense operator (INFL) has scope over the verb phrase (and hence it can only receive an external theta role from it). Thus, I claim that my account of the 1AEX effects is to be prefered conceptually since it is related to the properties of human language in a more basic way.

It is important to realize that the criticism of the 1AEX law given here is exactly parallel to the criticism of including explicit Grammatical Function changing rules in the grammar given in sections 1.1 and 1.2. Both the law and the rules describe facts about natural language in a clear and interesting way, but at the level of true explanation they raise as many questions as they answer. It is hardly surprising that the laws and the rules should both be subject to the same criticism, since both are a part of the same conceptual system; the laws presuppose the existance of the rules whose operations they constrain. However, when one moves away from a system of explicit rules to a system of general processes constrained by the interaction of systems of general principles in the way sketched out in chapter 1, the explicit and highly particular laws become unnecessary as well. In fact, properly they should follow from the same principles that make the process possible in the first place. Here we have seen an actual case of this program worked out: when the passive is analyzed as a special case of Incorporation in which two separate items become one, its governing 'law' (the 1AEX) is simply a natural reflection of the possible relationships between those two items (in particular, the theta marking relation). Thus, explanation is deepened twofold. Put another way, in a

framework in which there are no explicit GF changing rules, one expects there to be no explicit laws which make reference to such rules either. The fact that we can easily do without one important example of such a law, the 1AEX, is significant support for the move away from explicit rules in this domain.

Before going on, it is important to point out that there is (potentially) a straightforward empirical issue at stake here as well as a conceptual one. It is clear that P&P's 1AEX and the theta theory principles that I have used to derive its effects are by no means logically coextensive in all imaginable situations For example, the 1AEX does not explicitly mention the passive in its formulation, but only movements to subject. My account, on the other hand, hinges on a particular property of the passive morpheme itself: specifically, the fact that it is an argument in INFL. Each is broader than the other in certain respects and narrower in others. Therefore one might hope to find empirical differences between the two. In practice. however, this is difficult.

On the one hand, a clause which has two 'advancements to subject' where the second one was not an instance of 'passive' (in some common sense of the term) would be ruled out by the 1AEX, but perhaps not by theta theory in the current sense. However, Relational Grammarians define passive to be any process by which a direct object becomes a (new) subject in the presence of an underlying subject (cf. Perlmutter and Postal (1977)). Hence, the only ways that the second advancement could be something other than a passive are if (i) there is no subject already present in the structure, or (ii) something other than a direct object is advanced to subject. Furthermore, situation (i) will only be relevant if some other

argument has previously become the subject of the clause and then has moved away. Both of these hypothetical situations are highly unusual and perhaps impossible in Universal Grammar, making this type of prediction hard to check.[17]

On the other hand, the current Theta theory analysis would rule out a structure in which the passive morpheme appeared without getting an external theta role even if nothing ever moves to subject position, whereas, this case should be allowed by the 1AEX, which explicitly counts the advancements in the clause. At least superficially exactly this happens in the many languages which allow impersonal passives of intransitive verbs (cf. Comrie 1977). The Dutch cases considered above are examples of this, and they certainly show the predicted '1AEX effect', which seems to be in favor of the Theta theory account. Perlmutter and Postal (1984) rebut with an analysis of impersonal passives in which an expletive NP is introduced as a direct object and this dummy is then advanced to subject, providing the offending second movement. There is little doubt that there is a dummy subject present on the surface in impersonal passives; the question is whether it is reasonable to assume that this dummy starts out as a direct object. Given the general structure of Government-Binding theory, the answer is clearly that it is not: given the Projection Principle, it is impossible for an unergative verb which subcategorizes for no VP-internal NPs to acquire such an NP by insertion in the course of a derivation. In this way, P&P's device for getting the 1AEX to apply to impersonal passives is not available in this restrictive framework; it is blocked by general principles that have desirable results in other empirical domains.[18] I conclude this discussion with the

observation that there is some reason to favor the Theta theory approach developed here, but the issue becomes highly theory internal, and more investigation is in order.

---Vacuous Affixation approaches

I know of only one other approach to '1AEX effect' facts developed in the literature. This approach, due to Marantz (1981, (1984)) and appealed to rather frequently in GB work (e.g. Rothstein (1983), Zubizaretta (1985)), centers around a hypothesized principle of morphology that (intuitively speaking) blocks adding pointless affixes. Marantz (1984:128) formalizes this as the 'No Vacuous Affixation Principle':

(48) The No Vacuous Affixation Principle (NVAP):
For a certain class of features F, an [alpha F-i] affix may attach only to a [-alpha F-i] root.

Marantz envisions that there must be some kind of principle which is independently necessary to prevent all kinds of morphological overgeneration, such as adding the past participle morpheme to a past participle to get forms like *overgenerateded. The NVAP could be such a principle. Next, Marantz gives a GB-like analysis of passive in which passive morphology makes a verb unable to have a subject at D-structure (the feature [- logical subject]) and unable to have an object at S-structure (the feature [- transitive]). Now, to express the Unaccusative Hypothesis, unaccusative verbs are inherently specified as not taking a subject at D-structure or an object at S-structure. Hence, adding passive morphology to such a verb will not change its features, and it is ruled out by the NVAP. In this way Marantz accounts for the impossibility of passivizing unaccusative verbs, the primary 1AEX effect.

I believe that there are a number of reasons to be suspicious of this approach, however. Most importantly, it takes the passive morpheme to be a nonargument with stipulated features which appears affixed to the verb already at D-structure, assumptions that I have criticized already on other grounds. But also on its own merits it raises knotty conceptual questions. For example, while it is true that the past participle ending in English cannot attach to past participles, neither can it attach to many other verbal forms. In fact, the correct generalization about English seems to be that each verb is allowed only one affix apiece:

(49) a. beaten, *beatsen, *heateded, *beatingen, *beatenen
b. beating, *beatsing *heateding, *beatinging, *beatening
c. heated, *heatsed, *heateded, *heatinged, *heateded
d. beats, *beatses, *heateds, *beatings$_V$ *beatens

Now the majority of these affixations must be taken to be feature changing, yet they are all quite impossible. Thus blocking vacuous affixation does not seem to be a general enough idea, and the independent motivation for the concepts on which Marantz bases his account of the 1AEX effects is called into question.[19]

Secondly, as Marantz acknowledges, the proper characterization of the set of features F relevant to the NVAP is problematic. Given this, it becomes possible to assign features to particular affixes in ways that have no rationale other than allowing the NVAP to disallow the proper set of cases. This tactic is at the heart of Marantz's account of the fact that Dutch allows impersonal passives of intransitive verbs while English does not. He assumes that the passive morpheme in English is associated with the features [-transitive, -logical subject, +participle], whereas its cousin in Dutch has only the features [-logical subject, +participle]

Then attaching the passive to a [-transitive] verb will induce an NVAP violation with feature F-i = transitive. No such violation will occur in Dutch, precisely because its passive morpheme is not specified for this feature. Nevertheless, it is true that every passive form in Dutch is [-transitive], regardless of the transitivity of the root it attaches to. In every other instance of this situation, Marantz analyzes it as evidence that the feature in question is specified on the affix in question. Here, however, he is forced to bridge the gap by appealing to a lexical redundancy rule which must override (not just further articulate) the feature specifications implied by his theory of affixation in order to stipulate that the feature value [-logical subject] implies the feature value [-transitive]. In short, the features of the passive morphemes are set in just such a way so that the NVAP applies as desired to block affixations, and surface inconsistencies are patched up later. Without a deeper theory of morphological features, the NVAP can be used as simply a disguised stipulation.

In contrast to this, my analysis of the passive in which the passive morpheme is the external argument of the verb permits an account of the 1AEX effects purely in terms of theta theory, thereby avoiding the introduction of this new principle with its concommitant problems. At the same time, it relates the phenomenon in an interesting way to other syntactic facts, such as the 'implicit argument' effects of section 5.1.2. For these reasons, I believe it to be superior.

5.1.3.3 The 1AEX violated

There is one more issue that must be resolved for the derivation of the

1AEX effects from Theta theory to be a conclusive demonstration that the passive morpheme receives the verb's external theta role in passive structures--the 1AEX effects must be true. In fact, it seems that the 1AEX effects must be true in all languages, since we expect the Theta Criterion to hold uniformly in all languages. Nevertheless, the crosslinguistic generality of 1AEX effects has been challenged in recent years, notably by Keenan and Timberlake (1985; see also references cited there).

Keenan and Timberlake present a variety of cases in which the 1AEX seems to be violated outright. The most convincing pattern of cases comes from Lithuanian. In this language, canonical unaccusative type intransitive verbs can in fact form impersonal passives as regularly as unergative type intransitive verbs can. When this happens, the patient can even show up in the Lithuanian equivalent of a by-phrase, which is an NP marked for genitive case. Examples of this include:

(50) a. Kur mus gimta, kur augta?
where by-us bear/pass-n/sg where grow/pass-n/sg
'Where by us was getting born, where getting grown up?'
(=Where were we born, where did we grown up?)

b. Ko čia degta?
what here burn/pass-n/sg
'By what was it burned here?'
(=What burned here?)

c. Ar būta tenai langinių?
and be/pass-n/sg there window-gen/m/pl
'And had there really been any existing going on by windows there?'
(=Were there really windows there?)

Apparently, even the copula can be passivized in this language:

(51) Jo būta didelio.
Him-gen/m/sg be/pass-n/sg tall-gen/m/sg
'By him there had been being tall.
(=He had been tall)

Nor can one respond to this data by saying that Lithuanian is different from languages like Dutch, Italian, and English by saying that Lithuanian simply has no unaccusative verbs, but rather that all intransitive verbs in that language assign their theta roles externally. The reason is that it is possible to passivize other classes of verbs which must be assumed not to assign an external theta role including Raising-to-Subject type verbs:

(52) Jo pasirodyta esant didvyrio.
Him-gen/m/sg seem/pass-n/sg being hero
'By him it was seemed to be a hero.'

Even double passives--with double by-phrases!--are reported as being good in this language:

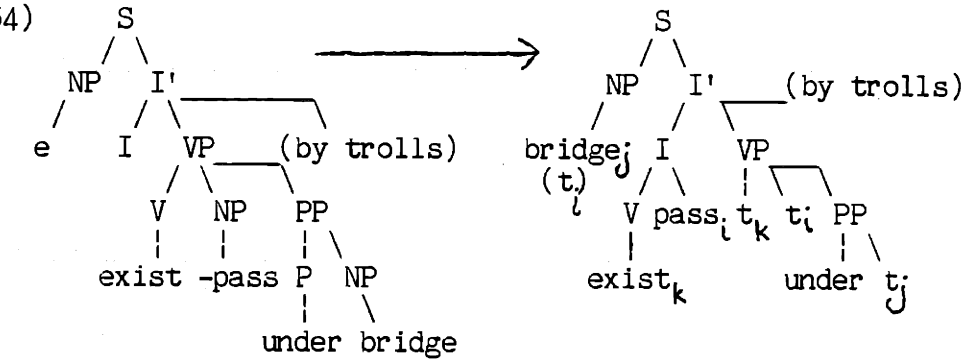
(53) To lapelio būta vėjo nupūsto.
that leaf-gen/m/sg be/pass-nom/n/sg wind-gen blow/pass-gen/m/sg
'By that leaf there was getting blown down by the wind.'

Thus, it seems that truly the whole range of 1AEX effects as laid out in 5.1.3.1 is violated by the Lithuanian passives.

What do we say to this? Surely we do not want to just abandon the 1AEX entirely, given that it explains a wide range of facts in many languages. In one sense, this data from Lithuanian highlights the fact that something like it must true in Dutch and English simply by way of contrast. On the other hand, we certainly do not want to parameterize the Theta Criterion either, saying that it holds in Western European languages but not (in some sense) in Slavic languages. There is, however, one other crucial assumption in our derivation of the 1AEX that can be appealed to in this regard. I have assumed that the passive morpheme is a full-fledged argument of the verb. If this is so, the question arises of why it cannot

be generated in the direct object position itself. This would make it parallel to other nominal arguments which (idiom chunks aside) can be base generated in the subject position, the object position, or any other argument position as long as they are consistent with the selection restrictions of the category that theta marks them. If this were possible. there would be another way to derive ungrammatical sentences like '*The bridge was existed under by trolls' (31b)--by generating the passive morpheme in the object position, moving it to the subject position as in normal unaccusative verbs, and adjoining it to the INFL position from there. The verb could then move to INFL, meeting the passive morpheme there. This would generate structures like the following:

(54)



Note that this derivation simultaneously solves both of the Theta theory problems that arise in the other possible derivation of the potential sentence given in (29) above:[20] the passive morpheme now appears in the place where it can get a theta role from the verb exists, and exists has an argument to receive its theta role and satisfy its subcategorization requirements in accordance with the Projection Principle. What then eliminates the derivation (54) in English? Crucially the specification that the passive morpheme is of the category INFL.[21] As such, its

distribution is limited by X' theory, so that it cannot appear as the sister of a lexical category such as V at D-structure, where X' theory holds. This then is the nature of the violation in (54). In fact, the only position which the passive morpheme can appear in is that of INFL, head of S, where it is outside the VP. Here it will only be eligible for an external theta role, by Theta theory, as has been discussed. Hence the 1AEX follows from the combination of Theta theory and the categorial specification of the passive morpheme.

Now, to return to Lithuanian, I observe that, while the Theta Criterion presumably cannot change from language to language, the categorial status of individual lexical items relevant to X' theory clearly can. Thus, in English the word meaning 'red' is categorially an adjective, while in the Australian language Walpiri it is a noun and in Chichewa (Bantu) and Mohawk (Iroquoian) it is categorially a verb. More generally, the lexical features of individual items is precisely the sort of information which a language learner must acquire through direct exposure to evidence; hence language variation is expected exactly here. With this in mind, I claim that passive morphology in Lithuanian differs in exactly this respect from that of English or Dutch; it has the following lexical specifications:

(55) '-pass' (Lithuanian): N (= +N, -V)
argument
$]_{INFL}$——

The familiar type of passive is categorially an INFL the Lithuanian passive is categorially nominal,[22] but it has a morphological subcategorization feature which requires it to affix to an INFL node by S-structure. This, then, is Noun Incorporation into INFL, observing all

the by now familiar constraints on such a process. Because of its category, the Lithuanian passive morpheme can be generated in any NP base position, including [NP, S] and [NP, VP]. Thus, a derivation like (54) will be allowed in Lithuanian, thereby making possible passives of unaccusative type verbs as in (50), (51). In the raising case (52), the passive will be generated in the lower [NP, S] position, where it receives a theta role from the embedded predicate. Then it undergoes NP movement to the subject position of the matrix verb, and from this position it incorporates into the matrix INFL, where it eventually meets the raising verb, yielding (52). In double passive structures (53), there are two tokens of the passive morpheme: one in the [NP, S] position at D-structure, and the other in the [NP, VP] position, both of which are theta positions. Then the 'subject' morpheme incorporates into the INFL, after which the 'object' morpheme moves to the subject position and then follows its colleague onto the INFL, deriving (53). Thus the 'subject' passive is treated exactly like the passive of an ordinary transitive structure, while the 'object' passive is treated just like the passive of an unaccusative verb. In this way, all of Lithuanian's 'anti-1AEX effects' are accounted for. Finally, allowing the passive morpheme to be generated in any base NP position will not lead to overgeneration because of the morphological subcategorization feature associated with the morpheme. This feature forces it to incorporate into an INFL by S-structure, and this X-o movement can only take place from a position which is immediately governed by the INFL, given the Head Movement Constraint. Clearly, the only position which satisfies this structural requirement is the subject position. Thus, the Lithuanian passive morpheme will only lead to a grammatical structure if it is generated in the subject position to start with--as in ordinary personal or

impersonal passive constructions--or if it is generated in a position from which it can reach a subject position by NP movement--as in examples (50)-(53). In this way, Lithuanian is accounted for within the context of the current framework.

Before closing, I observe that the lexical features associated with the Lithuanian passive in (55) are not a priori more marked or unusual than those associated with the passive of English. Thus, we expect to find that these '1AEX-violating' passives are actually rather common, once one knows what to look for. In fact, I believe that this is the case, except that constructions involving this class of morphemes are often descriptively labeled as 'impersonal constructions' rather than as passive constructions for reasons which are in part independent of the current issue (cf. section 5.2). In fact, one such morpheme is near to hand; the impersonal si of Italian (=se in Spanish). The literature on this morpheme is extensive,[23] but the basic facts are fairly clear. First, this element can appear with transitive verbs, forming a structure which is clearly passivelike:

(56) a. Le manifestazioni sportive si guardano con interesse
'The sporting events will be watched with interest'
(Burzio (1981))

b. I dolci al cioccolato si mangiano in questa pasticceria.
'Chocolate cookies are eaten in this pastry shop.
(Belletti (1982))

These sentences are very similar to the copular passive in Italian, which has more the nature of the English passive:

(57) I dolci al cioccolato sono stati mangiati in questa pasticceria.
'Chocolate cookies have been eaten in this pastry shop.'
(Belletti (1982))

Unlike the copular passive, however, the si construction is freely found with intransitive verbs as well as with transitives:

(58) Gli si telefona domani.
to him IMP telephones tomorrow
'IMP will call (to) him tomorrow'
(Burzio (1981))

This is normal enough; it corresponds directly to the impersonal (copular) passives of Dutch (cf. (26)). If, however, we maintain a passive-like analysis of si constructions, we face the fact that these too violate the 1AEX constraint, appearing with verbs which are clearly unaccusative:

(59) a. Si è arrivati.
'One (IMP) has arrived.'
(Burzio (1981))

b. Si va al cinema un po' troppo di rado ultimamente.
'One (IMP) goes to the movies too rarely, recently.'
(Belletti (1982))

with copular passives, forming a kind of 'double passive' with two different passive morphemes:

(60) Si è spesso maltrattati dalla polizia.
'One (IMP) is often mistreated by the police.'
(Belletti 1982)

and marginally with certain raising-to-subject verbs:[24]

(61) ?Si risultava dormire troppo.
'One (IMP) turned out to sleep too much.'
(Burzio 1981)

Each of these last three constructions is totally hopeless with a copular passive. In the framework developed here, we can conclude that Italian has two passive(like) morphemes--si and the participle morphology In many

respects they are similar, but they differ in their lexical category: the participial passive is an INFL, and therefore shows 1AEX effects just as English does; the clitic passive is a nominal which incorporates into INFL, and therefore systematically fails to show 1AEX effects, just like Lithuanian. The analysis of si structures that this implies is in fact identical to the one argued for in the literature by Rizzi (1976) and Burzio (1981), with the notion 'cliticizing from subject position' reduced (from the point of view of syntax) to the more general notion of 'Incorporating from subject position', in this case, into the INFL node.[25]

In fact, the Italian case is instructive in that it shows that any account of the 1AEX effects cannot simply be parameterized across languages, such that the child learns whether or not his language has this particular law. Rather, we see that whether or not the 1AEX is obeyed can vary not with respect to different languages, but also with respect to different morphemes in the same language. This provides a nearly fatal blow to the theories discussed in the last subsection--either the original formulation of the 1AEX Law proper, or the No Vacuous Affixation Principle- since neither should be 'parameterized' in this way. It is exactly what one expects, however, given my account of the 1AEX effects, in which they are dependent precisely on categorial features which vary from language to language. Other passive and passive-like elements which violate the 1AEX in the way we have seen here are found in North Russian (see Timberlake (1976)), and perhaps Ute (Uto-Aztecan; Givon (1982)) and Sanskrit (given Ostler (1979)).

To conclude, in this section, I have identified the source and nature of a major type of cross-linguistic variation in passive structures, showing

that this can be accounted for naturally in terms of lexical features of the morphemes involved without having to resort to explicit rule statements or explicit laws that govern them. Moreover, I have given evidence by way of contrast that it is correct to locate the passive morpheme of languages like English in the INFL node at D-structure; this is crucial in order to explain why 1AEX effects show up in these languages but not in others.

