takes place in full Noun Incorporation in some languages.[50] Here is yet another similarity between Noun Incorporation and Antipassive, further justifying the unified analysis of the two.

In conclusion, I have shown in this section that the distribution of Antipassive is directly parallel to that of Noun Incorporation over a wide range of constructions. This has been accounted for by analyzing Antipassive as a special case of Noun Incorporation, thereby making it subject to the same distribution-determining principles. Superficial differences between Antipassive and Noun Incorporation follow from the fact that the former is canonically an affix, while the latter is a compounding root, together with a cluster of loosely related functional correlates of this distinction. This analysis obviates the need for a specific rule of Antipassive in the grammar of a language. The difference between languages with Antipassivization and those without it is not the presence or absence of such a rule; rather it is simply a matter of whether or not there exists a lexical item with particular features in the language—namely one that is both an argumental N and an affix. All the other properties of antipassives follow from the general principles governing X^0 movement.

4 Verb Incorporation

In the last chapter we studied in detail constructions in which a single morphologically complex word does the work of two words in English: noun-verb combinations which count as both the verb and the (head of the) direct object of their clauses. I argued that these were the result of X^0 movement, which adjoins the head noun of a noun phrase to the verb between D-structure and S-structure. This process is simultaneously morphological and syntactic: syntactic in that its distribution and its consequences for the structure are determined by syntactic principles involving government, X-bar 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 the English counterparts: namely, morphological causatives. In these constructions, a single verb corresponds not to a verb and a noun, but rather to two verbs. This possibility, together with Noun Incorporation, is the second major element of polysynthesis. Here again, we will find strong evidence that the forms are actually syntactically derived from two independent verbs by movement. Thus, causatives are VERB INCORPORATION (VI), directly parallel to Noun Incorporation and subject to exactly the same principles. One conclusion of this will be that explicit rules are unnecessary to account for the properties of this class of GF changing processes as well.

4.1 Causative Constructions as Verb Incorporation

Consider the following causative paradigms from English and Chichewa (Bantu):

(1) a. Bill made his sister leave before the movie started.
b. The goat made me break my mother's favorite vase.

(2) a. *Mtsikana ana-chit-its-a kuti mtsuko u-gw-e.*
girl AGR-do-make-ASP that waterpot AGR-fall-ASP
'The girl made the water pot fall.'

b. *Aphunzitsi athu ana-chit-its-a kuti mbuzi zi-dy-e udzu.*
teachers our AGR-do-make-ASP that goats AGR-eat-ASP grass
'Our teachers made the goats eat the grass.'

(3) a. *Mtsikana anau-**gw-ets-a** mtsuko.*
girl AGR-**fall-made**-ASP waterpot
'The girl made the waterpot fall.'

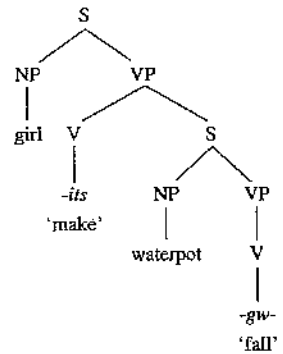
b. *Catherine ana-**kolol-ets-a** mwana wake*
Catherine AGR-**harvest-made**-ASP child her
chimanga.
corn
'Catherine made her child harvest corn.'

(Trithart (1977))

The English sentences in (1) are biclausal in all respects. In particular, they are biclausal in meaning, with an embedded clause appearing as a semantic argument of the causative predicate in the main clause. For each of the two clauses, there is a distinct morphological verb, as one would expect. The Chichewa sentences in (2) are similar; they correspond 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). These sentences contain only one verb each, which happens to be morphologically complex. Nevertheless, sentences like those in (3) can be thematic paraphrases of those in (2). Thus, the same thematic roles relate the same 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 look monoclausal morphologically. In this sense, the verb forms in (3) "do the work" of two verbs, thereby presenting another case of apparent mismatch between morphology and syntax. This is the morphological causative construction, the most famous of such mismatches. Unlike noun incorporation, this topic has been subject to long and complex discussion in generative linguistics.[1]

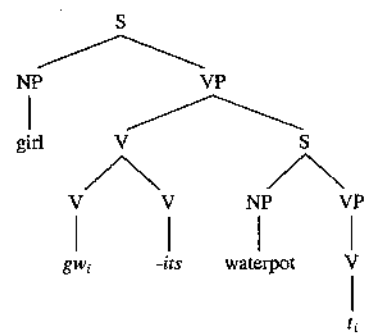
The guiding assumptions set down in chapter 2 determine the heart of an analysis for this construction. For concreteness, let us focus on (3a). Here it is the waterpot that breaks, and the girl who is responsible for that event taking place. Thus, the same theta role assignments occur in (3a) as in (2a). The Uniformity of Theta Assignment Hypothesis therefore says that (3a) and (2a) should have parallel D-structures. This implies a D-structure approximately like (4) (details omitted):

(4)



Next, the causative affix *-its* and the verb root *-gw-* clearly combine into a single word at some stage. Thus we are led to an analysis in which a lexical item undergoes syntactic movement to combine with another lexical item in the structure. By the Projection Principle, this movement may not destroy thematically relevant structure; hence, the moved verb root must leave a trace to allow theta role assignment to the "stranded" subject and to head the embedded clausal complement which the causative morpheme lexically selects. The S-structure of (3a) must therefore 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 claim that morphological causatives are derived by movement may seem less controversial to some when I point out its strong similarities to the claim that "subject-to-subject raising" is derived by movement, familiar from Chomsky (1981). Raising verbs like *seem* systematically appear in two different S-structure configurations:

(6) a. It seems that Sara adores Brussels sprouts.
b. Sara seems to adore Brussels sprouts.

Since these two sentences are "thematic paraphrases," in that the same NPs get theta roles from the same predicates, Chomsky (1981, 67f.) makes the minimal assumption that words like *seem* have a single set of theta marking and subcategorization properties specified in the lexicon. In particular, these words select a propositional direct complement, and fail to take any kind of external argument. This can be represented so:

(7) *seem*, V: [_____ proposition]
external theta role: _____

By the Projection Principle, the D-structures of (6a) and (6b) must both be projections of *seem*'s lexical properties; since there is only one set of such properties, they must be essentially identical, with the form of (8):

(8) [$_S$*e* Infl seem [$_S$Sara Infl adore Brussels sprouts]]

This common D-structure represents the "thematic paraphrase" relationship between (6a) and (6b), and accords with the UTAH. Independent principles of grammar then determine how (8) may appear at S-structure and LF. Predication theory, for example, states that clauses must have subjects (see 2.1.3). The matrix clause in (8) lacks a thematic subject; therefore, something must happen to fix this by S-structure. There are two logically possible ways this can happen, and this is the source of the two different S-structures in (6): a thematically empty, pleonastic subject *it* may be freely inserted, yielding (6a); or the matrix clause may steal the subject from elsewhere in the sentence via NP movement, yielding (6b). In this way, Chomsky 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.[2]

The Verb Incorporation account of causatives I have sketched is directly parallel to this. The Chichewa causative morpheme *-its*,[3] like English *seem*, systematically appears in the two different S-structure configurations which are thematic paraphrases, as illustrated in (2) and (3). Again the minimal assumption should be that *-its* has a single set of theta marking and subcategorization properties specified in the lexicon; it takes an agent external argument, the "causer," and a propositional direct complement naming the event or state that is caused:

(9) *-its*, V: [_____ proposition]
external theta role: 'agent'
]$_V$_____

-its thus has a lexical entry identical to that of *make* in English, with one crucial difference: *-its* is an affix, and hence has a morphological subcategorization frame which stipulates that it must attach to a verb. As with the raising predicates, the fact that *-its* has a single set of lexical properties implies that it will occur in essentially only one D-structure configuration—the one which is a projection of its lexical properties. This justifies the single structure in (4) from another perspective. Moreover, as with *seem*, an independent principle of grammar implies that (4) cannot surface "as is," but something must happen before S-structure. This time the principle will be the Stray Affix Filter, which implies that *-its* must satisfy its morphological subcategorization frame at S-structure. This requirement too can be met in either of two logically possible ways, parallel to the ways in which raising verbs can get a subject: a verb root with no thematic properties—a "pleonastic verb"—can be inserted in the matrix sentence, which the causative morpheme then suffixes to; or the causative morpheme can borrow a verb from elsewhere in the structure via X° movement. The first option yields sentences like those in (2); the second yields sentences like those in (3). The S-structures derived in these ways are (10a) and (10b) respectively:

(10) a. [$_S$girl Infl do+*its* [$_S$waterpot Infl fall]]
b. [$_S$girl Infl fall$_i$+*its* [$_S$waterpot Infl t_i]]

In essence, what happens in (10a) is a process of "*do*-support," similar to the familiar one that applies in the English auxiliary system to rescue stranded tense morphemes. (10b) is our main feature, Verb Incorporation. Thus the same premises and conceptual considerations that motivate subject-to-subject raising also motivate a VI approach to causatives.[4]

Some comments are in order concerning the generality of this particular "single subcategorization" argument for Verb Incorporation. Note that it turns on the existence of two different structures in which the same morpheme appears: the "*do*-support" structure and the VI structure. Such alternations are by no means common cross-linguistically; more often, "periphrastic" sentences like those in (2) will, if they exist, have a matrix verb that is completely unrelated to the causative affix of the language. The Chichewa situation is not unique, however. Thus, in Nedyalkov and Silnitsky's (1973, 6) typological study of causative constructions the authors write: "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." They cite the following forms from Avarian in illustration:

(11) *ɣabi-ze*, 'to do' + *ɮa-ze*, 'to know' ⟶
a. *ɮa-z-abi-ze* (synthetic form) 'to cause to know, to teach'
b. *ɮa-ze ɣabi-ze* (analytic form)

This appears to be slightly different from the Chichewa case in that the Avarian causative morpheme apparently does not need to be "*do*-supported" if Verb Incorporation does not occur; rather, it can serve as a root itself. Thus, causatives in Avarian apparently involve optional V-V compounding, parallel to Noun Incorporation in the Iroquoian languages; whereas causatives in Chichewa involve obligatory affixation, parallel to NI in Eskimo (cf. 3.5.2). This situation is said to arise in "a number of languages," suggesting that the "affix-verb homophony" is nonaccidental, and thus when it occurs it is correct to collapse lexical entries and invoke X^0 movement. Moreover, if a language has a causative affix but that affix does not appear in both structures, it does not follow that the morphological causatives are not derived by Verb Incorporation in that language. On the contrary, it may just be that such languages lack both the process of "*do*-support" and the possibility of forming V-V compounds, the things which allow both structures to surface. VI will always be obligatory with causatives in these languages, just as NI is always obligatory with antipassives; it is the only available way to satisfy the Stray Affix Filter. Thus alternations will not be seen in these languages.

The parallelism between causatives and raising-to-subject verbs developed above suggests a way of confirming the VI analysis of causatives. Thus, a classical argument for movement with raising verbs is that expletives and parts of idiom chunks can appear separated from their usually required positions:

(12) 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]

Such sentences contrast minimally with superficially similar structures with equi/control verbs, which have no movement (e.g. *'All hell preferred (PRO) to break loose' compared to (12b)). Now, in Chichewa morphological causatives can be formed based on verb-object idioms, and the idiomatic reading is preserved:

(13) a. (*Chifukwa sanasamale malamulo a pa msewu . . .*)
because not-he-PAST-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.'

(14) a. *Mphunzitsi a-na-uz-a atsikana kuti a-tch-e makutu.*
teacher SP-PAST-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-PAST-set-cause-ASP ears girls
'The teacher had the girls pay close attention.'

This suggests that these causatives are derived by syntactic movement, the relation that is known not to destroy idiomatic readings. Aissen (1974) gives essentially the same argument for morphological causatives in Turkish:

(15) a. *O adam el aç-iyordu.*
the man hand open-PROG
'The man is begging.'
[*el açmak*, 'open the hand'=beg]
b. *O adam-a el aç-tir-d-im.*
the man-DAT hand open-cause-PAST-1sS
'I made the man beg.'

To complete the argument, it is important to recognize that cases of derivational morphology which cannot be analyzed as incorporation typically do not preserve idiomatic readings. This is clear, at least in English:

(16) 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)

(17) 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 by my account, since both of the latter (but neither of the former) involve movement of a constituent in syntax. Thus, we see clearly that VI can, like NI, strand the complements of the moved head, even where the stranded elements form idioms with the head. This is excellent preliminary evidence for the Verb Incorporation analysis.