5.1.4 The by-phrase

The final topic to be investigated with respect to the external theta role in passives is the nature of the by-phrase that can appear in them. As discussed in the Introduction to this chapter, such a phrase generally appears only optionally; in some languages in fact it is highly disfavored or even completely forbidden. In this way, it seems not to be a true argument of the verb involved, but rather some kind of adjunct, as has often been observed. Nevertheless, it is crucially related to a true thematic role of the verb in a way which is unusual for an adjunct: in particular (descriptively speaking) the object of the preposition by bears exactly the theta role that the verb would have assigned to the subject NP in an active clause. Marantz (1984:129) establishes this point with the following range of facts:

(62) a. Hortense was pushed by Elmer.

b. Elmer was seen by everyone who entered.

c. The intersection was approached by five cars at once.

d. The porcupine crate was received by Elmer's firm.

e. The house was surrounded by trees

In the (a) sentence the 'by-object' is semantically an agent; in (b) it is an experiencer; in (c) a theme; in (d) a goal or recipient; and in (e) it is something else. The only valid generalization that covers these cases is that the theta role is the same as that which the verb normally assigns externally. The same point is made graphically by the following range of examples (pointed out to me by H. Lasnik):

(63) a. Kevin broke the vase.

b. The lead pipe broke the vase.

(64) a. The vase was broken by Kevin.

b. The vase was broken by the lead pipe.

(65) a. Kevin broke the vase with the lead pipe.

b. The vase was broken with the lead pipe by Kevin.

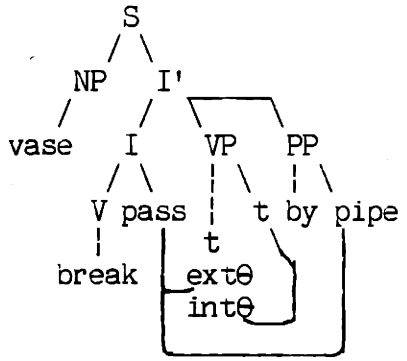
(66) a. *Kevin broke vase by the lead pipe.

b. *The lead pipe broke vase pipe by Kevin.

The sentences in (63) establish that the verb break can assign either an agent or an instrumental thematic role to its subject. The sentences in (64) show that by can also assign either role to its object in the context of this verb. The sentences in (65) show that both an agent and an instrument can appear with this verb simultaneously. Then, if the theta role assigning properties of by illustrated in (64) are taken to be a reflection of that lexical item's inherent properties independent of the passive construction, there is no reason why the sentences in (66)--where the verb assigns one thematic role to its subject and by assigns the other--should not be as grammatical as those in (65). They are, however, completely ungrammatical. The conclusion must be that the theta assigning properties of by are not independent of the passive construction. From the

preceding sections we know that the external theta role of the verb is in fact assigned to the passive morpheme in passive structures. Thus to capture the relevant property of the by-phrase, I will claim (following Jaeggli (1984)) that the by-phrase 'doubles' the theta role of the passive morpheme in a passive structure, thereby appearing to receive the external theta role itself. Recall from section 2 4 that exactly the same thing takes place with antipassives (and in some cases with full Noun Incorporation): there too the actual theta role is assigned to a nominal element on the verb but is optionally duplicated by an oblique NP external to the verb. I will express the two with the same formalism, in which the affixed element is coindexed with the oblique double representing the thematic link between the two:

(67)



Again, the links represent thematic role dependencies. In this way, the basic property of the by-phrase is captured.

Looking crosslinguistically, we find that in some languages an oblique 'by-phrase' type nominal that is thematically dependent on the passive morpheme is allowed in some languages, but not in others. Thus, such a thing exists in Chichewa (and Bantu in general), Chamorro (Austronesian), and Southern Tiwa; but never in Huichol (Uto-Aztecan; Comrie (1982)),

Latvian, Hungarian, or classical Arabic (Keenan (1975)). Considering again Italian, which has two different passive constructions involving different morphemes (as discussed in the last subsection), we find that one of the passives allows a by-phrase, and the other does not (Belletti (1982)):

(68) a. I dolci al cioccolato sono stati mangiati da Mario.
'Chocolate cookies have been eaten by Mario.'

b. *I dolci al cioccolato si mangiano in questa pasticceria da Mario.
'Chocolate cookies (IMP) are eaten in this store by Mario.'

This shows that the property of allowing a by-phrase double is not a property of a given language, or of the prepositions of that language, but rather of the specific passive morphemes of the language. In other words, it is an idiosyncratic lexical property of an individual passive morpheme whether or not it can transmit its thematic role to a doubling by-phrase.[26] This empirically observed tie between the possibility of a by-phrase and the lexical properties of the passive morpheme fits naturally enough into this analysis. A similar conclusion about the relationship between the lexical features of particular Antipassive morphemes and the possibility of doubling them was reached in section 2.4 Other languages which have more than one passive morpheme include Arizona Tewa (Kroskrity (1985)) and Mam (Mayan; England (1983)); in these languages also some of the morphemes allow a by-phrase and some do not.

This analysis makes understandable a peculiar fact about by-phrases in polysynthetic languages: they often incorporate into the verb. This fact is somewhat surprising, given the results of section 2 1 in which it was seen that adjunct NPs are generally unable to incorporate into the verb. The same holds true for subjects, the canonical bearers of the external

theta role, both of these facts following from the ECP. Nevertheless, this type of 'agent incorporation' is possible:

SOUTHERN TIWA: (Allen, Gardiner, and Frantz 1984)

(69) a. Khwien-ide Ø-ẽdeure-ban kan-ide-ba.
dog-suf A-kick/pass-past horse-suf-instr
'The dog was kicked by the horse.'

b. Khwien-ide Ø-kan-ẽdeure-ban.
dog-suf A-horse-kick/pass-past
'The dog was kicked by the horse.'

Compare active:

c. Kan-ide Ø-kwien-ẽdeuri-ban.
horse-suf A-dog-kick-past
'The horse kicked the dog.'

(70) a. Yede pĩru-de-ba te-khoake-ban.
that snake-suf-instr 1sS-bite/pass-past
'I was bitten by that snake.'

b. Yede-ba te-pĩru-khoake-ban.
that-by 1sS-snake-bite/pass-past
'I was bitten by that snake.'

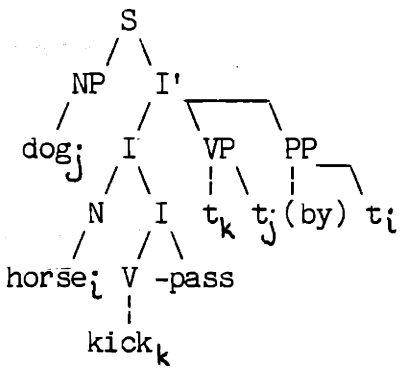
MALAGASY: (Travis (1984))

(71) a. Mi-vidy vary Rina.
act-buy rice Rina
'Rina buys rice.'

b. Vidi-n-dRakoto ny vary.
buy-pass-Rakoto the rice
'The rice is bought by Rakoto.'

These phrases are adjuncts in that they have no direct thematic relationship to the verb. Nevertheless, they are unlike adjuncts in that they do share a thematic index with another element in the sentence: namely the passive morpheme in INFL. Thus, given the definitions developed in section 1.4, the phrase containing the by-object will not block government between the INFL position and elements inside it, as adjunct phrases normally do. Incorporation is therefore possible to the INFL position, resulting in a structure like:

(72)



Here 'horse' (or more properly the complex INFL containing it) will govern its trace, satisfying the ECP, by virtue of the additional coindexing from the theta role transmission relationship between '-pass' and the by-phrase. Again, this is exactly parallel to the situation with antipassives and their thematic doubles; in section 2.4 we saw that antipassive morphemes sometimes mediate the Incorporation of an oblique NP which, apart from its relationship to the antipassive morpheme would not have been incorporatable. Allen, Gardiner, and Frantz (1984) confirm that this type of thematic relationship between the two elements is crucial to the incorporation by showing that optional instrumental phrases, unlike optional by-phrases, cannot incorporate in a passive structure in Southern Tiwa. This is true in spite of the fact that instrumentals and by-phrases have exactly the same morphological marking in the language, and hence are superficially identical:

(73) a. Te-hwiete-ban keuap-ba.
1sS-hit/pass-past shoe-instr
'I was hit with a shoe.'

b. *Te-keuap-hwiete-ban.
1sS-shoe-hit/pass-past
'I was hit with a shoe.'

The difference between these two minimally contrasting cases is explicable

given the hypothesis that theta role transmission (and hence theta indexing) occurs between the INFL node and the by-phrase by virtue of the passive morpheme. No such relationship holds in the case of the instrumental phrases, however.

Finally, this analysis makes a prediction about the structural position of the by-phrase in a passive sentence: the theory implies that this phrase must appear under INFL' (or possibly under S) rather than under the VP node. Normally, two elements cannot be theta indexed with one another unless they are sisters at D-structure. This is plausibly true of this special 'theta role transmission' subcase of theta indexing, as well as the more usual case of theta role assignment proper. This is confirmed by the fact that incorporation of the agent phrase is possible. We know that the incorporation must be into the INFL, because only the INFL is coindexed with the adjunct. Then, if the agent phrase appeared inside the VP, the VP node would block government between the INFL and the agent the V being a 'closer governor'.[27] The conclusion is that the by-phrase indeed hangs from INFL'. This seems to be confirmed by a small body of evidence from English, to the effect that the by-phrase tends to follow subcategorized VP-internal PPs in the most unmarked word order:

(74) a. The encyclopedia was put on the mantel by William.

b. The encyclopedia was put by William on the mantel.

Both orders of PPs in (74) are certainly grammatical, but there is a clear intuition that (74b), with the subcategorized PP outside the by-phrase is more stylistically marked. In particular, it is appropriate if the focus is on the location of the book, but is less appropriate otherwise. Thus,

it seems that (74a) is the basic order, and (74b) is derived from it by the English process of 'focus XP shift' (cf. Stowell (1981)). If this is true, we predict that the NP should be able to strand the subcategorized P in wh-movement from the first position, but not from the second. This is confirmed:

(75) a. Which shelf was the encyclopedia put on by William?

b. *Which shelf was the encyclopedia put by William on?

I conclude that at D-structure the by-phrase of passives appears outside of the elements known to be in the VP exactly as predicted by the analysis which claims that the by-phrase must be generated under INFL' rather than under the VP node.

In this way, the basic syntax of the by-phrases of passives is accounted for in a way which gives support to the fundamental hypothesis that verbs assign their external theta roles to a argumental passive morpheme in the INFL node.

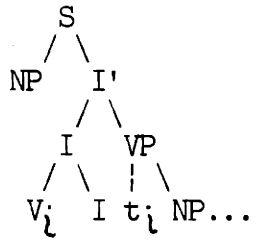
5.2 Verb Movement and Case Theory

The Incorporation analysis of the passive as represented in (7) consists of two fundamental claims: that the passive morpheme is an independent argumental element residing in INFL; and that the verb and the passive morpheme come together by having the verb incorporate into INFL before S-structure. In the last section we considered the evidence for the first claim in some detail, drawing especially on Theta theory, Binding theory and Control theory to establish it. In this section I will turn to an

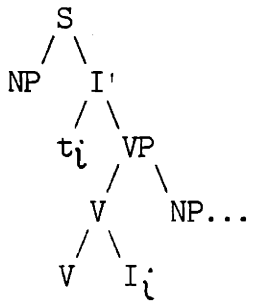
investigation of the second claim, that passive crucially involves the verb incorporating into the INFL node.

In fact, the claim that V undergoes X o movement to join together with INFL is neither radical nor necessarily specific to the passive construction. As has been observed since the earliest days of generative linguistics, the verb and the tense morphemes must come together in the syntax in some way in a vast number of languages, including English Originally, this was done by 'affix hopping' transformations (e.g. Chomsky 1975:283), which characteristically move the tense and aspect morphemes to have them join with the verb in the verb's position.[28] A priori however, it would be just as reasonable to accomplish the necessary combination by moving the verb to join with the tense and aspect morphemes in their position. The derived structures on these two analyses will be different, but since the verb and the INFL position are contiguous in English, any empirical differences between the two movement routes will be quite subtle. Also empirically subtle is the question of whether the general combination of verb and tense/aspect morphology generally takes place in the syntax (i.e. before S-structure) or in the 'Phonological Form' part of the grammar in a language like English. Leaving these questions aside, I simply note that in a system like the one assumed here in which X-o s move but must generally leave traces which they themselves govern, the movement illustrated in (76a) is entirely unproblematic, whereas the movement illustrated in (76b) violates the ECP, at least if it takes place in the syntax:

(76) a.



b.



Moreover, there are other languages in which the verb and the INFL node appear not to be contiguous in underlying structure. When this is the case, and when the verb and the INFL appear combined on the surface, the combination usually appears in the location of the INFL, and not the verb. Koopman (1983) shows this particularly clearly in the Kru languages of Vata and Gbadi, where minimal pairs can actually be given:

VATA:

(77) a. à lì sákáˊ.
we ate rice
'We ate rice.'

b. à lā sákáˊ lī.
we perf rice eat
'We have eaten rice.'

Vata is normally a head-final language, so the expected position of the verb is at the end of the VP, as in (77b); and in fact this is where it is found in most constructions of the language, including gerunds, infinitivals, and clauses with an auxiliary in INFL. However, in a specific set of tense/aspects, the verb obligatorily appears (inflected) in the second position, characteristic of auxiliaries in the language. Even in these constructions, Koopman shows that there is evidence that the V is originally in final position, based on word order in idioms, preposition stranding sentences, and so on. Here it is clear that the verb must be moving to the INFL position (76a), rather than the other way around as in

(76b). In fact, most of the literature on X-o movement so far has dealt with exactly this sort of case, arguing that Vs move into the INFL (or COMP) position and that this underlies such things as the 'Verb second' effects in the Germanic languages and the fact that Verb-Subject-Object word order is found on the surface in Celtic languages (see Koopman (1983), Travis (1984), Sproat (1985)).

The result of this discussion is that the incorporation of verbs into INFL is not a peculiarity of passive constructions; in fact, it is more widespread, perhaps even to the extent that it happens in most finite clauses in languages of the world. As such, it can be taken to be the theoretically unmarked case, and one would need to find arguments against it rather than arguments for it. Nevertheless, the claim that verbs incorporate to INFL has some particular content in the case of passive constructions, beyond simply achieving the morphological combination of the verb with the passive morpheme. This particular content has to do with how Case theory works in such constructions. Specifically, there are (potentially) two arguments in the passive which must be morphologically identified in order to be properly thematically indexed at LF: the argument which the verb would normally mark with accusative case (if there is one); and the passive morpheme itself. The range of ways in which these requirements can be satisfied crosslinguistically will be seen to provide evidence for the hypothesis that the verb moves to INFL in the passive. At the same time, I shall attempt to reveal the nature of more of the typological variation found in passive constructions in these terms.

5.2.1 Case and the passive morphology

Consider first the passive morpheme in INFL. This element is a nominal argument; therefore it must have a theta index at LF, by the Theta Criterion as we have seen (section 5.1.3). Moreover, in order for this theta index to be licit, it must be morphologically identified in some way (see section 2.3.2). In general, this requirement can be satisfied by a Case relationship, by an agreement relationship, or by an Incorporation relationship. Note, however, that this nominal morpheme is automatically embedded within an X-o category which could serve as its method of identification. In other words, passive morphemes are always incorporated, and hence will behave like incorporated nouns with respect to the m-identification requirement. In section 2.3, we saw that this type of incorporation alone is adequate for morphological identification in full Noun Incorporation cases, and Case of the usual sort need not be assigned to them as well, given the theory. The same is presumably true in passives. On the other hand, there was no theoretically motivated reason why the incorporated noun could <u>not</u> be assigned Case either, and languages were seen to vary rather idiosyncratically on this point (section 2.3.4). In some languages, the incorporated N never needed to receive Case (Mohawk, Southern Tiwa); in some, it obligatorily took the Case of the verb if it was available, but was still acceptable if there was none to be had (Niuean); in some, it obligatorily needed case as a special, not theoretically necessary property, and was ungrammatical if there was no Case for it to receive (Eskimo, most antipassive morphemes). Since passive morphemes have the same theoretical status as incorporated N roots in the relevant respects, we expect them to show the same semi-idiosyncratic range

of Case requirements.

Meanwhile, in a passive construction under the Incorporation analysis, there are potentially two Case assigners that appear in a structural position where they will be able to assign Case to the passive morpheme: the INFL itself or the main verb. Case assignment can take place only under government, and government in turn can only hold between two nodes if the one c-commands the other and there is no 'barrier' maximal projection between the two. Both of these requirements will always be satisfied rather trivially between the (head of the) INFL and the passive morpheme that appears within it; they will also be satisfied between the verb and the passive morpheme if and only if the verb has undergone X-o movement to the INFL position. Therefore passive morphemes crosslinguistically can potentially receive nominative case from INFL, accusative case from the verb, or no case at all, if they are such that appearing inside an X-o category itself is sufficient to morphologically identify them.

If we put together all of the possible options for passives so far, we find that there is rather a lot of room for variation: in the category of the passive morpheme itself (INFL or N that attaches to INFL); in how strongly the morpheme requires Case; and in what element assigns Case to the morpheme if the morpheme needs it. Clearly, there is much space in this system for satisfying requirements of morphological identification, such that almost anything can happen. I propose one rather simple constraint on the space of possible Case assignments which will limit this range to some degree. This constraint can be stated in the following form:

(78) No category may assign Case to itself.

Such a constraint is usually taken for granted in some sense, and is very reasonable in that Case has the functional task of visibly identifying the semantic/thematic relationships between the syntactic atoms (cf. section 2.3.2). As such, it clearly must be at its core a relational notion as well, and if categories were allowed to assign Case to themselves, this function of case assignment would break down. Hence, (78) is a natural consequence of a system which views Case in terms of morphological identification of thematic dependencies. Empirically this will have important consequences, even apart from the passive. Thus, suppose, following Manzini (1983a) and Chomsky (1984) that nouns in English, contrary to some earlier assumptions, are in fact Case assigners, assigning genitive case to their complements, which is later 'spelled out' either as of-insertion or as the 's prenominal genitive form. Then, we must not allow N's to assign their Case to the very NP which they themselves head; otherwise ungrammatical structures such as the following will be permitted:

(79) a. *I decided [[NP the picture's] to hang on that wall].

b. *It seems [[NP that story's] to have become worn-out.]

(80) a. *I decided [[of the picture] to hang on that wall].

b. *It seems [[of that story] to have become worn-out].

In short, even if a nominal is itself a Case assigner, it cannot save itself from violating the Case filter when it appears in a non-Case marked position, such as the subject position of an infinitival clause. There are, of course, many ways in which this situation could be blocked technically, but (78) is sufficient. Turning to the passive, (78) will make a distinction between the two types of passive morphemes discovered in section 5.1.3.3 Passive morphemes of categorial type N will be distinct

from INFL at some levels of description, and this will be adequate for them to be allowed to receive nominative case from INFL. Passive morphemes of category type INFL, however, will not be allowed to receive case from INFL itself; this would straightforwardly violate (78). Therefore, if a passive morpheme is in INFL and needs to receive Case, it can only do so from the verb.

Beyond this restriction languages in fact seem to show the amount of variation and freedom in their passive constructions which is implied by the theoretical considerations laid out above. There are at least four situations to be considered, each of which will be discussed in turn. The discussion will be organized in terms of the lexically stipulated features of the passive morpheme in question.

5.2.1.1 INFL type passive morphemes

(i) -pass is INFL and needs case. A passive morpheme with these features first of all will create passive structures which show 1AEX effects, by virtue of the category stipulation. Moreover, since it needs case but cannot receive the nominative normally associated with INFL by constraint (78), it must receive accusative case from the verb. Then, in order for this to take place two things must happen. First, the verb must incorporate into INFL so that it is in a position to assign accusative case to this element, as has already been mentioned. Second, the verb must have an accusative case to assign in the first place. Normally, this is true if and only if the verb has an object. Thus, with this type of passive morpheme, passive structures will only be possible with verbs which are transitive in the relevant sense. This yields the most familiar type of

passive constructions; namely those found in English, as well as in Chichewa, the copular passive in Italian, and in many other languages. In these languages, passives occur freely with transitive verbs:

(81) a. The tabletop was pounded by John.

b. The metaphysical status of ideas was discussed by Wilma in her third book

c. Lisa was seen as she left the scene of the crime.

CHICHEWA:
(82) a. Mkango u-na-ph-a fisi chaka chatha.
lion SP-past-kill-asp hyena year last
'The lion killed a hyena last year.'

b. Fisi a-na-ph-edw-a ndi mkango chaka chatha.
hyena SP-past-kill-pass-asp by lion year last
'A hyena was killed by the lion last year.'

(83) a. Mbidzi y-a-umb-a mtsuko.
zebra SP-past-mold-asp waterpot
'The zebra molded a waterpot.'

b. Mtsuko w-a-umb-idw-a ndi mbidzi.
waterpot SP-past-mold-pass-asp by zebra
'The waterpot was molded by the zebra.'

On the other hand, they are impossible with intransitive verbs when these verbs appear in structures where they do not assign a case. This holds true even of the 'unergative' class of intransitive verbs which do assign an external theta role to their subjects, so that the ungrammaticality of the structures cannot be attributed to Theta theory:

(84) a. Rob ate five times a day.

b. *There/it/Ø was eaten (by Rob) five times a day.

(85) a. The horse jumped (over the fence) yesterday.

b. *There/it/Ø was jumped (over the fence) (by the horse) yesterday.

CHICHEWA:
(86) a. Fisi a-ma-yend-a kawirikawiri.
hyena SP-hab-walk-asp frequently

'The hyena walks frequently.'

b. *a/zi-ma-yend-edw-a (ndi fisi) kawirikawiri.
SP-hab-walk-pass-asp by hyena frequently
'There is walked frequently by the hyena.'

(87) a. A-ma-nen-a za mfumu kamodzikamodzi.
3pS-hab-talk-asp about chief rarely
'They rarely talk about the chief.'

b. *A/zi-ma-nen-a za mfumu kamodzikamodzi.
SP-hab-talk-asp about chief rarely
'It is rarely talked about the chief.'

In other words, these languages have no 'impersonal passive' construction, the result being blocked by Case theory. However, verbs of the unergative case are not forbidden from assigning case by any particular principle of the theory, and they can quite often be used in contexts where they must be taken to assign accusative case (cf. Burzio (1981)). With such uses of the verbs in question, passives become possible again in these languages:

(88) a. Rob should eat liver at least five times a day.

b. Liver should be eaten at least five times a day by someone like Rob.

(89) a. The horse jumped the fence yesterday.

b. That fence was jumped by the horse yesterday.

CHICHEWA:

(90) a. Fisi a-ma-yend-er-a ndodo kawirikawiri.
hyena SP-hab-walk-appl-asp stick frequently
'The hyena frequently walks with a stick.'

b. Ndodo i-ma-yend-edw-a ndi fisi kawirikawiri.
Stick SP-hab-walk-pass-asp by hyena frequently
'A stick is frequently walked with by the hyena.'

(91) a. A-ma-i-nen-a mfumu kamodzikamodzi.
3pS-hab-OP-talk-asp chief rarely
'They rarely talk about the chief.'

b. Mfumu i-ma-nen-a kamodzikamodzi.
chief SP-hab-talk-asp rarely
'The chief is rarely talked about.'

This is exactly as we expect; the (a) sentences in these paradigms show that the verb root must be able to assign accusative Case in these uses, in which event that Case will be available to satisfy the passive morpheme's need for case as well. Thus, the ability to take an object corresponds quite directly to the ability to form a passive in a way that is explained on this analysis Hence the restriction of passives to 'transitive' clauses.[29]

Moreover, since the passive morpheme needs accusative Case in these languages, this case will never be available to the direct object (or any other VP internal phrase) in passives in these languages. Thus, the direct object will be required to make other arrangements (see section 5.2.2 below) in order to be properly morphologically identified. In this way, the well-known 'Case absorption' property of the passive in English and similar languages is accounted for. Chomsky (1981 124ff) identifies two basic properties of verbs in passive constructions in these languages: (I) they do not assign a theta role to the [NP, S] position and (II) they do not assign case to some [NP, VP] position. Chomsky then goes on to claim that both of these facts are somehow properties of the passive morphology. and that the two are to be related in some way. In the analysis presented here, this cluster of properties is captured in a very simple way, all dependent on the single fact that the passive morphology is an argument in the INFL position. Since it is an argument it must receive the external theta role to satisfy the Theta criterion, and thus this theta role cannot go to an NP in the subject position, accounting for (I). On the other hand, since it is an argument bearing a theta role, it is reasonable to require that it must be assigned case given the general visibility

condition on theta role assignment, thereby accounting for (II). The peculiar 'crossing' property of the passive--the fact that it is associated with an external theta role but an internal case--is both allowed and forced by the fact that it is an INFL. The crossing is allowed because INFL governs both the subject NP and the VP, so both the thing bearing the external theta role and the thing assigning the internal case can meet together there. It is required because the INFL can only receive the external theta role given its D-structure position but cannot receive the external case by principle (78). Thus, the rather surprising constellation of properties associated with the passive in languages like English are related in a natural way.

To summarize in a somewhat more general context, the characteristic property of a language which has passive that is an INFL and that requires Case is that it will only be possible with verbs which are somehow transitive. I then explain two facts about this type of passive. First, any language which has a transitivity requirement on its passives (i.e a language which does not allow impersonal passives) will also show 1AEX effects: If there is a transitivity requirement, it shows that the passive morpheme must get accusative case. This in turn shows that the passive morpheme cannot get nominative case, which implies that it is an INFL subject to (78), and all passive morphemes which are categorially INFLs induce 1AEX effects. In fact this prediction is subtle, since passives of intransitive verbs are ruled out more generally in this type of language. It is not entirely vacuous however; even in a language like English 1AEX effects can be found if one looks in the proper places, as shown by Perlmutter and Postal (1984) and reviewed in section 5.1.3.1. In the cases where it can be checked, this prediction seems to be true. The second

prediction is that any language whose passive construction has a transitivity condition will also show 'case absorption' effects, such that what would normally be an accusative direct object can no longer be an accusative direct object. This follows because the reason a language can only have passives of transitive verbs is because its passive morpheme must receive the accusative case assigned by such verbs, which in turn implies that the object cannot receive this case. As we shall see in the remainder of this section and the next, this is both a true and a nontrivial prediction as well.

(ii) -pass is INFL and takes Case if it is there. A passive morpheme with these features will again induce passive structures which show 1AEX effects, given the category stipulation. Furthermore, when the verb is an accusative case assigner, the passive morpheme will take up this Case obligatorily, as before. Thus, there will still be no accusative case for the direct object of a transitive verb in a passive structure, and it will have to make other m-identification arrangements. Unlike before, however, if the verb is not an accusative case assigner, the passive will still be perfectly acceptable, since the passive morpheme can be m-identified solely by the Incorporation if necessary. Thus, unergative verbs will be able to undergo passive, unlike in English. Hence, the characteristic features of this type of passive will be that impersonal passives of intransitive verbs will be allowed, but only personal passives' of transitive verbs will be possible. These characteristics are those of the passive in many of the Germanic languages, including German, Dutch, and Icelandic. This is illustrated in the following paradigms:

GERMAN: (Jaeggli (1984))
(92) a. Es wurde getanzt.
It was danced
'There was dancing.'

b. Es wurde bis spat in die Nacht getrunken.
It was till late in the night drunk
'Drinking went on till late in the night.'

ICELANDIC: (Zaenen, Maling, and Thrainsson (to appear))
(93) Það var dansað í gær.
there was danced yesterday
'There was dancing yesterday.'

GERMAN: (Jaeggli (1984))
(94) a. *Es wird diesen Roman von vielen Studenten gelesen.
It was this-acc novel-acc by many students read
'This novel was read by many students.'

b. Dieser Roman wird von vielen Studenten gelesen.
this-nom novel-nom was by many students read
'This novel was read by many students.'

ICELANDIC:
(95) a. Lögreglan tók Siggu fasta.
the-police took Sigga-acc fast-acc
'The police arrested Sigga.'

b. Sigga var tekin föst af lögreglunni.
Sigga-nom was taken fast-nom by the-police-dat
'Sigga was arrested by the police.'

c. *Það var tekin Siggu fasta af lögreglunni.
there was taken Sigga-acc fast-acc by the-police-dat
'There was arrested Sigga by the police.'

(92), (93) illustrate the fact that unergative type intransitive verbs can be passivized in these languages (but only this type, cf. 5.1.3.1). In such sentences there is passive morphology on the verb, and the agent appears in a by-phrase or not at all, the subject position being filled with an expletive. There are, however, no changes in the structure of the verb phrase per se. Nevertheless, the same is not true when the passive of a transitive verb is formed, as seen in (94), (95). Here the verb phrase cannot stay as it was; in particular the direct object can no longer have accusative Case. Instead, it surfaces in nominative case and may move to

the structural subject position. Thus, we find that this type of passive, permitted by our typology of passive morphemes, is also attested in the languages of the world.

(iii) -pass is INFL and never needs Case. Once again, passive constructions with this type of morpheme will be found to show 1AEX effects. Like the type (ii) scenario, it does not need Case to be identified, and hence impersonal passives of unergative type intransitive verbs will be allowed. The difference between this scenario and the (ii) scenario is that even if the verb does assign accusative case, that case need not be assigned to the passive morpheme, just as accusative case need not be assigned to the incorporated N root in Mohawk Noun Incorporation. Thus, there will be no 'case absorption' effect in this type of passive, and the verb will still be free to assign its accusative case to some other NP in the structure--namely the direct object. Thus, the relationship between passive morphology, theta role 'absorption' and case absorption discussed in Chomsky (1981:124ff) and under (i) above, while perfectly valid for some languages, is not universal. Since accusative Case will always be available to the direct object, it will never have to move to the subject position. Hence, the characteristic properties of this type of language are that it allows impersonal passives of both intransitive verbs and transitive verbs. For this reason, such constructions sometimes are not called 'passives' at all by grammarians; rather they can be called simply 'impersonal constructions'. Nevertheless, they form a natural class with 'true passive' constructions in that both involve an argumental INFL and the incorporation of V into that INFL as we see, the two differing only in a low-level idiosyncratic property of a single lexical item (the passive morpheme). The Celtic languages Welsh (see Comrie (1977), Perlmutter and

Postal (1984)) and Irish (J. McCloskey (personal communication)) seem to have this type of passive. Examples are of this construction with unergatives are:

WELSH: (Perlmutter and Postal (1984))
(96) a. Dannswyd gan y plant.
dance-imp by the children
'It was danced by the children.'

b. Sefir pan ddaw'r athro i mewn.
stand-imp when comes teacher in
'It is stood (up) when the teacher comes in.'

c. Siaradwyd gan yr ysgrifenydd Cymraeg.
speak-imp by the secretary Welsh
'It was spoken by the Welsh secretary.'

IRISH: (from McCloskey)
(97) a. Táthar ag damhsa.
be pres/imp dance/prog
'There is dancing.'

b. Táthar ag amharc ort.
be-pres/imp look/prog on-you
'People are looking at you.'

Permutter and Postal (1984) show that, at least for Welsh, the impersonal passive of an unaccusative type verb is ungrammatical, contrasting with the otherwise parallel examples in (96).

WELSH:
(98) a. Gwywodd y blodau
wilted the flowers
'The flowers wilted.'

b. *Gwywyd gan y blodau.
wilt-imp by the flowers
'It was wilted by the flowers.'

(99) a. Tyfodd y plant yn sydyn.
grew the children suddenly
'The children grew suddenly.'

b. *Tyfwyd gan y plang yn sydyn.
grew-imp by the children suddenly
'It was grown by the children suddenly.'

This construction is also possible with transitive verbs, giving sentences such as:

WELSH. (Comrie (1977))
(100) a. Lladdodd draig ddyn.
killed dragon man
'A dragon killed a man.'

b. LLaddwyd dyn (gan ddraig).
kill-imp man by dragon
'A man was killed (by a dragon).'

IRISH: (from McCloskey)
(101) Marghadh beirt ar an bhóthar aréir.
kill-imp two people on the road yesterday
'Two people were killed on the road yesterday.'

Since both Welsh and Irish have Verb-subject-object word order, it is not immediately obvious from sentences (100b) and (101) whether the thematic object of the verb is in the subject position or in the object position with accusative case and a null expletive subject. Nevertheless, in both languages there is good evidence for the latter view. Thus, in Welsh when the direct object is a pronoun and the assertion marker fe is present the object is expressed as a preverbal clitic, with or without a following pronoun. This is not possible with subjects:

WELSH: (P&P (1984))
(102) a. Lladdodd ef ddraig.
killed him dragon
'He killed a dragon.'

b. Fe'i lladdodd (ef) draig.
him killed him dragon
'A dragon killed him.'

In a passive clause, the thematic object pronoun cliticizes preverbally like an object and unlike a subject:

(103) Fe'i lladdwyd (ef) (gan ddraig).
him kill-imp him by dragon
'He was killed by a dragon.'

This is evidence that the thematic object in a Welsh passive remains an accusatively marked object on the surface, especially if the theory of clitics in terms of 'spell-outs' of case assignment features (e.g Borer (1983)) of the verb can be extended from Romance and Hebrew to Welsh. The evidence is even more direct in Irish, where the morphological distinction between nominative and accusative is maintained in the pronoun system. The form that appears in a passive is the accusative one:

IRISH:
(104) Marbhadh areir é.
kill-imp yesterday him
'He was killed yesterday.'

The nominative form of this pronoun, sé, is impossible here. Furthermore, Irish has distinct ways of making relative clauses whose heads match a direct object argument in the clause itself, and the thematic object behaves like a surface object in this respect as well (McCloskey (personal communication)). Thus, this spot in my theoretical typology of passives seems to be filled as well.

Here I may mention the converse of a prediction made above: Any language whose passive shows 1AEX effects but does not take away the accusative case on the object must also allow impersonal passives. This follows since the passive morpheme is an INFL and the only case which it could receive is the accusative case from the verb. This accusative case shows up on the thematic object, however, implying that the passive morpheme in fact does not need to receive case at all. But if this is true, then nothing blocks the appearance of this morpheme with intransitive verbs in general. We

have seen that this prediction holds true, at least in the Celtic languages.

5.2.1.2 N type passive morphemes

(iv) -pass is N that incorporates into INFL. The last scenario to be considered is one in which the passive morpheme is not categorially an INFL itself, but reaches that position by Incorporation. In this scenario, the passive constructions in question will not show 1AEX effects. Moreover, condition (78) will not restrict the Case which the passive morpheme can be assigned, any more than it bars Niuean verbs from assigning accusative case to the object N roots which they incorporate (cf. 2.3.4). Thus, passive morpheme of this type will be able to receive either the nominative Case of INFL or the accusative Case of the incorporated verb, or it will (in some circumstances) be able to go without Case at all. Thus, in the normal range of structures, there will always be two possible Cases which the passive morpheme can receive. The effect of this will be to largely wipe out the empirical consequences of the stipulation as to whether the passive morpheme must, will, or need not receive Case. In short, there will always be enough Cases to go around; hence the lexical property of whether or not the morpheme needs Case will not generally have visible effects like those it has the passive morpheme is an INFL, and thereby restricted by condition (78). Thus, three potentially different scenarios collapse for the most part into one. Furthermore, instances of this passive type will characteristically show more freedom than instances of the INFL passive type.

We saw in section 5.1.3.3 that various Slavic languages exemplify such a

passive, including Lithuanian (Keenan and Timberlake (1985)) and North Russian (Timberlake (1976)). Consider then in this light the following range of passive forms from North Russian:

NORTH RUSSIAN: (Timberlake (1976))
(105) Ee muza ubito na vojne.
her man-acc kill/pass-n/sg war
'There was killed her husband during the war.'

(106) a. U lisicy uneseno kurocka.
by fox carry/pass-n/sg chicken-n/fem/sg
'By the fox was carried off a chicken.'

b. Percexano bylo doroga tut.
cross/pass-n/sg aux-n/sg road-n there
'There's been crossing over the road there.'

(107) Sapka-to u parnja v okno brosena.
hat-n/fem/sg by guy window throw/pass-fem/sg
'The hat was thrown out the window by the guy.'

Timberlake shows that there are no less than three possible forms which a passive clause can take in essentially free variation (although the choice may have some aspectual overtones). In (105), the thematic object of the verb appears in accusative case and does not trigger number and gender agreement on the participial verb form. In (106), the thematic object appears in nominative case, but still does not trigger agreement on the verb. In (107), the thematic object appears in nominative case and does trigger number and gender agreement. In the first case, the NP presumably remains in the VP; and we may think of the difference between the latter two cases in the same terms: in the nonagreement case, the NP receives nominative case inside the VP, and in the agreement case it moves to the subject position. This difference is perhaps confirmed by the difference in the position in word order in (106) and (107), although 'scrambling' of phrases is fairly free in Russian (see Pesetsky (1982) for discussion). This variation in the case marking of the theme in the passive is exactly

what one should expect given that the morpheme has the features we have assumed. Thus, in (105) the fact that the object has accusative case implies that the passive morpheme is either receiving nominative case or does not need case at all. In (106) and (107), the fact that the thematic object has nominative case implies that the passive morpheme receives accusative case or no Case at all. Putting it the other way around, the fact that the passive morpheme can get either nominative or accusative Case means that either Case can be left over for the external NP as well. This is exactly what we see. Similar facts hold in Ukrainian (Sobin (1985)) and Polish (Keenan and Timberlake (1985)).

We have seen that Italian has two passives, a copular passive and a passive with impersonal <u>si</u>, where the latter patterns with the Slavic languages with regard to the lack of 1AEX effects. In fact, the <u>si</u> passives pattern together with them in terms of case as well (from Belletti (1982); see also Burzio (1981)):

(108) a. In questa pasticceria si mangia soltanto
in this pastry shop IMP eat-3s only
i dolci al cioccolato.
the cookies of chocolate
'In this pastry shop one eats only chocolate cookies.'

b. Li si mangia volentieri in questa pasticceria.
them IMP eat-3s with pleasure in this pastry shop
'One eats them with pleasure in this pastry shop.'

(109) a. Si mangiano i dolci al cioccolato in questa pasticceria.
IMP eat-3p the cookies of chocolate in this pastry shop
'Chocolate cookies are eaten in this pastry shop.'

b. *Li si mangiano in questa pasticceria
them IMP eat-3p in this pastry shop
'One eats them in this pastry shop.'

(110) I dolci al cioccolato si mangiano in questa pasticceria.
the cookies of chocolate IMP eat-3p in this pastry shop
'Chocolate cookies are eaten in this pastry shop.'

In each of these sentences, the external argument of the verb is realized as the clitic si in INFL. They differ, however, in their treatment of the thematic object. Thus, in (108), this object is marked with accusative case and it remains in the VP. Case is not usually marked overtly in the morphology of Italian, but this is confirmed by the fact that the object NP does not trigger agreement on the verb (a sign of nominative case) and can be represented in the form of an accusative object clitic (108b). In (109), on the other hand, the thematic object is still in the VP, but it appears to receive nominative case in that position. Thus, it has the opposite morphological properties of its parallel in (108): it does trigger person/number agreement on the verb, and it cannot be represented by an accusative object clitic on the verb (109b). Finally, in (110) the thematic object moves to the preverbal position and becomes a nominative marked subject. Thus, we see that this paradigm is exactly parallel to the one from North Russian. Once again, the object NP can receive either structural Case because the passive morpheme in INFL can receive either structural Case. This in turn follows from the fact that the passive morpheme is categorially an N rather than an INFL.[30] In general, we expect to find this type of case marking variation in languages with passives which do not show 1AEX effects.[31]

In conclusion, there are certainly detailed aspects of the typology of passive constructions which are not fully accounted for on this analysis in a nonstipulative way. Nevertheless, the general pattern of variation is captured in an interesting way by the Incorporation account, and several important covariances between the possibility of impersonal passives, the possibility of accusative objects in passives, and the possibility of

passives of unaccusatives verbs in a given language are explained. Once again, differences in the type of passive that one sees in a language can be accounted for without resorting to explicit GF changing rules of passivization by attributing the right values of lexical features - whose existence has some independent motivation--to a particular lexical item (namely, the passive morpheme itself). Moreover, we have seen strong support for the fundamental hypothesis that the verb incorporates into the INFL node in order to assign case to an argumental passive morpheme--obligatorily in some circumstances, and optionally in others. In all, the general framework is upheld.

5.2.2 Case and the thematic object

In the last subsection, I organized discussion primarily around the fact that the passive morphology must be morphologically identified. Now, I turn to the other NP in a passive construction which is relevant: the 'object' NP to which the verb normally assigns Case. This NP too bears a theta role, and hence must be morphologically identified by the Visibility Condition. A priori, this can come about in three ways: it could receive accusative case from the verb, it could receive nominative case from INFL, or it could be m-identified without case by incorporating into the verb. This last possibility I will defer to section 5.4 and its discussion of the interactions between passive and other Incorporation processes. The first two possibilities, we have already seen illustrated in some depth in the last subsection, since the Case that the object receives is crucially dependent on the Case which the passive morpheme receives. Yet, it remains to be explained why these two types of Case assignment are possible at all.