The idea that morphological causatives are derived from a source containing two verbs and two clauses is far from original. On the contrary, it has a long history in the generative tradition, showing up in different ways in different frameworks: "Verb Raising" in transformational terms (Aissen (1974)), "Predicate Raising" in generative semantics, "Clause Union" in Relational Grammar, or "Merger" in the theory of Marantz (1984), to name just 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 is that the "Verb Incorporation" proposal is embedded in a (different) restrictive set of theoretical assumptions, which determine very accurately the nature of the derived structure. This makes possible new and insightful explanations of properties of morphological causatives and related constructions. The rest of this chapter is devoted to defending, developing, and drawing out the implications of this analysis.

4.2 The Distribution of Verb Incorporation

In section 3.2 I argued that noun incorporation was the result of a syntactic movement process since its distribution can be explained by known syntactic principles. Specifically, noun incorporation obeys the (revised) Head Movement Constraint (HMC) of Travis (1984):

(18) The Head Movement Constraint
X may move into Y, where X and Y are zero level categories, only if Y governs the position of X.

This constraint in turn was shown to be a corollary of the ECP (2.2.3), since X°s when they move leave traces which must be governed by their antecedents. The consequence of this was that only the head noun of the direct object can be incorporated, because only there does the government relation hold between the trace and the antecedent. Now, if our guiding assumptions are correct in giving a syntactic analysis of Verb Incorporation, then VI should be subject to the same syntactic principles. In particular, it too should respect the Head Movement Constraint subcase of the ECP, 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 the only complex verbs in languages of the world; rather, the phenomenon of Verb Incorporation seems to be more general. Thus, 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:

(19) *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].'

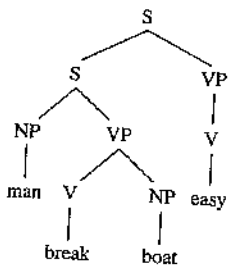
(20) *Ndi-**ka-pemp-a** pamanga.*
*1*SSP-**go-beg**-ASP maize
'I am going [to beg maize].' (Watkins (1937))

(21) *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].' (Watkins (1937))
(cf. *ku-dza* = main verb 'come')

(22) *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].' (Watkins (1937))

There are some differences between (20)–(22) and the causative in (19); 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 complement of the matrix verb, and is thus governed by it. Assuming for the time being that V is the X-bar theory head of S,[5] we see that Chichewa complex verbal formations all obey the HMC:

b.

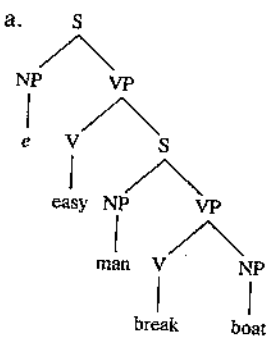


As a solitary exception to the hypothesized ban on VI from subject position, this example is suspicious for two reasons: first, the hypothesized matrix predicate takes only one argument; and, second, the predicate is nonagentive. This recalls the one case in which it is claimed that Noun Incorporation happens from subject position—the case of intransitive predicates taking "theme" subjects. In section 3.2, 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)). Their sole argument 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 (32) the noun root incorporates directly from object position, giving a grammatical result:

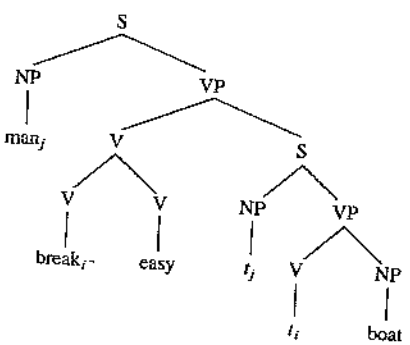
(32) *I-**mukhin**-k'etuwe-m.*
b-*hat*-old-stat:pres
'The hat is old.'
(Southern Tiwa; AGF)

Clearly, the same line of reasoning is open for (31a). We can assume that the sentential argument of 'easy' is underlyingly in the VP and the subject position is nonthematic, as in (33a). Then the surface form is derived by a nonproblematic instance of Verb Incorporation and ordinary subject-to-subject raising, giving the S-structure in (33b):

(33) a.



b.