Consider first the situation in which the thematic object appears in nominative case. This can come to be in two ways: the NP can move to the subject position, where nominative case is standardly assigned under government by a tensed INFL. This is the most familiar, and perhaps the most common scenario. However, there is strong evidence that the thematic NP can also receive nominative case without ever moving out of the VP. This has already been seen above in North Russian (106), and Italian (109), but perhaps the most spectacular examples come from Icelandic. Thus, consider the following paradigms:

(111) a. Hestarnir voru gefnir Haraldi.
horses-n/pl were given-pl Harold-dat
'The horses were given to Harold.'

b. Haraldi voru gefnir hestarnir.
Harold-dat was given-pl horses-n/pl
'Harold was given the horses.'
(from Thrainsson (1979))

(112) a. Ambattin var gefin konunginum.
maidservant-n/fem/sg was given-fem/sg king-dat
'The female slave was given to the king.'

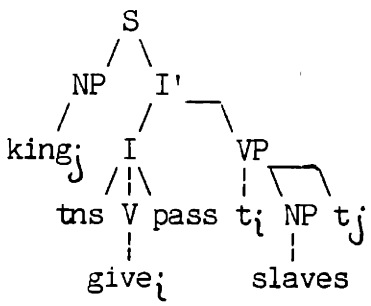
b. Konunginum voru gefnar ambattir.
king-dat were given-fem/pl maidservants-n/fem/pl
'The king was given female slaves.'
(from Zaenen, Maling, and Thrainsson (to appear))

The verb gefa 'to give' takes both a dative case NP (the goal) and an accusative case NP (the theme) in a standard active structure. When the verb is passivized the theme argument can move to the subject position and be marked nominative, as expected (111a), (112a). However the dative goal NP can also move to the subject postion (111b), (112b). This nominal retains its dative case, presumably because dative is not a structural Case but a semantically related inherent one, which is therefore assigned under government at D-structure and maintained throughout the derivation (cf.

Chomsky (1984), Belletti (1985)). Zaenen, Maling, and Thrainsson (to appear) comfirm that this dative NP is indeed the subject of the clause (rather than merely some kind of topic) with a number of tests, including the fact that it can raise, antecede reflexives, invert with the verb in questions, and be controlled. Meanwhile, the theme NP remains in the VP, and does not show these subject properties Nevertheless, it still appears in the nominative case. In part, we know why this is: it cannot get accusative case because this Case is obligatorily assigned to the passive morpheme. The NP in the subject position, on the other hand, already has its own Case and hence does not need the nominative normally assigned to that position, making that case still available. The question remains, however, as to how this Case can be assigned into the VP, a position which the INFL normally does not govern.

In fact, the solution to this problem is very simple: in a passive construction the verb has incorporated with the INFL. Thus, by the Government Transparency Corollary, the combined INFL-plus-verb governs everything which the verb formerly governed--including the theme object:

(113)



Formally speaking, the NP ceases to be a barrier to government between the INFL and itself when the verb is incorporated into the INFL, because the NP and the complex INFL are theta indexed by virtue of the verb root. The VP

category is not a barrier by virtue of the verbal case relation between it and the INFL. Therefore, INFL (including the crucial tense element) governs the [NP, VP] in the post Incorporation structure Thus, it may assign its nominative case to that NP without violating any principles. This is completely parallel to the way that the verb complex comes to govern a stranded possessor in Noun Incorporation structures, giving rise to 'possessor raising' effects, or the way that the object of a preposition or a lower verb comes to act like the object of the matrix verb in applicative and causative constructions respectively. We can fruitfully compare this analysis with that of Saddy (1985). Saddy, on the basis of data from English similar to the Icelandic data considered here, concludes that nominative Case must be assigned directly to the [NP, VP] position. This he accomplishes by having the INFL transmit its Case assigning property to the head that it governs, which then assigns that Case to the NP that it itself governs. Here we see how to preserve Saddy's insight[32] while subsuming the somewhat stipulative 'Case assignment transmission' process to the more general (and better understood) process of Incorporation. Case assignment still happens only under government, but the government domain of the Case assigner is extended in this restricted way. Thus, the fact that the INFL can assign nominative case into the VP is another strong piece of evidence that the verb does indeed incorporate into the INFL in passive constructions.[33]

Since the possibility of assigning nominative case into the VP falls out as an automatic consequence of the Incorporation analysis of passives, we might fairly ask why it does not seem to be possible in languages like English and Chichewa. I assume that the answer is very simple, and can be

stated in the following way:

(114) In certain languages, nominative case may only be realized in the [NP, S] position.

I leave open the possibility that nominative may be assigned inside the VP even in these languages, but claim in (114) that nominative case will only be legitimate on an NP in the structural subject position. Doubtless, the stipulation in (114) holds primarily in languages which have little or no overt morphological case marking. In such languages, accusative case is often represented purely by having the relevant NP adjacent to the Case assigning verb (on the right in English and Chichewa). How then is a nominative case assignment relation represented? Typically, it must be by having the relevant NP in a distinct linear/structural position, adjacent (in the proper sense) to INFL (this time on the left). Thus, in these languages it is virtually meaningless from the point of view of the morphological identification of arguments to say that nominative case is assigned in the VP. Hence, a constraint such as (114) holds for these languages. Since English and Chichewa also have the verb's accusative case taken up by the passive morpheme, (114) implies that NP movement to the subject position will still be required in order for the NP to receive case in this particular set of languages (cf. Chomsky (1981)). In constrast, in languages like Icelandic and North Russian which have live systems of morphological case, nominative case assignment can be realized by a particular morphological form apart from a given structural position--and in some cases it is.

The explanation of why nominative case can be assigned inside the VP brings up a new question, however: why can accusative case be assigned in the VP?

In particular, I have been assuming a principle of Case theory which says that a complex X-o category formed by incorporation cannot go beyond the maximum case assigning properties associated with a morphologically simple member of that category in a given language (see section 2.3.3 (103)). This assumption was crucial in explaining the properties of morphological causative constructions and applicative constructions, and how those properties differ in different languages depending on their more general Case marking properties. However if this principle holds in general and if passives do indeed involve incorporation of the verb into INFL, the complex INFL so formed should only be able to assign nominative case, since this is the maximal case assigning property of simple INFLs. Nevertheless, we have seen that passive verbs in some languages can assign accusative case, including Irish (104), North Russian (105), and Italian (108). In light of this, I will claim that the principle simply does not hold in this case: a V+INFL combination can freely assign both an accusative Case and a nominative Case if the V and INFL it is made up of themselves have the relevant Case assigning properties. This assumption is clearly needed independently if V-INFL incorporation is indeed the source of verb fronting in the Kru languages (Koopman (1983)), of 'verb-second' phenomena in the Germanic languages (Koopman (1983), Travis (1984)), and of Verb-Subject-Object word order in the Celtic languages (see also Sproat (1985), etc.). In each of these constructions, the verb movement to combine with INFL can be seen overtly by the change of position of the verb, and the patterns are neatly accounted for in terms of V-o movement (see sources listed above; also Torrego (1984)). Nevertheless, in each of these cases, accusative case assignment to the direct object is still possible, and in fact usual in ordinary transitive clauses. There are

several imaginable reasons why V-INFL incorporation should differ from N-V, V-V, and P-V incorporation in this way: it may have to do with the fact that the host of the Incorporation (INFL) is a nonlexical category, or the fact that V-INFL incorporation may be the usual situation rather than the exceptional one. I will not develop any of these lines, but simply point out that this same property of V-INFL Incorporation is seen in the passive as well.

Putting these observations together, we have the following situation. The complex V+INFL formed in a passive construction can in principle assign either nominative or accusative case to an NP inside the VP as a result of the incorporation. When one or the other of these structural cases (usually the accusative) is required by the passive morpheme in INFL, the one that is not taken up in this way can be assigned to this nominal, either in situ (in some languages) or after it has moved to the [NP, S] position. In some languages either case (or neither) can be assigned to the passive morpheme, and in this situation either object in free variation (North Russian, Ukrainian, Italian). Thus, we see how the passive construction possibilities illustrated in the last subsection receive a theoretical account. Moreover, we have seen that Case theory gives two arguments in favor of incorporating the verb into INFL in passives: the verb thereby can assign accusative case to the passive morpheme, and the INFL can thereby assign nominative case into the VP by the Government Transparency Corollary.

5.3 NP-movement and the Subject Position

One aspect of the syntax of passive constructions which I have almost entirely ignored up to this point is the process by which an NP in the VP--usually the object--moves to become the subject of the passive clause. This subpart of the passive construction (whether defined in terms of movement or directly in terms of grammatical relations) has been taken to be the fundamental defining characteristic of the passive construction at various times in the history of generative grammar, notably by Perlmutter and Postal (1977, 1984a, 1984b) and others working in Relational Grammar. In the current framework, however, this NP movement is at most an inessential and peripheral aspect of the passive, which takes place when it is allowed or forced by other more general principles (cf. Chomsky (1981), Marantz (1984) for arguments in favor of such a view). Instead a passive clause is any clause which has a passive morpheme in it, where this is defined as an (R-expression type) argument which either appears in INFL or is required to incorporate into INFL. This will normally implicate V-INFL incorporation in order for the passive morpheme not to violate the Stray Affix Filter of section 3.2. NP movement, however, may take place only optionally (e.g. in Italian and North Russian; cf. Burzio (1981)), or not at all (e.g. Irish (McCloskey (personal communication)), Georgian (Marantz (1985)), Ute (Givon (1982)) in such a construction. Essentially, this comes to agreeing with Keenan (1975) and others who claim that 'subject demotion' [= the special properties of the external argument] is more fundamental to the nature of passive than 'object promotion' is (cf. Baker

(1983)). Nevertheless, the NP movement that takes place in passives needs to be addressed, both because it is sometimes forced in languages like English, and because it is a vehicle of GF-changing and hence relevant to the major theme of this work. When it is obligatory and why it is possible will therefore be the topic of this section.

In fact, there are two reasons why movement to the subject position may need to take place. One general constraint which passive structures must satisfy which has not yet been mentioned is the constraint following from Predication theory that all clauses must have the [NP, S] position filled at S-structure (cf. Chomsky (1981), Rothstein (1983)). Now, this position cannot be occupied by a thematic NP in the D-structure of a passive clause. Suppose it were. Then, there would be two arguments--the passive morpheme and this NP--both external to the VP. Both would thereby need to receive external theta roles to avoid violating the Theta Criterion, but it is a principle of Theta theory that no category can assign more than one such role (cf. Williams (1981)). Thus, there are only two possible ways for a passive clause to satisfy this requirement of Predication theory: it can have a nonthematic, pleonastic element appear in the subject position, or it can have a phrase which receives its theta role in some other D-structure position move into this position before S-structure. Both cases arise, and lead to acceptable structures. The following are examples of various types in which a pleonastic has been inserted and no argument movement has taken place:

ENGLISH:
(115) a. <u>It</u> was (widely) believed that Jerry would never marry.

b. ??<u>There</u> was killed a man here.

FRENCH. (Kayne (1975))

(116) a. Il a été mangé beaucoup de pommes hier soir.
'There were eaten many apples last night.

b. *Il sera dansé (par Marie).
'It (expl) will be danced (by Marie).'

GERMAN:
(117) Es wird getanzt werden.
'It (expl) was danced.'

Even this small range of examples shows that there are differences between languages as to when a passive with an expletive subject is acceptable at all: (115b) is very marginal in English but the parallel (116a) is free in French; (116b) is unacceptable in French but its parallel is fine in German (117). Moreover, some languages have more than one expletive element, each of which appears under different circumstances ((115a) versus (115b) in English). In 'pro-drop' languages, the expletive in all of these cases is characteristically phonologically empty. This then is another locus of language variation affecting the passive construction, but one which I will not explore.[34]

When an expletive element is not (or cannot be) in the [NP, S] position some phrase from the VP must be moved to this position. This phrase can potentially be of essentially any type across languages. The following gives some idea of the range of variation allowed:

(118) a. A book was put on the table.

b. Konunginum voru gefnar ambattir.
king-dat were given-fem/pl maidservants-n/fem/pl
'The king was given female slaves.'
(Icelandic; Zaenen, Maling, and Thrainsson to appear)

c. That bridge was skied under by the contestants.

d. On the table was put a book

e. That Jerry would never marry was believed by everyone.

f. Norman was believed to have solved the problem.

Here we see that, under the right conditions, the subject position can be appropriately filled by a true thematic object (118a), an obliquely case marked NP (118b) the object of a preposition (118c), a subcategorized PP (118d), a subcategorized S' (118e), or even the subject of a subcategorized clause (118f). This freedom for any category type to move, subject to other conditions, is exactly what one expects if the subject is filled not by an explicit 'promotion rule' expressed in terms of Grammatical Functions, but rather by the general movement transformation 'Move Alpha', which stipulates neither the category type nor the landing site of the phrase it moves.

Nevertheless, in spite of this variety, the thematic object NP does bear a special relationship to the subject position in the passives of languages like English and Chichewa because of Case theory. In particular, we have seen in the last section that in these languages the passive morpheme takes away the ability of the verb to assign accusative case, while nominative case cannot be realized apart from the [NP, S] position. Thus, under these circumstances, the object indeed must move to that position in order to receive Case, and if another phrase is moved to that position instead, an ungrammatical structure will result.[35] This seems to correctly characterize the cases in which a given phrase may or must move to the subject position.

It behooves us in this regard to consider the more fundamental question of why NP-movement from the VP to the subject position is allowed at all, and what principles govern its movement. It is well-known that such movement can only be local in some strict sense. Following a suggestion made to me

by Chomsky (personal communication), I will assume that this locality is to be derived from fact the trace of an NP movement must be properly governed by its antecedent.[36] This proposal has been made before in the GB literature specifically in regard to Raising-to-subject constructions (Bouchard (1982), Lasnik and Saito (1984)). In this way, the hopeless ungrammaticality of a 'double raising' construction such as (119b) is explained:

(119) a. It seems [that it is certain [that John likes ice cream]].

b. John seems [t to be certain [t to like ice cream]].

c. **John seems [that it is certain [t to like ice cream]].

Chomsky (1985, cf. 1981) has observed that the movement indicated in (119c) should violate subjacency only very weakly if at all; furthermore, the trace should not create a particularly strong Binding theory violation because the only subject between it and its antecedent is an expletive (compare Chomsky's example (?)'They think it pleased me that pictures of each other are hanging on the wall.') (119c) is ruled out at the appropriate (strong) level, however, given the assumption above: John will not govern its trace, because the middle S' category (at least) is a barrier between them, and the ECP is violated. I now observe that the same sort of argument carries over to NP movement in passives. Consider the following paradigm:

(120) a. It seems [that John has been told t [that he will die]].

b. John seems [t to have been told t [that he will die]].

c. **John seems [that it has been told t [that he will die]].

In (120c) John is case marked as the subject of seems but its trace is not

in the VP of a passive participle. Insertion of the pleonastic it in the embedded clause should be allowed because there is an S' in the VP which it can be related to. Nevertheless, the sentence is still much worse than would be expected given only a (very) mild subjacency violation or an expletive-induced Binding theory violation. Thus, I conclude that government of the NP-trace by the verb is not sufficient to satisfy the ECP but that antecedent government is needed as well. In (120c) this condition is violated, leading to the strong violation.

This point can be confirmed in another way, by asking why it is impossible to move the object of a preposition into the subject position if the P is not reanalyzed with the verb. The basic facts are:

(121) a. Fred was talked [about t] frequently.

b. ?*Fred is talked frequently [about t].

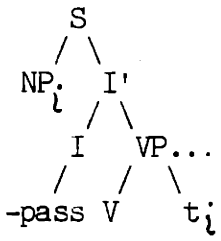
FRENCH:
c. *Fred a été parlé [de t] hier soir.
'Fred was talked about last night.'

The thematic object of the P can become the subject if the P can be Reanalyzed with the verb, as shown by (121a) (cf. section 4.2.3). If such Reanalysis is blocked, however, such a movement is completely impossible. This is seen in (121b) where Reanalysis is at best marginal because the P is not adjacent to the verb (121b), and in (121c) since P-V Reanalysis is impossible in French in general. Why should this be? Clearly the antecedent-trace relationship will not violate either subjacency or the Binding theory at all in this case. Moreover, it is unlikely that the problem is that the P obligatorily must assign Case to the argument it theta marks, given the grammaticality of (121a). These facts can be explained nicely, however. in terms of the assumption that the moved NP

must govern its trace. In this case, the PP node will be an extra maximal projection between the subject and its trace in (121b) (121c); a node which is not present in ordinary passives. This PP will then be a government barrier with respect to these two categories, and the sentences will be ruled out by the ECP. In (121a), however, the P abstractly incorporates into the verb, and the PP it heads thereby ceases to be a barrier to government by the Government Transparency Corollary (see section 5.4.2 for details). In this way, we complete the explanation of why 'pseudopassives' like (121a) are only possible in configurations in which the P can incorporate or reanalyze; simultaneously we support the idea that traces of NP movement must always be governed by their antecedents.

If this result is true, however, we need to face the question of why NP movement in passives is possible at all. In a configuration like (122), the VP node should be a barrier to government between the trace and its antecedent in exactly the same way that the PP node was seen to block government in the account of (121):

(122)



Here VP is a maximal projection which contains the trace, does not contain the NP, and which the NP does not theta mark; therefore it blocks government between the two. Thus the ECP account seems too strong. Incorporation comes to the rescue, however: we know that the V must incorporate into INFL before S-structure, and this will cause complements

of V to be governed from positions outside the VP but inside the projection of the resulting complex INFL, again by the GTC. All that remains is a technical problem; strictly speaking, only the complex INFL governs t within the VP because only it is coindexed with both the VP node (by the verbal case assigning relation) and the NP (t) node itself (via the theta index of its incorporated verb). These government properties must then be imputed to the subject NP in some manner, by virtue of its highly local relationship to the INFL which governs. I achieve the necessary result by simply generalizing my theory of government slightly so that if a lexical category B governs a position A, then any category which is an immediate constituent of the maximal projection of B also governs A. This is easily built into the definition of barrier with a trivial modification (compare 1.4.3 (67)):

(123) Suppose A to be an immediate constituent of the maximal projection of a lexical item D. Then, the maximal projection C is a (government) barrier between A and B if and only if C contains B, C does not contain A, and C is not theta indexed (with D).

In this definition, the term 'immediate constituent of the maximal projection of D' is intended to include the X' theory specifiers of D, complements of D, and D itself. This definition reduces to the former definition when A is taken to be D. In fact, this modification is technically needed in order to allow XP type adjuncts to govern their traces as well. Beyond this, nothing is changed by moving to this definition of barrier.[37] In this way, I complete my account of when and under what conditions movement to the subject of a passive is allowed.[38]

To conclude, let us compare the GF change of object to subject associated

with passives to the other GF changing phenomena that we have discussed. Other GF changes such as possessor-to-object (Possessor Raising), oblique-to-object (applicatives) and (lower) subject-to object (causatives) have all been shown to be the direct and immediate result of an X-o movement type incorporation (of N, P and V respectively) by virtue of the Government Transparency Corollary. The object-to-subject change of the passive, in contrast, is a result of NP movement rather than of Incorporation per se. This implies that passives, unlike these other processes, can appear apart from their 'characteristic' GF change. This we have seen to be a correct result. Nevertheless, the GF change in passives is still inherently linked to Incorporation, in that the NP movement will be impossible unless the V incorporates into the INFL in the way which is a necessary characteristic of the passive. Moreover, I have been assuming (cf. 3.5.1) that the ECP must be satisfied at every point of the derivation; hence NP movement to the subject position must crucially follow V-INFL incorporation if it happens at all. In short, the GF-changing in passives is not a direct result of the incorporation that defines passive; however when the GF changing process does take place it will necessarily be after the incorporation; hence it will appear to be a unified process with the incorporation. Thus the association between morphology and syntax discussed in section 1.1.3 is explained in this case as well to the extent to which it is true.

5.4 Passive Incorporation Interactions

In this section I return one more time to the topic of how the

interactions among GF changing processes can be explained in terms of incorporation, this time integrating the passive into the account. I will restrict my attention to the English type passive (type (i) of section 5.2.1), in which the passive morpheme is categorially an INFL requiring case.

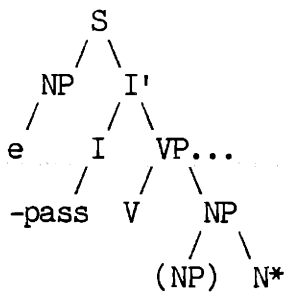
In fact, I have already used the passive as a probe into the nature of other incorporation processes throughout this work. The implicit generalization resulting from this has always been that the NP which the active verb normally governs and assigns case to may--and often must--become the subject of the passive. We are now in a position to see in a deeper way why this generalization holds. First, the NP will be able to move to the subject position if and only if it will properly govern its trace from that position. If the verb governs that NP position before it incorporates, then the position will be governed from the IP (=S) projection after the incorporation by the Government Transparency Corollary; otherwise it will not be so governed. It follows that the NP movement is only possible if the NP is governed by the verb. Moreover, assuming that the passive takes away the verb s ability to assign accusative case to the NP it governs, that NP must get case in some other way, often requiring that this NP move into the subject position. Thus, that our descriptive generalization about the passive is explained by the theory: the object of the verb with respect to Government and Case theory (but not necessarily with respect to X' theory) will become the subject of the passive (in the canonical case). With this general theme in mind, let us turn to specific accounts of the interaction between passives and other incorporation processes, to account for when and how they are possible. Furthermore, when they are possible, we shall see how the Mirror Principle

of Baker (1985) follows from this theory of GF changing processes.

5.4.1 Passives and Noun Incorporation

We start by investigating the interaction of passive with Noun Incorporation. The D-structure of a clause in which these two will potentially interact will be one of the form:

(124)



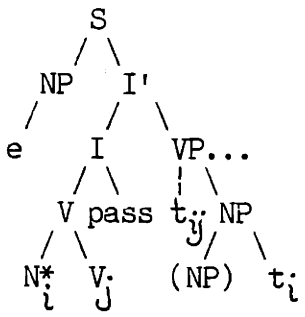
In this structure, by assumption two incorporations must take place: N* must incorporate into the verb, and the verb must incorporate into INFL. Suppose that the verb incorporates into INFL first. Then N* is stranded; the only category it could incorporate into would be the complex V+INFL, but this X-o movement would give rise to a structure of the type forbidden by (4.4 (209)). This constraint is repeated here for convenience:

(125) $*[_{XP}\ [Z_j + [Y_i + X]]_{X\text{-}o}\ [_{YP}\ t_i\ [_{ZP}\ t_j\ .\ .]]...]$

Thus, Noun Incorporation could follow V-INFL incorporation only if the NP which the noun is incorporated from is theta indexed but <u>not</u> inside the VP, but rather under I'. In fact, we have seen (section 5.1.4) that exactly this case arises with the <u>by</u>-phrase of the passive, and that incorporation is indeed possible. Apart from this situation, NI may only precede Verb-INFL incorporation in all cases.

If NI does precede V-INFL Incorporation, the following structure will result:

(126)



Here each trace is properly governed. and the structure is not ruled out by any principles known to this point; in fact the structure is essentially identical to that in which NI feeds VI discussed in section 3.5.1.[39] Hence, I expect that, subject to other principles, such constructions will be grammatical.

Recall that we know of three forms of NI: the 'full' Noun Incorporation of Southern Tiwa and the Iroquoian languages, the antipassive construction, and abstract (=LF) NI. This last type can be seen via either one of two slightly different manifestations--the effect of Possessor Raising and the effect of allowing an NP to mysteriously seem to avoid the Case Filter. Unfortunately, I have no evidence of either of the overt NI types feeding the passive.[40] There is evidence that the abstract NI feeds passive in this way, however. Thus, Possessor Raised constructions can be passivized:

CHICHEWA:
(127) a. Fisi a-na-dy-a nsomba za kalulu.
hyena SP-past-eat-asp fish of hare
'The hyena ate the hare's fish.'

b. Fisi a-na-dy-er-a kalulu nsomba.
hyena SP-past-eat-appl-asp hare fish
'The hyena ate the hare's fish.'

c. Kalulu a-na-dy-er-edw-a nsomba ndi fisi.
hare SP-past-eat-appl-pass-asp fish by hyena
'The hare had his fish eaten by the hyena.'

Here (127b) is a possessor raising construction in which the head of the object is abstractly incorporated; (127c) is a passive of this sentence type. A pre-S-structure of (127c) thus must be precisely that of (126), with the parenthesized possessor NP included. This NP is then moved to the subject position to form the S-structure of (126c). This movement is allowed: the NP will govern its trace over both the VP and the NP node because of the GTC, given that the heads of both categories have undergone successive Incorporation. This movement is also required for the NP to receive case: the N cannot assign the possessor Case because it has incorporated, and the V+INFL cannot because the passive morpheme takes the accusative case (plus (114)). Thus, the fundamental properties of this construction follow from the theory. Similar interactions between passive and Possessor Raising are found in Kinyarwanda (Kimenyi 1980) and other languages.

I claim that abstract NI interacts with the passive even in English, although the construction is easily missed. Suppose as I have assumed (section 4.2.5.2) that NI can apply fairly freely in English and that when it does the NP which is reanalyzed in this way no longer needs to receive Case from the verb. Then, such a reanalysis could precede the V-I Incorporation associated with passive, and the reanalyzed NP would not be required to move to the subject position to receive case. At first glance, this seems incorrect, but consider the following sentences (cf. Saddy (1985)):

(128) a. On the table was put a book.

b. In the garden was killed a man.

c. Under the table was hidden a taperecorder.

In these sentences, instead of the usual NP, a locative PP is moved to the subject position in order satisfy the requirements of Predication theory. Passives absorb accusative Case in English, and I have assumed that nominative Case cannot be realized in the VP given that Case is not represented by morphological form. How then are these thematic NPs morphologically identified? I claim that this is exactly the case of NI Reanalysis which the theory says should be possible.

If this is true, we predict that it will be governed by the same principles which govern NI in general. For example, we know that it is ungrammatical to incorporate two NPs into a single verb. Moreover, we know that one NP (the theme) is obligatorily incorporated in all double object/dative shift constructions. Therefore, we predict that PP-fronted passives of the type seen in (128) should be impossible with dative shifted verbs. Strikingly, this is confirmed by the following paradigms:

(129) a. I buy toys for orphans in this store.

b. ?In this store are bought toys for orphans.

c. I buy orphans toys in this store.

d. *In this store are bought orphans toys.

(130) a. They serve food to outcasts at this mission.

b. ?At this mission is served food to outcasts.

c. They serve outcasts food at this mission.

d. *At this mission are served outcasts food.

(131) a. The terrorist sends bombs to senators in this type of box

b. ?In this type of box are sent bombs to senators.

c. The terrorist sends senators bombs in this type of box.

d. *In this type of box are sent senators bombs.

The PP fronted passives of nondative-shifted structures in the (b) sentences are stylistically marked and marginal to various degrees in various dialects. However the PP fronted passives of their dative shifted counterparts in the (d) sentences are significantly worse for all the informants I have checked. This contrast is exactly what is expected if PP fronted passives involve Reanalyzing the object NP with the verb.

The other major limitation on NP Reanalysis is that it is impossible to Reanalyze the complement of a preposition which has itself been Reanalyzed with the verb (a consequence of (125)). This restriction also governs PP fronted passives, making them completely impossible with pseudopassives:

(132) a. All contestants must ski under a bridge on this mountain.

b. A bridge must be skied under on this mountain.

c. *On this mountain must be skied under a bridge.

(133) a. People will soon exercise in a gymnasium in this building.

b. A gymnasium will soon be exercised in in this building.

c. *In this building will soon be exercised in a gymnasium.

Here the P in the VP must be Reanalyzed with the verb in order to make it passivizable at all (cf. 5.2.1 (i)). When this happens, the NP which is the thematic complement of the P can no longer get case from the P. If it moves to the subject position, it can receive nominative case, yielding the acceptable (b) sentences. If, however, a PP moves into that position, there will be no case available for the NP in situ, and it, unlike its true direct object counterparts, cannot reanalyze with the verb over the

blocking P. Hence, (132c) (133c') are ruled out by the Case filter.

Moreover, it is well known that the thematic object in sentences like (128) must be indefinite (the so-called 'definiteness effect'; see references in Belletti (1985)), such that (for example) personal pronouns cannot appear there. In fact, a very similar effect shows up with the second object of a dative shift construction:

(134) a. She was killed in the garden.

b. *In the garden was killed her/she.

(135) a. I sent her to my dentist (for a check-up).

b. *I sent my dentist her (for a check-up).

In this framework, these two 'definiteness effects' can be unified in terms of the semantic effects of N Incorporation (cf. Szabolci (1984)). Thus, we have further evidence that abstract NI exists in English, and that it interacts with the passive in exactly the way allowed by the theory.

Finally, this theory also makes a 'Mirror Principle' type prediction with regard to the morphology of passive and NI. We have seen that (except when the by-phrase is incorporated) the NI must always take place before the V-INFL Incorporation given (125). This then predicts that passive morphology will always occur morphologically outside of the incorporated noun root in this type of interaction structures. I cannot check this prediction fully, because most of my cases of interaction involve invisible Noun Incorporation. However, it was argued in section 4.2.5.1 that the applied affix appears in Possessor Raising constructions in languages like Chichewa as an inserted overt marker that a covert Noun Incorporation has taken place. If we further assume that this morpheme is inserted at the

point of the derivation when the NI Reanalysis occurs, we explain the fact that the passive morpheme can only appear outside of this morpheme, never inside of it:

(126) a. Kalulu a-na-dy-er-edw-a nsomba ndi fisi.
hare SP-past-eat-appl-pass-asp fish by hyena
'The hare had his fish eaten by the hyena.'

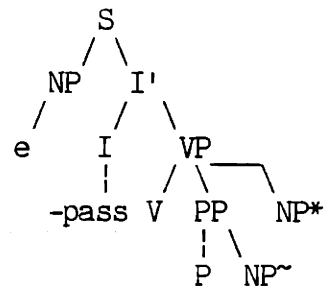
b. *Kalulu a-na-dy-edw-er-a nsomba ndi fisi.
hare SP-past-eat-pass-appl-asp fish by hyena
'The hare had his fish eaten by the hyena.'

-er is added to the verb when the NP is reanalyzed with it, and -edw and the verb are joined when the latter is incorporated into INFL, the site of the former. The first of these processes must precede the second by the syntactic constraint (125), so the ordering follows. In this way, another part of the content of the Mirror Principle is seen to follow naturally with no additional stipulation from a framework in which all GF-changing processes are analyzed in terms of X o movement.

5.4.2 Passives and Preposition Incorporation

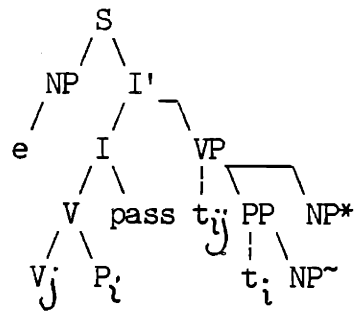
Next, consider the possibility of interactions between passives and Preposition Incorporation. Here, the issues will be much the same as those in the last subsection. The D-structure configuration in which passive and PI will potentially interact is the one in (137):

(137)



Here, the P must incorporate into the verb, and the verb must incorporate into the INFL. Once again, if the verb incorporates first, the P will be stranded, unable to incorporate without violating (125). Hence the P must incorporate first. This leads to a grammatical structure of the form:

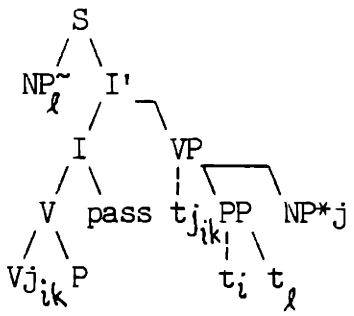
(138)



This structure is wellformed with respect to the ECP, each trace being properly governed. In fact, except for the category of the first incorporate, the structure is completely parallel to the NI case considered above. Next, consider the two NPs in the VP of this structure. Both need to be morphologically identified, but neither can get case from the verb or the preposition--the preposition because it has incorporated into a lexical category and the verb because its case is necessarily claimed by the passive morpheme. Only two options remain: the NP can potentially Reanalyze with the verb before it moves or undergo NP movement itself into the [NP, S] position where it will receive nominative case from INFL. In fact, only NP* can take the Reanalysis option, since Reanalysis of NP~ with

the verb will always be blocked by the trace of the preposition, as we have seen. Therefore, the Reanalysis of NP* becomes obligatory, and NP~ is left to receive case by moving to the subject position. Thus, the only grammatical S-structure which combines PI and (this type of) passive will be:

(139)



NP~ again will be able to govern its trace through both the VP and PP by the GTC, given that the heads of both categories have incorporated. Thus this is a valid NP movement.

The result of this discussion is the prediction that the only possible combination of PI and passive is when the PI takes place first, and the NP thematically dependent on the incorporated P becomes the subject of the passive. In fact, this is true across languages (cf. Baker 1985). The acceptable structure and some of the unacceptable ones have already been illustrated in detail in section 4.2. I repeat here two examples:

CHICHEWA:

(140) a. Kalulu a-na-gul-ir-a mbidzi nsapato.
hare SP-past-buy-appl-asp zebra shoes
'The hare bought shoes for the zebra.'

b. Mbidzi zi-na-gul-ir-idw-a nsapato ndi kalulu.
zebras SP-past-buy-appl-pass-asp shoes by hare
'The zebras were bought shoes by the hare.'

c. *Nsapato zi-na-gul ir-idw-a mbidzi ndi kalulu.
shoes SP-past-buy-appl-pass-asp zebras by hare

'The shoes were bought for the zebras by the hare.'

TZOTZIL: (Mayan; Aissen (1983))
(141) a. ?I-Ø-h-?ak'-be čitom li Šune.
asp-A3-E1-give-appl pig the Sun
'I gave the pig to Sun.'

b. ?I-Ø-?ak'-b-at libro li Šune.
asp-A3-give-appl-pass book the Sun
'Sun was given the book.'

c. *?I-Ø-?ak'-b-at Šun li libroe.
asp-A3-give-appl-pass Sun the book
'The book was given to Sun.'

This much has been known and discussed before, although its explanation now becomes clear in full. Moreover, we add the fact that the V-INFL Incorporation of passive can never take place before the PI given (125). This then translates into another 'Mirror Principle' type prediction about the morphological structure of passive-PI interactions: the passive morpheme can never appear morphologically inside the prepositional (applied) affix. This holds true regardless of which NP from the VP is taken to be the subject of the resulting structure.[41] Hence, the ungrammaticality of the following examples:

CHICHEWA:
(142) a. *Mbuzi i-na-ph edw-er-a mfumu (ndi Mavuto).
goat SP-past-kill-pass-appl-asp chief by Mavuto
'The goat was killed for the chief by Mavuto.'

b. *Mfumu i-na-ph-edw-er-a mbuzi (ndi Mavuto).
chief SP-past-kill-pass-appl-asp goat by Mavuto
'The chief was killed a goat by Mavuto.'

(143) a. *Chitseko chi-na-perek-edw-er a mtsikana ndi njovu.
door SP-past-hand-pass-appl-asp girl by elephant
'The door was handed to the girl by the elephant.'

b. *Mtsikana a-na-perek-edw-er-a chitseko ndi njovu.
girl SP-past-hand-pass-appl-asp door by elephant
'The girl was handed the door by the elephant.'

TZOTZIL: (Aissen (1983))
(144) a. *I-Ø-y-ak'-at-be Šun li libroe.

asp-A3-E3-give-pass-appl Sun the book
'The book was given Sun.'

b. *I-Ø-y-ak'-at-be libro li Šune.
asp-A3-E3-give-pass-appl book the Sun
'Sun was given the book.'

As far as I know, this combined constraint on the morpheme structure and the syntax of passive-PI combinations is true universally (e.g. see also Kinyarwanda (Kimenyi (1980)), Chimwiini (Kisseberth and Abasheikh (1977)), and Huichol (Uto-Aztecan; Comrie (1982)). It is thus an important fact about this analysis that it explains this generalization.

The ungrammaticality of the (a) sentences in these paradigms is especially interesting in this regard, because they would be expected to be grammatical if applicative and passive were explicit GF changing rules which feed one another in the usual way. Here the passive applies first to make the underlying object (the theme) into the subject, and then applicative applies to make the oblique NP into an object. Both of these operations are possible in this way. Thus, no deep account of this gap is possible under such an analysis--short of a universal stipulation that passive is ordered after applicative. The fact that no such stipulation is necessary in the current account is further support for the framework which lacks GF changing rules and includes instead a very general process of X-o movement (Incorporation) whose operation is governed by familiar syntactic principles.

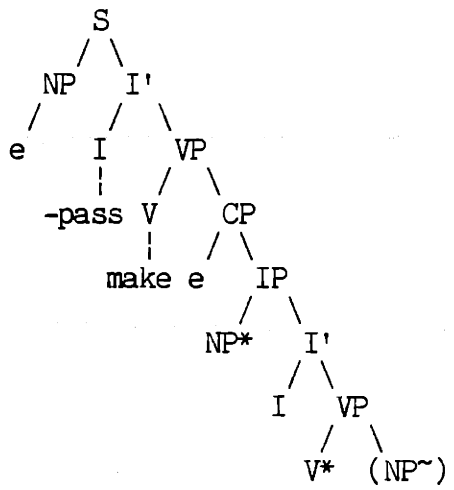
5.4.3 Passives and Verb Incorporation

The final type of interactions to be considered are those which can potentially arise from the combination of passives and Verb Incorporation. This case is somewhat more complicated than the others for two reasons.

First, the case properties of a language interact with the syntax of V-o movement to determine two rather different morphological causative constructions as discussed in section 3.3:[42] the 'type 1' causative in which the lower object of an embedded transitive verb is governed and structurally case marked by the derived verb complex; and the 'type 2' causative in which the lower subject of the embedded clause is governed and structurally case marked by the verb complex. Second, VI structures inherently involve two clauses, and a passive morpheme could in principle reside in the INFL node of either clause. I will discuss each of these subcases in turn.

Consider first the case in which there is a passive morpheme in the INFL of the matrix clause. This will give a D-structure such as this:

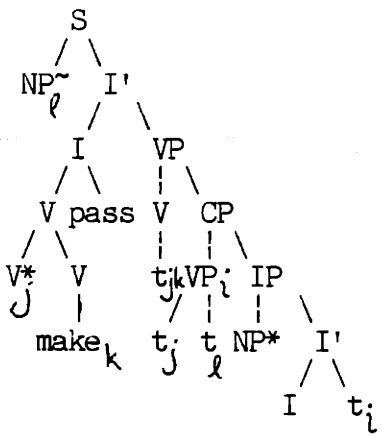
(145)



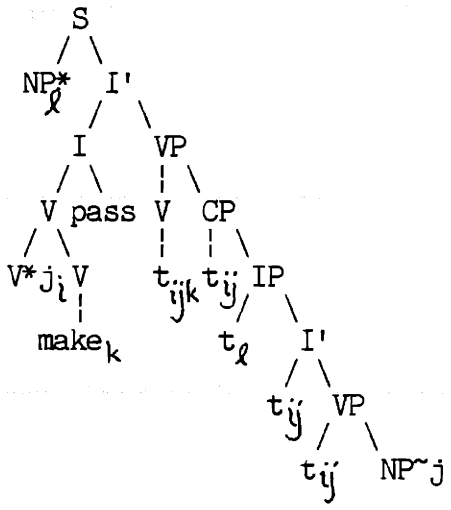
Apart from the complications internal to the complement of the matrix verb which are inherent in cases of VI this structure is exactly parallel to those which underlie cases of passive plus NI or passive plus PI. The consequences of the structure are parallel as well. Thus, the embedded verb must incorporate into the matrix verb before the matrix verb

incorporates into the matrix INFL by constraint (125). On the other hand, if the incorporations are done in the proper order, a grammatical structure will result. This much is independent of which type of causative exists in the language. Furthermore, whatever NP is governed and assigned accusative case by the verb in an active structure may and must become the matrix subject in the passive structure, as usual. This NP movement may take place, because the extra clausal boundary in the VI structure will not keep it from governing its trace after the embedded V is incorporated, by the Government Transparency Corollary. This NP movement must take place in the language under consideration because otherwise it will not be morphologically identified, since the verb complex's accusative case now goes to the passive morpheme. The only difference is that this 'promoted' NP will be a thematically different one depending on the language: it will be NP~ in a language with type 1 causatives with a transitive embedded verb, NP* in a language with type 2 causatives and a transitive embedded verb, and NP* in any language when the embedded verb is intransitive (see 3.3 for details). The resulting S-structures for the transitive cases will be (146) and (147):[43]

(146) Type 1 causative:



(147) Type 2 causative:



Thus, I conclude that the passive of a causative will be grammatical in any language, but that the thematic role that the final subject bears to the lower clause will vary along with the type of causative found in that language, and ultimately with the case marking properties of that language.

Much of the data confirming this prediction was already given in section 3.3, where it was introduced as one type of test for distinguishing the two causative types. What has been added here is merely the theoretical underpinnings of this test, explaining why it works the way it does. I will repeat some of this evidence here for convenience. In languages with type 1 causative, these causatives passivize, with the lower object becoming the final matrix subject:

CHICHEWA:

(148) a. Anyani a-na-meny-ets-a ana kwa buluzi.
baboons SP-past-hit-cause-asp children to lizard
'The baboons made the lizard hit the children.'

b. Ana a-na-meny-ets-edw-a kwa buluzi ndi anyani.
children SP-past-hit-cause-pass-asp to lizard by baboons
'The children were made to be hit by the lizard
by the baboons.'

c. *Buluzi a-na-meny-ets-edw-a ana ndi anyani.
lizard SP-past-hit-cause-pass-asp children by baboons
'The lizard was made to hit the children by the baboons.'

MALAYALAM: (Mohanan (1983))
(149) a. Amma kuṭṭiye-kkoṇṭ@ annaye ṉuḷḷ-icc-u.
mother child-acc with elephant-acc pinch-cause-past
'Mother made the child pinch the elephant '

b. Ammayaal aana ṉuḷḷ-ikk-appeṭṭ-u.
mother-inst elephant-nom pinch-cause-pass-past
'The elephant was caused to be pinched by the mother.'

c. *Ammayaal kuṭṭi annaye ṉuḷḷ-ikk-appeṭṭ-u.
mother-inst child-nom elephant-acc pinch-cause-pass-past
'The child was made to pinch the elephant by the mother.'

In languages with type 2 causatives, the causative structure also passivizes, but this time it is the thematic lower subject which becomes the final matrix subject:

CHIMWIINI: (Bantu; Marantz (1984))
(150) a. Mwa:limu Ø-wa-andik-ish-ize wa:na xati.
teacher SP-OP-write-cause-asp children letter
'The teacher made the children write a letter.'

b. Wa:na wa-andik-ish-iz-a: xati na mwa:limu.
children SP-write-cause-asp/pass letter by teacher
'The children were made to write a letter by the teacher.'

c. *Xati a-andik-ish-iz-a wa:na na mwa:limu.
letter SP-write-cause-asp/pass children by teacher
'The letter was made to be written by the children
by the teacher.'

CHAMORRO (Austronesian; Gibson (1980))
(151) a. Ha na'-taitai häm i ma'estru ni esti na lebblu.
3sS-cause-read us the teacher obl this lk book
'The teacher made us read the book.'

b. Ma-na'-fa'gasi si Henry ni kareta nu i famagu'un.
pass-cause-wash PN Henry obl car obl the children
'Henry was made to wash the car by the children.'

Moreover, a 'Mirror Principle' type prediction again follows: since with this syntactic structure the verb incorporation must take place before the matrix verb joins the passive morpheme in INFL, the causative morpheme must

appear closer to the verb stem than the passive morpheme does. A glance at the grammatical (b) sentences shows that this constraint is obeyed in every case. Inverting the order of these morphemes and leaving all the rest of the structure as is leads to ungrammatical forms:

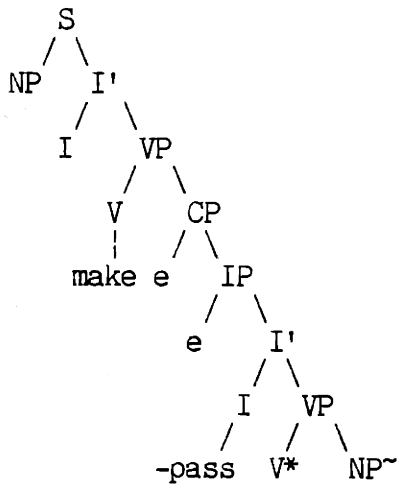
CHICHEWA:
(152) *Ana a-na-meny-edw-ets-a kwa buluzi ndi anyani.
children SP-past-hit-pass-cause-asp to lizard by baboons
'The children were made to be hit by the lizard
by the baboons.'

CHAMORRO:
(153) *Na'-ma-fa'gasi si Henry ni kareta nu i famagu'un.
cause-pass-wash PN Henry obl car obl the children
'Henry was made to wash the car by the children.'

In this way the class of causative-passive interactions stemming from the D-structure in (145) receives an explanatory treatment in the Incorporation system.

Next, consider the other possible D-structure that will lead to passive-VI interactions:

(154)



This time, the passive morpheme occurs in the embedded INFL rather than in the matrix INFL; in other words, a passive structure is embedded under the

causative. We now ask under what conditions there will be a grammatical S-structure corresponding to this D-structure.

Empirically, this structure seems to divide the two causative types. Having a passive occur inside of a causative is apparently never possible if the language has 'type 1' causatives:

CHICHEWA:
(155) a. Mphika u-na-umb-idw-a (ndi kalulu).
cooking-pot SP-past-mold-pass-asp by hare
'The cooking pot was molded by the hare.'

b. *Anyamata a-na-umb-idw-its-a mphika (ndi kalulu).
boys SP-past-mold pass-cause-asp waterpot by hare
'The boys made the waterpot be molded by the hare.'

(156) a. Anyamata a-na-meny-edw-a (ndi anyani).
boys SP-past-hit-pass-asp by baboons
'The boys were hit by the baboons.'

b. *Kalulu a-na-meny-edw-ets-a anyamata (ndi anyani).
hare SP-past-hit-pass-cause-asp boys by baboons
'The hare made the boys be hit by the baboons.'

TURKISH: (Aissen (1974))
(157) a. *Hasan bavul-u aç-ıl-dır-dı.
Hasan suitcase-acc open pass-cause-past
'Hasan had the suitcase (be) opened.'

b. *Salon-un duvarların i boya-n-dır-acaktım.
salon-gen wall-acc paint-pass-cause-tns/1sS
'I was going to have the drawing room walls painted.'

c. *Mektub-u imzala-n-dır-dım.
letter-acc sign-pass-cause-past/1sS
'I got the letter (to be) signed.'

ITALIAN: (from Zubizarreta (1985:278); cf. section 3.3.5)
(158) *Piero face (essere) lett-i quei brani (da Giovanni).
Piero made be read pass those passages by Giovanni
'Piero made those passages be read by Giovanni.'

In contrast, it is possible to have a passive appear under an incorporating causative morpheme in at least some languages, all of which share the property of having 'type 2' causatives.[44] Examples are:

CHAMORRO: (Gibson (1980:115ff))
(159) Si nana ha na'-ma-fa'gasi i kareta ni lalahi.
PN mother 3sS-cause-pass-wash the car obl males
'Mother had the car be washed by the boys.'

(160) a. Para u fan-s-in-aolak i famagu'un gi as tata-n-niha.
irr-3sS-plur-cause-pass-spank the children obl father-their
'The children are going to be spanked by their father.'

b. Hu na'-fan-s-in-aolak i famagu'un gi as tata-n-niha.
1sS-cause-plur-pass-spank the children obl father-their
'I had the children (be) spanked by their father.'

LABRADOR INUTTUT: (Eskimo; Smith (1982), cf. 3.3.3.2)
(161) a. Annak anguti-mut taku-jau-juk.
woman(abs) man-dat see-pass-3sS
'A woman is seen by the man.'

b. Angutik taku-jau-kqu-ji-vuk anna mik sugusim-mut.
man(abs) see-pass-want-Apass-3sS woman-inst child-dat
'The man wants the woman to be seen by the child.'

JAPANESE:
(162) a. Mary wa Taroo o Ziroo ni home-rare-sase-ta.
Mary-top Taroo-acc Ziro-dat praise-pass-cause past
'Mary made Taro be praised by Ziro.'
(Marantz 1985 (83c))

b. ?Boku wa wazato Mary o nagur-are-sase-te oita.
I top intentionally Mary-acc hit-pass-cause-ing still
'Intentionally I stood still, letting Mary be hit.'
(Aissen 1974, attributed to Kuno)

Both types of languages freely allow causatives of intransitive verbs, including of the unaccusative class. Thus, if passive is merely a rule--either in the lexicon or in the syntax--which creates a normal intransitive verb, it is impossible to capture this contrast between the two types of languages shown here. This systematic contrast, as far as I know unnoticed previously in the literature, thus stands in need of an explanation.

In fact, an explanation can be given in terms of the Incorporation theory of passives, if two further refining assumptions are made. In section 3.3,

I developed an account of VI causatives that reduced the difference between type 1 causatives and type 2 causatives to independent case marking properties of the language. To review those results, recall that the verb can never incorporate directly into the higher verb because it would not govern its trace, due to the intervention of the S' and S nodes. Thus, the verb must move internally to the lower clause to reach the COMP position before it will be able to incorporate. This can take place in one of two ways: either the V moves by itself to COMP via the INFL node, stranding its direct object; or the VP as a whole moves directly to COMP. The first option will be taken by a language if and only if it allows an NP--in this case the stranded object--to be morphologically identified by an abstract NI (see 4.2.4). If it does not, the VP as a whole must move to COMP in order for the thematic lower object to receive case. The first situation will lead to a type 2 causative construction; the second to a type 1 causative. It was also observed, however, that if the embedded verb is intransitive, no serious case marking problem will arise for either language, and more or less the same structure will be reached by V-to-COMP movement and by VP-to-COMP movement: in both cases the embedded subject will be governed and case marked by the complex verb, thereby showing object properties. Thus, I left open the question of exactly what happens in the two types of languages when intransitive verbs are embedded under an incorporating causative. On the one hand, it is possible that both types of VI derivations are always allowed in both types of languages in this case. On the other hand it is possible that the type of internal movement allowed in all cases is determined once and for all by which type is required for transitive embedded structures to be possible with respect to Case theory. Thus, on this second view, if a language must move its VP to

COMP in transitive structures, it will move the VP to COMP in intransitive embedded structures as well; while if V to COMP movement is allowed with transitive embedded structures, it will be allowed with intransitives as well. These two views are empirically identical on the range of data that has been analyzed so far. Perhaps the first view is theoretically the more minimal one, but suppose that the second is the true one.

This hypothesis can be confirmed by careful consideration of some binding facts from Malayalam (Dravidian). In chapter 3, we considered the following binding theory contrast (from Marantz (1984)) between Malayalam and Chimwiini (Bantu):

(163) CHIMWIINI:
a. Mi ni-m-big-ish-iz-e mwa:na ru:hu-y-e/a.
I SP-OP-hit-cause-asp child him/myself
'I made the child hit himself.'
*'I made the child hit me.'

MALAYALAM:
b. Amma kuṭṭiye-kkoṇṭ@ aanaye swantam wiṭṭil
mother-nom child-acc with elephant-acc self's house
wecc@ nuḷḷ-icc-u.
at pinch-cause-past
*'Mother made the child pinch the elephant at his house.'
'Mother made the child pinch the elephant at her house.'

In both languages, the underlined anaphor must take a structural subject as an antecedent. In Chimwiini, when that anaphor appears in the embedded VP, it obligatorily takes the embedded subject as an antecedent, even though this NP seems to be a direct object on the surface (163a). In Malayalam, on the other hand, when the anaphor appears in the embedded VP, it can have the matrix subject as an antecedent, but not the embedded subject (163b), in direct contrast with Chimwiini. This contrast was attributed to the independent difference that Chimwiini has type 2 causatives in which the verb moves to COMP alone, whereas Malayalam has type 1 causatives in which

the entire VP moves to COMP. Thus in Chimwiini causatives, the VP internal anaphor is still part of the lower clause and hence is still in the domain of the embedded subject at S-structure. Therefore, this subject may be the antecedent of the reflexive; it also blocks the higher matrix subject from being such an antecedent. In Malayalam, however, the VP internal anaphor is moved into COMP along with the rest of the VP. In this configuration, the causee will no longer c-command this anaphor, and hence cannot be its antecedent; meanwhile the matrix subject is now its closest c-commanding subject and so may be its antecedent. In this way, the contrast is accounted for. Now, however, consider the Malayalam binding facts when the lower verb is an intransitive one (Mohanan (1983:61)):

(164) a. Kuṭṭi swaṇṭam wiiṭṭil wecc@ kaṟaññ-u.
child-nom self's house-loc at cry-past
'The child cried at the child's house.'

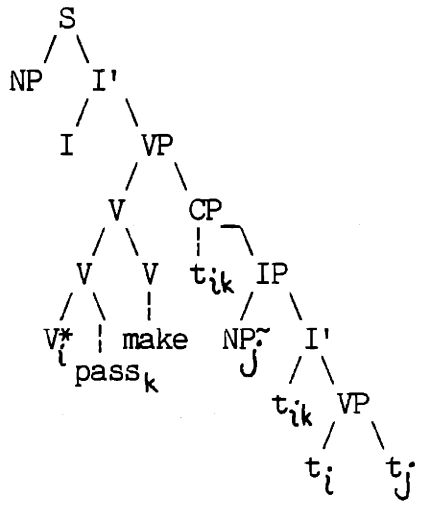
b. Acchan kuṭṭiye swaṇṭam wiiṭṭil wecc@ kaṟay-icc-u.
father-nom child-acc self's house-loc at cry-cause-past
'Father made the child cry at father's house.'
*'Father made the child cry at the child's house.'

(164b) shows that even when the lower verb is intransitive, an anaphor which is thematically part of the embedded clause can take the matrix subject but not the embedded subject as its antecedent. Following the analysis of (163b), this implies that the anaphor is moved into the embedded COMP position as a part and hence out of the binding domain of the embedded subject causee. Furthermore, this movement must not be merely optional but obligatory, since otherwise it could remain in the embedded clause and take the causee as its antecedent, parallel to the grammatical (164a). However, in this locative PP moves to COMP, it shows that the whole VP must be moving to COMP if the derivation of the morphological causative of the intransitive verb. Apparently, this is true in spite of

the fact that Case theory does not force the entire VP to move in this case. Thus, we conclude that the 'once a VP-to-COMP language, always a VP-to-COMP language' theory must be correct after all.

With this in mind, return to the issue of passives embedded under causatives with the D-structure in (154). The passive morpheme must be affixed to the verb by S-structure, or its morphological subcategorization requirement will be violated. In a V-to-COMP language, this constraint presents no problem: the lower V must move to COMP via the embedded INFL node in any case, and it simply picks up the passive morpheme in the first step of this journey. Thus, in this type of language (154) has a valid S-structure as in (165):

(165)

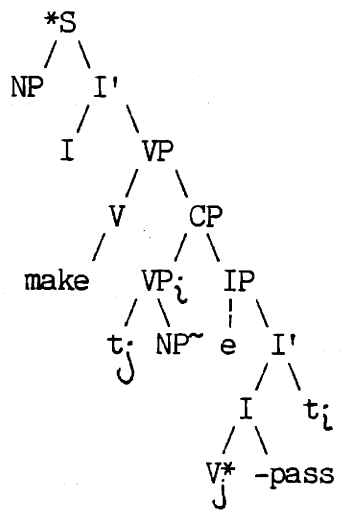


Here the lower verb moves to the embedded INFL joining with '-pass , then to the embedded COMP, and finally to the matrix verb. Meanwhile, the thematic object $NP^{\sim}$ undergoes NP movement to the embedded subject position, where it will be able to receive the accusative case which the verb complex assigns by virtue of dominating the case assigner '-make'. All conditions are satisfied, and the causative of a passive is grammatical in this type

of language with a type 2 causative. Thus, the grammaticality of (159)-(162) is explained.

This possibility for picking up the passive morpheme is not open to a VP-to-COMP type language, however, given that the entire VP is required to move as a unit. In fact, there is no way to jointly satisfy this requirement and the requirement that the verb combine with the passive morpheme. If the VP moves straight to COMP directly as usual, -pass is stranded and the sentence will be ruled out by the Stray Affix Filter of section 3.2. If the verb incorporates into the INFL and then the VP moves, the verb itself is stranded:

(166)



This structure is bad for several reasons. V* no longer governs its trace, which will presumably violate the ECP. Moreover, V* has not made it to COMP in the derivation; hence it will not be able to move to the matrix verb without violating the ECP, and the matrix verb will violate the Stray Affix Filter at S-structure. The only other possibility would be to move the V into the embedded INFL to pick up the passive morpheme, and then move the entire I' projection to COMP. I assume, however that this type of

movement of an X' level projection is impossible, because there is no landing site for it: following Chomsky (1985), an XP can fill the specifier of COMP position and an X can fill the head of COMP position, but there is no X' position in COMP for an I' to move to. Nor could there be, given X' theory as outlined in section 1.3.2. Thus, I' is ruled out as a violation of structure preservation. Thus, there is no grammatical S-structure corresponding to the D-structure in (154), and we have explained the impossibility of embedding a passive under a morphological causative in a language with type 1 causatives, thereby accounting for the ungrammaticality of (155)-(158).[45] Thus, this previously unnoticed difference between the two causative types with respect to their interactions with passive receives an explanatory account in this system.

Finally, we derive one more Mirror Principle prediction about the order of morphemes in these cases. A look at the structure in (165) makes it clear that the lower verb root must incorporate into the INFL thereby joining with the passive morpheme before it can incorporate into the matrix verb. Hence, the passive morpheme must be closer to the causative morpheme in this syntactic structure. Thus, we explain why in Chamorro the morpheme order is as in (167a) (=(159)) and not as in (167b).

(167) a. Si nana ha na'-ma-fa'gasi i kareta ni lalahi.
PN mother 3sS-cause-pass-wash the car obl males
'Mother had the car be washed by the boys.'

b. *Si nana ha ma-na'-fa'gasi i kareta ni lalahi.
PN mother 3sS-pass-cause-wash the car obl males
'Mother had the car be washed by the boys.'

(167b) can be compared with the grammatical (151b), in which the morphological structure of the verb is the same, but both the underlying

and surface syntactic structures are crucially very different.

In conclusion, I have shown in this section that the 'Incorporation analysis' of passives laid out in the introduction to this chapter provides the basis for an adequate account of the interaction between passives and other GF-changing processes. In fact, this account is substantially more adequate than any found in the literature heretofore, in that it explains gaps in the set of a priori possible interactions; notably the fact that passive can never precede applicative and it can only precede causative in a certain type of language. In an alternative framework in which GF-changing processes are accounted for with explicit rules which are in the unmarked case freely ordered with respect to one another, these gaps are quite mysterious. Finally, the simultaneous effects on morphology and syntax induced by a single X-o movement have been shown to explain a wide variety of correlations between morphological structure and syntactic configurations of the type discussed in terms of the Mirror Principle of Baker (1985). Thus the goal of having the content of this principle follow from the fundamental nature of the GF changing processes themselves has been achieved in this domain.

CHAPTER FIVE: FOOTNOTES

1. This implication holds of a certain class of passives; roughly those which are syntactic in the sense of Wasow (1977). Adjectival Passives may be--and presumably are--derived in the lexicon (see Levin and Rappaport (1985)).

2. Presumably there are other elements under the INFL node besides the passive morpheme and (at S-structure) the main verb, including agreement, tense, and (for English) modals (cf. Chomsky (1981)). This is indicated in a cursory way in (7), and for the most part it will be ignored in the structures that follow.

3. I would like to give special acknowledgement to K. Johnson and I. Roberts for their input into and influences on my views on the passive. The core idea of the analysis defended here was developed by the three of us together (Baker, Johnson and Roberts (1984)), and for the most part I will not further acknowledge this work. Johnson and Roberts are not to be held responsible for various of the implementations of the leading idea in terms of Incorporation, however.

4. Or, for Williams and Marantz at least, the verb's usual external theta role may be assigned to an oblique by-phrase. For my analysis of the by-phrase, see section 5.1.4.

5. It may be objected that this is still odd, since it involves specifying both that the passive morpheme is nominal (hence presumably of category type 'N') and of category type 'INFL'. In fact, this is rather odd, but it seems to be a peculiar property of INFL nodes in general to allow such a

situation. Hence, Chomsky (1981) claims that INFL quite generally contains both a nominal part and a verbal part (AGR and TENSE respectively). See also the Romance literature on 'pro-drop' and subject clitics referred to briefly above.

6. In Chamorro, infixes metathesize and prefix to the verb rather than infixing inside the first onset of the verb when that onset is a nasal or a liquid. This accounts for the morphological form of the verb in (12).

7. Furthermore, on the basis of this account, it would be predicted that in no language will the choice between different passive morphemes be based on the inherent features of the internal argument of the verb, even though such a situation could be described just as simply as the attested Chamorro one is. This prediction will be hard or impossible to check however, since the internal argument will (often) be the surface subject, and agreement with the surface subject is extremely common. Moreover, the subject agreement and the passive presumably reside together under the INFL node, and hence are natural candidates for suppletive combination or representation as 'portmanteau' forms.

8. In both English and Italian, these passive sentences are best when they appear with a modal or a generic time reference. Presumably, this facilitates a natural interpretation of the anaphor, which is necessarily dependent on an 'unspecified' item for its reference.

9. For completeness, I will cite examples of other implicit argument effects which show that the agent in a passive must be present in some sense. The null pronominal anaphor PRO can pick up its reference from the implicit agent under certain circumstances. This happens freely with

adjunct clauses (Manzini):

ENGLISH:
(i) The bureaucrat was bribed [PRO to gain special privileges].

compare: *Bureaucrats bribe easily [PRO to gain special privileges].

Sometimes it is also possible to control into an argument clause (pointed out to me by N. Chomsky):

ENGLISH
(ii) a. We all decided [PRO to leave].

b. It was decided (unanimously) [PRO to leave].

ITALIAN:
(iii) a. È stato stabilito [che dovevimo lavorare di più].
'It has been established that we must work more.'

b. ?È stato stabilito [di PRO lavorare di più].
'It has been established to work more.'

NORTH RUSSIAN:
(iv) Ne dumano [PRO pit' moloka].
not thought-neut/sg (pass/) drink milk
'It was not thought to drink any milk.'

Finally, the implicit argument can sometimes be the 'subject' (in the Predication theory sense) of a secondary predication:

ENGLISH:
(v) a. This song must not be sung <u>drunk</u>.

b. Such petitions should be presented <u>kneeling</u>.

ITALIAN:
(vi) ?Certe petizioni al re devono essere presentate <u>inginocchati</u>.
'Certain petitions to the king should be presented kneeling.'

NORTH RUSSIAN:
(vii) U Surki bylo vcera prijdeno <u>namazanos'</u>.
by Surka aux-n/sg there arrived/pass-n/sg slicked-up-n/sg
'There was arrived all slicked up by Surka.'
(='Surka arrived all slicked up.')

Thus Control theory, and (perhaps) Predication theory as well as Binding theory imply that the agent in a passive is not merely 'understood' in the same vague sense but rather is syntactically present to a degree that the Incorporation analysis can make understandable. For detailed discussion of these phenomena, see the references cited in the text above, in particular Roberts (to appear).

10. The control and predication implicit argument effects likewise disappear in these structures.

11. Timberlake (1976) crucially distinguishes North Russian passives from Standard Russian passives in several ways, one of which is that the Northern dialect shows implicit argument effects while the Standard language does not. This may mean that Standard Russian lacks a verbal passive entirely, and the constructions that Timberlake illustrates are in fact all adjectival passives. This hypothesis is confirmed by the fact that the Standard Russian passives are only possible if the derived subject is directly affected by the action of the verb. This 'Affectedness Constraint' is not seen in true verbal passives in languages like English and Italian, but it does appear in various similar constructions which are arguably derived in the lexicon (see Jaeggli (1984), Rizzi (1985)).

12. Throughout this review of Perlmutter and Postal's results I take several liberties in the way I present their analyses. In particular, I recast several of their relational grammar notions into GB terms (following Burzio (1981)) in the interests of uniformity of presentation. The biggest difference is that they take grammatical functions to be primitive notions, whereas in GB they are configurationally defined with respect to a VP node. As a reflection of this the first theory talks of changing the GF of

an NP in irreducible terms, whereas in the second this can come to moving the NP in question from one position to another.

13. As is well-known, there insertion structures with unaccusative verbs in English are not as free as are, for example il insertion structures with the corresponding verb class in French. This issue too remains unclear.

14. In section 4.2.4, I took sentences like (41c) to be ungrammatical, explaining this in terms of the inability of NPs which Reanalyze with the verb to move to the subject position, out of the government domain of the verb which they reanalyze with. In fact, however, this seems to be a relatively mild prohibition when the verb is a canonical dative shifter and the goal object is 'light' (a pronoun or simple proper name). Certainly the sentences in (42) are much worse than would be expected given this constraint alone.

15. The structure in (55) as given is also ruled out (redundantly) by the other half of the Theta Criterion as the Projection Principle: give obligatorily subcategorizes for two internal arguments, but it has only one categorially represented.

16. For consideration of some of the proposals in the literature, see section 5.1.3.2.

17. Perlmutter and Postal (1984) claim that situation (ii) does in fact arise in the Philippine languages, where it seems that a variety of thematically different nominals can be advanced directly to subject, each with its own characteristic morphology. If this is the correct analysis of these constructions, the 1AEX is indeed obeyed. However, these cases are very hard to interpret. Cf. footnote 21, chapter 4. As far as I know, no

putative case of situation (i) has been put forth in the literature.

18. Not counting the appearance of passive morphology and the observed '1AEX effects', which are natural consequences of both theories, P&P give only two arguments for this particular aspect of their analysis: the existance of reflexive impersonal passives in languages like German, and the consonant mutations on certain direct objects in Welsh. Neither of these arguments is particularly strong, and both constructions are certainly open to reinterpretation.

19. Fabb (1984) gives a very different account of the impossibility of the forms in (61) in terms of his notion of verbal Case.

20. This derivation involves forming chains (in the sense of Chomsky (1981) which 'overlap' in the subject position; both -pass and bridge occupy this position at different points in the derivation. For this to be allowed, a minor reformulation of the chain theory and the Theta Criterion of Chomsky (1981) is necessary, to the effect that chains can (in some cases) contain more than one theta position, and their theta role is determined solely by the 'tail' (D-structure position) of the chain. This suggestion is due to Chomsky (MIT class lectures, 1984, see also Burzio (to appear)). The extension seems to be necessary only in the subject position.

21. More properly, it is a part of INFL, which also includes tense and agreement elements.

22. Here I abstract away from the question of whether the passive morpheme is an NP or an N which (like a pronoun) heads an NP with no other material. Perhaps the second choice is more natural in this system.

23. See Rizzi (1976), Burzio (1981), Belletti (1982), Manzini (1983), Everett (1985), etc.

24. In the case of raising, the data is variable and the level of acceptability seems to depend on the particular raising verb involved. Different researchers idealize the data in different ways.

25. Here I must reject the analysis of si in Belletti (1982), even though it is generally very compatible with my views, and in particular argues strongly for identifying si constructions with passives. Belletti base generates si in the INFL node and allows it to pick up an internal theta role via a type of chain formation. As well as being inconsistent with the UTAH, this would eliminate the possibility of distinguishing si from the copular passive, given my arguments that this (too) is an argument in INFL.

26. Jaeggli (1984) reaches the same conclusion in this regard. Probably it is no accident that in Italian it is the INFL passive morpheme that transmits its theta role and the nominal (and thus more obviously argumental) one which necessarily keeps the theta role to itself. However, this does not seem to be a rigid correlation: the Lithuanian passive is parallel to Italian si but allows a by-phrase, for example.

27. Nor will this problem be solved if and when the verb incorporates into INFL, given constraint (209) of chapter 4.

28. In fact, this idea has a continuous history in the literature; essentially the same thing appears in Chomsky (1981), now called 'Rule R'.

29. Here many interesting questions about the precise nature of

transitivity are ignored. For example, passives are generally possible both in English and in Chichewa when the verb takes a sentential direct object. Moreover, languages like French and Italian have generally the same type of passive as English and Chichewa do, but if there is a certain type of PP in the VP an 'impersonal' passive becomes possible. Thus in these languages the parallel to (87b) and perhaps the parallel to (85b) are grammatical, whereas the sentences like (84b), (86b) are impossible. Interestingly, the situations that seem to be possible in Romance correspond rather directly to those which can form pseudopassives in English and which form applied verbs in Chichewa. This is left as a topic for further research.

30. Belletti (1982) argues on the basis of the ungrammaticality of certain complex infinitival constructions that when Italian si does not receive accusative case, it must receive nominative case (which is unavailable in these infinitivals. If this analysis is correct, it suggests that the Italian si in fact cannot be m-identified solely by appearing in INFL. In this respect, it would be like the English--and the other Italian--passive morpheme. I leave this question open.

31. It is possible that there may be more language particular restrictions of this general freedom, however. Thus, if Ostler (1979) is right that Sanskrit does not obey the 1AEX, it seems that the Sanskrit passive morphemes prefer to receive accusative case rather than nominative, yielding paradigms similar to those in German where the thematic object in a passive cannot be accusative. On the other hand, if Ute (Givon (1982)) does not obey the 1AEX, its passive seems to prefer nominative case, such that thematic objects show up with objective case markings obligatorily.

More data and research is needed on these questions.

32. Although I do not accept this analysis for the language Saddy was actually studying (English), for reasons discussed in section 5.4.1.

33. In fact, a nominative object is possible in Icelandic, Italian, and other languages any time an inherent case NP which does not need nominative appears in the subject position (see Thrainsson (1979), Belletti and Rizzi (1985)). This confirms the hypothesis that V-INFL incorporation is more general than the passive construction per se, although it is often not obvious when the verb and the INFL are adjacent anyway.

34. Travis (1984) begins to address some of these issues.

35. On the grammaticality of (118d), see section 5.4.1.

36. This is a move toward the position of Kayne (1983), in which the ECP is entirely reduced to a constraint on antecedent-trace relationships.

37. In particular, our derivation of the Head Movement Constraint given in 1.4.3 is still valid. The only new positions that will govern the head position of a phrase are all XP level positions by X' theory, and these are not valid landing sites for X-o movement, by structure preservation. Nor can the X-o adjoin to the head of one of these XPs, because the complex category so formed will not c-command the X-o's trace and ECP will be violated.

38. This theory can be immediately extended to the NP movement that takes place in unaccusative verbs as well. Certain correct results follow, such as the fact that (ic) is ruled out in the same way that (120c) is:

(i) a. It seems [that there have arrived three men].

b. Three men seem [t to have arrived t].

c. **Three men seem [there to have arrived t].

39. Furthermore, the constraint against incorporating two Ns into a single V is not violated here, just as it is not violated in causative constructions. In the latter case two Ns can be identified, one for each V root. In the former case, one can be m-identified by the V and the other by the INFL.

40. The Iroquoian languages simply lack the passive construction altogether. Southern Tiwa has a passive, and Allen et. al. (1984) imply that the object NP cannot incorporate prior to passivization, but too little data is given about the passive to narrow in on its properties. As for passive-antipassive interactions, they may be blocked because both morphemes will often compete for the accusative case of the verb.

41. This covers a gap in the account of passive-applicative interactions in Baker (1985). In that work, the paradigms in (140), (141) were correctly captured but there was no deep account of the impossibility of (142a), (143a), (144a).

42. In fact there are more than two. Kinyarwanda causative constructions are an easy extension of the analysis that I express here, and I will omit discussion of them.

43. The derivation based on Case theory of the fact that VP must move to COMP in one type of language and V may move by itself in the other still follows in the case of a passive matrix clause, but I omit the reasoning.

44. Not all languages which have type 2 causative constructions allow the

morphological causative of an passive to be formed; Swahili for example does not according to Vitale (1981). This is easily attributed to idiosyncratic morphological gaps.

45. In fact, there is one other possible way which a D-structure such as that in (154) could surface in a VP-to-COMP language--if the passive morpheme satisfies its need to affix to a verb not by receiving the lower verb, but by incorporating into the higher causative verb. Thus, it would be effectively absorbed into the causative. This may be the source of the famous 'Faire Par' construction in Romance as discussed in Kayne (1975) (see also Burzio (1981), Zubizarreta (1985)). Kayne shows that this construction differs from the ordinary causative that we have been focusing on in a number of ways that testify to its passive nature. Furthermore, such a construction in which the 'causee' appears either in a passivelike by-phrase or not at all (as an implicit argument), is by no means rare in languages with type 1 causatives; Chichewa is one non-Romance example. The fact that there seems never to be any overt sign of this passive morheme even in the causative affix itself is a potential problem for this line of inquiry, but it seems well worth exploring.

Chapter 6

INCORPORATION IMPLICATIONS

The preceding chapters have been filled with many detailed analyses of particular constructions in particular languages; this last chapter will highlight the main unifying themes of basic importance, drawing together the threads of the tapestry. The central notion has been that of Incorporation--the syntactic movement of a word level category from its base position to combine with another word level category. The nature and existence of this process has implications for three interlocked areas of fundamental interest: the nature of D-structure and its relationship to S-structure; the relationship between morphology and syntax; and the nature and properties of the so-called Grammatical Function changing processes. These will be discussed in turn.

6.1 On D-structure

One theme of this work is that D-structure is a valid and necessary level of syntactic description in its own right, distinct from S-structure and LF, with its own characteristic properties. The characteristic properties of D-structure which define it are two: phrase markers obey a pure form of X' theory, and thematic relationships between linguistic entities are

represented directly, in X' theory terms. This takes an particularly strong form in the Uniformity of Theta Assignment Hypothesis (1.4.1 (47)), which states that similar thematic relationships are represented by similar structural relationships across sentence types at D-structure.

Throughout this work, we have seen much empirical support for this perspective. Primary evidence has come from Incorporation structures. The UTAH implies that such structures cannot be base generated at D-structure; rather any item which gives or receives a productively characterizable thematic role must be a separate constituent at that level in order to represent that thematic relationship in X' theory terms. Then, when the relevant items come together in the syntax, their movements must leave traces and preserve categorial structure by the Projection Principle. The result is that Noun Incorporations, morphological causatives, applicatives and passives do not have the same S-structure and LF phrase markers as superficially similar examples which are morphologically simple from the point of view of syntax. On the surface, this is masked for many aspects of government and Case theory because of the Government Transparency Corollary, which states that phrase structure headed by the trace of an incorporated head will be invisible with respect to government. If one looks beyond this, however one finds rich and pervasive support for the prediction. Thus, Noun Incorporations, causatives, and applicatives behave differently from normal transitive sentences with respect to Binding theory (section 3.3.3.2, 3.3.3.3), Bounding theory (3.4), wh-movement (4.3.3), and the way that they interact with (other) GF-changing processes (3.5, 4.4, 5.4). These differences are not random and idiosyncratic, but rather can be explained in terms of the complex structure implied by the UTAH. In this way, the notion of a conceptually pure and independent level of D-structure

is vindicated.

Incorporation phenomena also support the UTAH in other areas. Thus, the UTAH implies the Unaccusative Hypothesis (Perlmutter (1978)) about the underlying structure of intransitive verbs, which in turn enables the range of possible Noun Incorporations in languages like Mohawk and Southern Tiwa to be explained (2.1). The UTAH similarly points toward Kayne's (1983) hypothesis that there are empty prepositions which govern the goal/beneficiary NP in dative shift constructions in English; a hypothesis which (extended to other languages) is also supported by the Incorporation data, most directly by the fact that the heads of such NPs can never undergo Noun Incorporation (4.4.2) and cannot wh-move freely (4.3). On the other hand, Kayne's (1983) hypothesis that the two postverbal arguments form a small clausal structure in dative shift sentences but not in their thematic paraphrases without dative shift is inconsistent with the UTAH. This hypothesis has been empirically refuted, in that it fails to account for the wh-movement facts of such structures in the proper way, and it cannot capture the difference between benefactive and instrumental applicatives in this regard (4.3). Thus, the notion of a conceptually pure and independent level of D-structure is vindicated again.

Finally, we have seen that 'Mirror Principle' effects in which the morphological structure of a word and the syntactic structure of an entire sentence are crucially interrelated (cf. Baker (1985)) are explained by the Incorporation analysis in a fundamental way (see 3.5, 4.4, 5.4). These effects follow from the fact that the morphological structure and the trace indexing are built up simultaneously as S-structure is derived from D-structure by multiple applications of the transformation 'Move Alpha'.

If there were no D-structure, however, this natural account would be lost.

Turning to the implications of this analysis, I note that the status of D-structure--or any sort of 'underlying stucture'-- as an independent syntactic level of linguistic description has been attacked from many perspectives. Notably, Lexical-Functional Grammar (Bresnan (1982b)) dispenses with such a level entirely (see also Generalized Phrase Structure Grammar). This framework and others like it will be hard pressed to replicate or supercede the explanatory results of this work in terms of lexical rules, linguistic metarules, or the like, without losing the essence of the claim that there are no transformations that map syntactic structures onto other syntactic structure. In a similar vein but conceptually closer at hand, GB theorists have in recent years explored the possibility of dispensing with the notion of D-structure as a level fundamentally different from S-structure. This is done by recapturing the thematic information more traditionally represented at D-structure by 'Chain formation' algorithms defined on S-structure (cf. Chomsky (1981), Rizzi (1983), Sportiche (1983), Brody (to appear)). In order to capture the facts presented in this work--in particular the Mirror Principle facts--these algorithms would have to be complicated enormously, thereby loosing much of their appeal. Thus, the existence and importance of D-structure as a level of linguistic representation is reestablished by the theory of Incorporation.[1]

6.2 On the Interaction of Morphology and Syntax

Another theme of this work has to do with the relationship of morphology to syntax. I have argued that the rules and principles of Morphology are not a subpart of any particular level of the grammar, such as the lexicon or the level of Phonological Form (PF). Instead, they constitute their own semi-independent component of the grammar, and as such, they can potentially constrain representations at any or all levels of description. In this way, 'Morphology theory' is on a par with X' theory, Case theory or Government theory. The domain of Morphology theory is the structure of X-o level categories, just as the domain of X' theory is the structure of X' and XP level categories. As such, Morphology theory determines whether a given combination of morphemes is well-formed or not, and if it is, what its phonological shape will be. It does this the same way regardless of whether the morphemes in question come together in the lexicon as part of 'standard' word formation or in the syntax as a result of Incorporation. Furthermore, Morphology theory constrains the operation of 'Move Alpha', so as to block syntactic Incorporation in some cases and force it in others (see 1.4.5, 2.2).

In consonance with this view, we have seen many proofs that Morphology is independent of the syntactic level. The English passive provides a convenient example:

(1) a. The vase was kept in the top drawer to insure its safety.

b. The vase was broken to anger the auction-goers.

c. The vase was smashed to anger the auction-goers.

(2) a. The vase remained kept in the top drawer for many years.

b. The vase seems broken/remains unbroken.

c. The vase seems smashed/remains unsmashed.

In (1), we have a collection of verbal passives, as shown by the purposive clauses; in (2) we have adjectival passives, as shown by the fact that they are embedded under verbs which subcategorize for APs. Nevertheless, the morphology and the phonology is exactly the same in both cases. Suppletive ((a) sentences), irregular ((b)), and regular ((c)) morphology can correspond freely to either type of passive, with no effect on its syntactic behavior. More generally, cross-linguistically we find that a morpheme which normally attaches in the syntax in a given language also appears on forms which can only be accounted for lexically due to idiosyncracies; yet the morpheme has the same morphophonological properties in both cases (e.g. the applied affix in Chichewa: section 1.4.5, 4.2.2). On the other hand, we also find that there will be two (or more) morphological devices to express (say) morphological causatives in a language, one of which is morphologically productive and phonologically regular, the other unproductive, exceptional, perhaps even suppletive; nevertheless the two causatives have the same syntax (e.g. applied affixes in Tuscarora, section 4.2.5.2). This establishes that Morphology must be a system of principles which is independent of the syntactically defined levels of S-structure, D-structure, and the (syntactic) lexicon. This view is necessary for theory-internal reasons if the notion of Incorporation as X-o movement is to be maintainable. However, we also see that this view captures without loss of generalization an empirically true fact about morphology: namely that the same morphological process can express things

with very different syntactic properties.

The other basic notion that has been supported is the idea (due to Lieber (1980)) that affixes are just like words except that they must attach to a word. Thus, whether an item is an affix or not is a lexically marked stipulation which is relevant to Morphology Theory, but otherwise is largely independent of the item's other properties. In particular, at the level of D-structure affixes need not be attached to roots and they appear in the same range of configurations that nonaffix X-o level categories do; they assign theta roles, head phrases which receive theta roles, and so on. The only difference is that an affix must move to attach to an X-o of the specified type by S-structure, or it will be ungrammatical (the Stray Affix Filter (2.2)). Hence antipassive morphemes are Noun affixes (2.4), causative morphemes are Verb affixes (3.2), and applicative morphemes are Preposition affixes (4.1). Thus, the picture of how morphology and syntax are interrelated begins to crystalize; in particular, the way that Morphology theory provides an independent source of constraints on syntactic structures (cf. Marantz (1984)).

This overall view of the interaction between morphology and syntax is unlike several views put forth in the literature. For example, it is inconsistent with the model of Lexical Phonology and Morphology (LPM) (e.g. Mohanan (1982), Kiparsky (1982, 1983)) if the word <u>lexical</u> in its name is interpreted as meaning that it is actually located in the lexicon: i.e. in the (possibly structured) list of properties of syntactic atoms. In practice, however, the empirical content of LPM could quite simply be translated as a specific outworking of independent 'Morphology Theory' subcomponent which I have defined. The characteristic constructs of LPM,

such as the notion of word formation strata to which certain principles of phonological rule application are sensitive, could be maintained in a perfectly consistent manner in this new setting. Less translatable perhaps is any view which strongly distinguishes derivational morphology from inflectional morphology in the way which they interact with the syntax. There are two basic versions of this. One is a traditional view that words are inserted into D-structure with their derivational morphology complete and their inflectional morphology is added latter. The other is the view of Anderson (1982) who claims that words are inserted with their derivational morphology at S-structure and inflectional morphology is added in PF. Neither of these views is easy to maintain in the light of the Incorporation data (e.g. (1) and (2) above; see also Marantz (1985), Baker (to appear)). The one theory developed in the literature which is consistent with the conditions on the interaction between morphological form and syntactic derivation is that of Marantz (1984, 1985).

In conclusion, it should be pointed out that this theory of morphology and syntax is in a sense both weaker and stronger than these other views. It is weak in that the syntax cannot be exclusively linked to any one particular type of morphology, nor can different 'strata' or types of morphology be so linked to particular levels. Given examples like the English passives above, this weakness seems to be empirically correct. There is another sense, however, in which this theory is much stronger than previous ones, in that it can explain why certain morphological <u>structures</u> are associated with certain syntactic structures: both are built simultaneously by Incorporation. At the general level, we account for why GF-changing processes are associated with morphology; at the specific level, we account for why the Mirror Principle is true in this way. Levels

of morphology in no way correspond to levels of syntax, but derived morphological structures are related to derived syntactic structures in a fundamental way.[2]

6.3 On Changing Grammatical Functions

The third and most central theme of this work is that there are no explicit rules which change Grammatical Functions in specified ways. Rather, apparent GF changes are the result of 'Move Alpha' applying freely in the syntax subject to general conditions of the theory. In particular, most GF changing phenomena are the result of moving an X-o category out of the phrase which it heads and adjoining it to an X-o that governs it--'Incorporation'. The fact that 'Move Alpha' can bring about this type of X-o movement and only this type follows from an independent principle, the ECP (1.4.3). The fact that this type of movement causes apparent changes of GFs--in particular from the point of view of Government theory and Case theory (cf. 1.3.3)--follows from the Government Transparency Corollary (1.4.4), an extremely felicitous side-effect of the definitions of fundamental notions such as government and the nature of complex X-o s. Finally, a residue of GF changes is attributed to the NP-movement subcase of 'Move Alpha'. This can only move an NP into the subject position, and that only under certain conditions derived from the Theta Criterion and the Projection Principle (cf. Chomsky (1981)). This too is related to Incorporation, because the verb must incorporate into INFL before NP movement to the subject position will be legitimate (section 5.3). In this way, all the GF changing that is allowed crosslinguistically is reduced to

the free application of X-o movement, without need of recourse to specific GF changing rules. This theme has been stressed throughout the presentation; in this last section I will show in a more general way how the Incorporation theory solves the basic explanatory problems associated with GF changing processes as sketched in section 1.1.

The first basic question about GF changing processes was why is only a peculiar subset of the imaginable GF permutations allowed by Universal Grammar. Why do passive, applicative, and possessor raising occur, but not their exact inverses, for example? An answer can now be given: a GF permutation is allowed only if it is the automatic side-effect (via the GTC) of a possible Incorporation. The class of possible Incorporations in turn is determined by the ECP plus general properties of X'-theory and complementation which determine which categories can govern which. Thus, V-to-V incorporation exists and underlies causatives and related constructions (chapter 3); P-to-V incorporation exists and gives rise to applicatives (chapter 4); N-to-V incorporation exists yielding Noun Incorporation, Antipassive, and Possessor Raising (chapter 2, 4.2.4). These last three differ not in their syntax but in their characteristic morphological realizations (cf. 6.2). V-to-INFL and N-to-INFL both exist as well: the former is involved in all passives as well as in V-fronting processes of various kinds; the latter in passives in some languages (5.1.3). Other imaginable GF changes simply cannot be made to fit into this sort of schema, thereby accounting for why they do not exist. Thus X-o movement can be taken to be completely free across categories based on its inherent properties.[3] When and where it actually occurs is then determined by general considerations of Government theory (which in turn

depends on X' theory and Theta theory) and Case theory. These limitations translate into limitations on the range of GF changing phenomena, in what (with the addition of NP movement to subject) seems to be the right way. Thus, we converge on the correct set of GF changing processes in an explanatory way.[4]

The second question about the nature of GF changing is why are GF changing phenomena characteristically associated with morphology in the deep way expressed by the Mirror Principle? The answer is that GF changing is a side effect of X-o movement. X-o movement necessarily does two things at the same time: it builds a complex structure dominated by a zero level category, and, because it leaves a trace, it creates a coindexing between two nodes of the structure which were not coindexed before. The first of these effects is the morphological affixation; the second is the syntactic change of GFs given the GTC. Thus, morphology and syntax are inherently linked by the nature of the phenomena itself.

The third question about GF changing processes is why, how, and to what extent they vary from language to language. I have emphasized that if there are no GF changing rules per se, there are no rules which can vary from language to language. Rather, there are precisely two ways which languages can vary consistent with the hypothesis of intrinsically free X-o movement. The first is that languages can vary in the lexical items they contain. Thus, Chamorro (Austronesian) has an antipassive while Chimwiini (Bantu) does not, even though they are otherwise typologically similar in relevant respects. The reason is simply that Chamorro happens to have a lexical item which is of category N, which morphologically subcategorizes for a verb (stem), and which has the meaning of a 'semidefinite' pronoun;

Chimwiini happens to have no items with this collection of features (cf. 2.4). Similarly, Southern Tiwa has a passive but Mohawk does not, simply because the one has an INFL which is the right sort of argument; the other does not. To take a slightly different example, in sections 5.1 and 5.2 typological variation in the passive construction was attributed to more fine grained variation in the properties of specific lexical items; namely whether the passive morphemes were INFLs or Ns and whether or not they needed to receive Case. A second, deeper type of language variation arises when languages differ in some general principle. If this principle is one that makes a contribution to restricting the operation of X-o movement in some way, one of the effects will be apparent variation in GF changing behavior. Thus, we attributed differences in the behavior of causatives and applicatives across languages to independent differences in how Case assignment (more generally morphological identification) works in those languages (3.3, 4.2). In this way, we capture generalizations such as the fact that languages with 'type 1' causatives generally lack applicative constructions, whereas those with 'type 2' causatives have them. More generally, we make allowance for language variation, while at the same time setting up clear, interesting, and apparently true limits on how drastic that limitation can be, and on what effects it will have in other areas of grammar.

The fourth and final question regarding GF changing processes is why more than one of them can be composed with predictable results in some cases, whereas in other cases such a composition is impossible. This too has been accounted for in terms of Incorporation. In particular, the assumption that movement of X-o's in the syntax is involved in all GF-changing processes implies by the Projection Principle that there will always be

null structure (i.e. traces) in the syntactic descriptions of GF-changed sentences. This null structure then will in some cases block further incorporations, just as overt structure does. In this way I have explained why NI cannot follow PI (4.4.2); why one cannot causativize an applicative (4.4.4); why passive can never precede NI or PI, and can only precede VI in a certain type of language (5.4); and so on. In other cases, the null structure does not get in the way, and the second incorporation can take place as usual. Then, the two GF processes will appear to combine in the expected way. For example VI and NI can take place in either order in a given structure, with predictable results in each instance (3.5). The null structure also has effects with respect to wh-movement, degrading it in certain situations due to Bounding theory and Case theory. Thus, even though causatives and applicatives can create what look like perfectly usual transitive sentences, extracting the object leads to worse results than usual (3.4, 4.3.3). In short, structures which have undergone one GF-change do not necessarily behave like superficially similar structures which have not, simply because they do not have the same structural relationships, given Incorporation plus the Projection Principle.

The primary implication of this is that explicit GF changing rules are to be eliminated from Universal Grammar. They may in some cases be a useful notation for expressing properties of a given language, just as Phrase Structure Rules are, but like Phrase Structure Rules (assuming Chomsky (1981), Stowell (1981)) they have no fundamental status and ultimately they should not be appealed to in the course of giving linguistic explanations. Rather, the true work is done in both instances by the interactions of general constraints from X' theory, Case theory, Government theory, and the like--plus the operation of the process 'Move Alpha'. This conception of

grammar in general and of the grammar of Grammatical Functions in particular stands in rather sharp contrast to much recent linguistics work, such as that in Relational Grammar (e.g. in Perlmutter (1983), Perlmutter and Rosen (1984)) and Lexical-Functional Grammar (e.g. in Bresnan (1982b)), which depend heavily on specific rules which apply to Grammatical Function descriptions themselves.

The other implication of this theme is that GF changing phenomena are to be accounted for primarily in the syntax, rather than in the lexicon; that 'Move alpha' is the key rather than lexical rules. The contrary view is held by many. It is a hallmark of Lexical-Functional Grammar, but the same basic idea appears in work in the Government-Binding framework as well, including that of E. Williams (1981, 1984, in preparation). One way in which the syntactic approach seems clearly superior is that it accounts for important ways in which the syntax of morphologically complex items is identical to that of the periphrastic constructions which paraphrase them--generalizations which are lost in a lexical account (e.g. Binding theory effects in causative constructions, section 3.3.3.2, NI possibilities with applicative constructions, section 4.4.2; etc.). Moreover, the development of a syntactic approach to GF changing in this work succeeds in explaining the restrictions on the class of possible GF changing processes in a non ad hoc way based on fundamental principles. This result will have to be duplicated in some way by a lexical approach. There is no reason to think that this is necessarily impossible, but it is yet to be done. Indeed, there is reason to think that basic principle that restricts GF changes is the ECP, as I have claimed. Where the ECP is involved, one expects asymmetries between the subject (which is usually not governed) and the object (which is). In fact, such asymmetries show up in

the roles subjects and objects can play in GF permutations, just as expected (for more discussion of a particular case, see 1.4.3, 2.1). This means that the account of GF changing has been related in a deep way to wh-movement in the syntax, to assignment of quantifier scope at LF, and to the fundamental asymetries in the ways in which language represents different semantic relationships in form, as expressed by X theory and Theta theory.

Thus, we have returned to the issue which we started with, having discovered something about what relation the curious phenomena of GF changing has to the more logically understandable aspects of how human languages pair meanings with forms. Moreover, deep similarities among superficially very different GF changing processes have been revealed and explained. Clearly there is much more to be said, both in detail and in general, both conceptually and empirically.[5] However, perhaps enough has been said for now.

CHAPTER SIX: FOOTNOTES

1. It is worth pointing out that the theory of Incorporation not only helps to establish the existence of D-structure, but can provide a powerful probe into its nature. In particular, it has been proposed at various times, that the D-structures of some languages are very different from those of English. Thus, English has D-structures in which patient arguments are canonically internal to the VP and agent arguments are external. Other languages might systematically contrast with this by having D-structures in which the agent argument is external and the theme argument internal (the 'Ergativity Hypothesis'), or in which there is no (relevant) structural difference between the two at all (so-call 'Non Configurational languages'). Thus, Marantz (1984) claims that Dyirbal (Australian) and one of the Eskimo dialects (Central Arctic) are 'ergative' in this D-structure sense (cf. B. Levin (1983)); while certain other researchers claim that Hungarian is 'nonconfigurational' in a similar sense. Note that if these hypotheses are true, we predict that Incorporation will behave very differently in these languages from the way it behaves in the languages which I have investigated. In particular, the ECP will imply that a 'true ergative' language should contrast with a language like Mohawk or Southern Tiwa in that Ns associated with agent roles will freely incorporate, whereas Ns associated with patient roles will be unincorporable. In 'nonconfigurational' languages, on the other hand, either or both types of N should incorporate. Similar variation would be seen in VI and PI structures as well. Thus, Incorporation theory gives a good way of evaluating these claims.

In fact, preliminary evidence points away from this type of variation of

D-structure. Marácz (1985) shows that Incorporation in Hungarian works the same way that it does in languages described in this work. In particular, the subject-object asymmetry with respect to Incorporation exists in that language as well. With regard to Ergativity, all Eskimo dialects have rich systems of Noun and Verb Incorporation (cf. the 'postbases' of traditional grammars); yet they do not show the radical shift in the syntax of Incorporation structures which would be predicted if some of them were 'deeply ergative'. Rather, the different dialects that Marantz cites are said to be mutually intelligible in some cases. This is a topic for further research.

2. See Sproat (to appear) for discussion of what 'Morphology theory' might or might not come to, and how it is to be related to the lexicon.

3. In fact, the notion of Incorporation probably extends to processes which may be taken to form a natural class with those that have been discussed in detail, but which do not come up (much) in the GF changing literature. We have already seen one example of this: N-to-P incorporation exists in the Iroquoian languages and certain others (section 2.1.2). In fact, even a limited degree of possessor raising goes along with this process, as we might expect.

Another possible case is INFL-to-COMP Incorporation. This type of Incorporation probably underlies subject-auxiliary inversion in English (Speas (1984)), among other things:

(i) a. You <u>can</u> change a tire in under five minutes.

b. <u>Can</u> you t change a tire in under five minutes?

(ii) a. John like<u>s</u> pizza.

b. Does John t like pizza.

Moreover, I speculate that complementizers (the head of S') may incorporate into the verb that governs them under certain circumstances. Thus Kayne (1983, chapter 5) argues on the basis of differences between French and English that there is a phonologically null complementizer in the COMP of Exceptional Case Marking constructions in English:

(iii) I believe $[_{S'}$ Ø $[_{S}$ John to be intelligent]]

The problem with Kayne's otherwise attractive analysis is that 'John' seems to behave like the object of the verb, rather than like a normal embedded subject. For example:

(iv) Bill was believed [Ø [t to have seen Tom]]

In order to solve such problems, Kayne makes the following assumption about the nature of the complementizer 'Ø' of sentences like (iii):

> Let us say then that Ø has the essential property of 'transmitting' government: X governs Ø and Ø governs B implies that X governs B.

This solves the problem but is very odd in its own right. Notice, however, that it looks exactly like a subcase of the Government Transparency Corollary. Suppose in fact that it is, and Ø simply has the property of being a null affix of category C, which must therefore be incorporated. Then Kayne's stipulation follows from the GTC. Thus, we have an instance of 'C-to-V' incorporation. Moreover, we have unified the old 'Raising-to-Object' (= Exceptional Case Marking) 'GF changing process' into the conceptual framework of Incorporation, which also accounts for the other GF changing processes in a unified fashion.

Finally, I have given no examples of Adjective Incorporation. I know of none, but take this to be an accidental gap, given that most of the languages I have studied have no category of Adjective in the first place, but only stative verbs.

4. It should be pointed out that there is a (small and scattered) remainder of GF changing rules proposed in the literature (especially by Relational Grammarians) which I have not accounted for. Persumably, other types of analyses would have to be found for these. Perhaps the best established is 'inversion', where a subject seems to become an indirect object. For an approach to this phenomenon in GB compatible with this work, see Belletti and Rizzi (to appear). Interestingly, inversion is both highly lexically governed and almost never associated with characteristic morphology--good signs that it is a different type of process.

5. There is another approach to GF changing phenomena which I have omitted from discussion because my data does not directly bear on it at a conceptual level. It is, however, too important to go completely unmentioned. Thus, one popular theory of some of this phenomena in a GB framework is to assign two parallel syntactic S-structures to a single string of morphemes One of these structures corresponds roughly to my unincorporated D-structure representation, the other to my incorporated S-structure representation. This approach has been developed in various ways, especially to give account of Romance causative constructions (cf. 3.3.5, etc.) by Zubizarreta (1985), by Manzini (1983b), and by Goodall (1984). More recently, Sadock (to appear) has taken a similar approach to Noun Incorporation using Generalized Phrase Structure Grammar terminology, and a similar move is certainly imaginable for applicatives. In fact, this

is the logical alternative to my analysis which both respects the syntactic nature of the processes and obeys the Projection Principle. Any empirical predictions between the two approaches will be subtle, since roughly the same structures are present in both accounts; the only difference being where and when these structures are available. There is a rather serious conceptual problem with the 'parallel structures' approach, however, in that no one has successfully answered the question of how principles such as the Binding theory apply to the two simultaneous contradictory structures in general. This problem does not arise in a pernicious way on my account, since at every level there is exactly one 'simple' and consistent structure. In fairness, however, Zubizarreta (1985) and Goodall (1984) try to deal with fine grained and variable differences among causatives in the Romance languages which I have not addressed; it is conceivable that this and the Incorporation account will need to be combined to handle certain 'intermediate' cases such as these.

GLOSSES AND ABBREVIATIONS

In general, the transcriptions of the languages in this thesis follow those of the cited sources, and no attempt at standardization has been made. In some instances, diacritics of a noncrucial nature have been suppressed for convenience, notably including tone markings for the Bantu languages. Glosses also generally follow the cited source, although agreement morphemes and the characteristic morphemes of GF changing processes have been regularized. The following is a list of glosses used:

AGREEMENT GLOSSES:

person	number	gender	GF
1	s	M	S(subject)
2	p	F	O(bject)
3	du	N	E(rgative) (Mayan)
			A(bsolutive) (Mayan)

OTHER GLOSSES:

A,B,C	noun class agreements	(S. Tiwa)
abs	absolutive case	
acc	accusative case	
agr	agreement (general)	
aor	aorist tense	(Iroquoian)
Apass	antipassive morpheme	
appl	applicative morpheme	
asp	aspect marker (general)	
aux	auxiliary	
cause	causative morpheme	
comp	complementizer	
dat	dative case	
dir	directional	(Mam)
du	dualic	(Mohawk, Tuscarora)
Em	Ergative (subject) marker	(Chamorro)
erg	ergative case	
expl	expletive element	
fem	feminine gender	(North Russian, Icelandic)
fut	future tense	
gen	genitive case	
Hab	habitual aspect	
imp(er)	imperfective aspect	
indef	indefinite tense	(Mohawk)
indic	indicative mood	
imp	impersonal morpheme	(Welsh Irish)
instr	instrumental case or morpheme	
Lk	linking morpheme	(Chamorro)

Loc	locative case	
m	masculine gender	
n	neuter gender	
neg	negative	
nom	nominative case	
ns	'non-subject' marker	(Choctaw)
obl	oblique case	
OP	object agreement prefix (clitic)	(Bantu)
pass	passive morpheme	
p(a)st	past tense	
perf	perfective aspect	
pl(ur)	plural number agreement	
PN	Proper Noun marker	(Chamorro)
pre	nominal inflectional prefix	(Iroquian, S. Tiwa)
pres	present tense	
prog	progressive aspect	
prt	particle	
punc	punctual aspect	(Tuscarora)
Q	question morpheme	
refl	reflexive morpheme	
sg	singular number agreement	
SP	subject (agreement) prefix	(Bantu)
stat	stative morpheme	
subj	subjunctive mood	
suf	nominal inflectional suffix	(Iroquoian, S. Tiwa)
tl	translocative	
top	topic marker	(Japanese)
trans	transitive marker	(Bahasa Indonesian)

KEY ABBREVIATIONS:

ECP	The Empty Category Principle	(1.3.2 (42))
GTC	The Government Transparency Corollary	(1.4.4 (76))
HMC	The Head Movement Constraint	(1.4.3 (60))
m-id	(Condition of) Morphological Identification	(2.3.2 (94))
P&P	Perlmutter and Postal	
UTAH	The Uniformity of Theta Assignment Hypothesis	(1.4 1 (47))

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