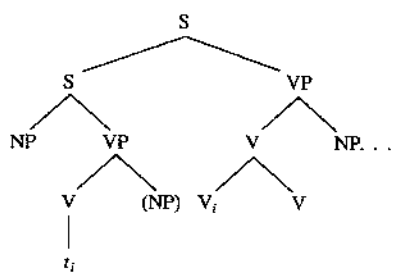
(33) is isomorphic to the structure associated with noun incorporations like (32), with V in the place of N and S in the place of the NP under the matrix VP.[8]

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 is generally not possible.[9] 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 every one of his examples has a matrix verb which is intransitive and adjectival, as in (31a). Verb Incorporation from the subject position is perfectly conceivable, and a priori would be no stranger or more complex than VI from object position. Hypothetical examples would look like:

(34) a. *John AGR-lie-prove-ASP his unreliability
(='[That John lies] proves his unreliability.')
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 from any language. Taking this to be a true gap, it implies that the configuration in (35) is an impossible verb incorporation:

(35)



This follows from the HMC and the ECP: having the embedded verb adjoin to the matrix verb involves moving it to a position that does not c-command its trace, and hence one that does not govern it. The trace is therefore not properly governed by an antecedent, and the structure is ungrammatical. Again, this is parallel to NI, where subjects of transitive verbs can never be incorporated:

(36) *∅-***hliawra***-*k'ar-hi yede.*
A:A-**lady**-eat-*fut* that
'The lady will eat that.'
(Southern Tiwa; AGF)

In chapter 3 the ECP was shown to account for two further aspects of the crosslinguistic distribution of noun incorporation: the fact that it never takes the head noun out of an adjunct noun phrase, or out of a prepositional phrase:

(37) *Baby AGR-**time**-laugh-PAST [five *t*].
(= 'The baby laughed [five times].')
(38) *The man AGR-**lake**-ran-PAST [around [(that) *t*]].
(= 'The man ran [around [(that) lake]].')

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:

(39) a. *John AGR-**insult**-left-ASP Mary (to) his mother.
(= 'John left [$_S$ because Mary insulted his mother].')
b. *The baby AGR-**break**-cry-ASP his toy.
(= 'The baby cried [$_S$ when his toy broke].')
c. *I AGR-**hit**-throw-ASP a snowball (to) my roommate.
(= 'I threw the snowball [$_S$ (in order) to hit my roommate].')

Nor can Verb movement ever take a verb out of the sentential complement of another head (say a noun) to adjoin it to a higher verb:

(40) *I AGR-die-cause-PAST the rumor (of) John.
(= 'I caused [$_{NP}$ the rumor [that John died]].')

Again, these impossible examples do not yield surface forms which are a priori more complex or contorted than the existing cases of VI from a sentential object. Rather, it seems that a direct theta connection is needed between the matrix verb and its associated S in order for incorporation to be possible. As with NI, this restriction is rooted in the ECP. A category is a barrier to government if it is an adjunct, like the S's in (39), or if it has a theta-marking head which intervenes between the potential governor and the governee, like the NP in (40) (2.2.3, cf. Chomsky (1986b)). Therefore, the antecedent will be blocked from governing its trace in all such structures. It follows that VI will only be possible out of a clause which is a direct complement of the landing site verb.

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 and call them "Verb Incorporations." When one looks at the class of such cases across languages and language families, one finds a certain variety in what matrix predicates host Verb Incorporation.[10] In spite of this, the observed 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 (always nonagentive) may incorporate out of their sole sentential argument, but these are the only possibilities. Thus, 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 must reflect the basic nature of the Verb Incorporation process. We then observe that this distribution can be derived from the Empty Category Principle, an independently known principle of grammar which plays a central role in explaining the properties of syntactic movement. In fact, we see objects distinguished from subjects and adjuncts, a hallmark of ECP effects (Huang (1982), Lasnik and Saito (1984)). Therefore, I conclude that Verb Incorporation is a special case of syntactic movement. This supports the validity of my basic assumptions, in particular the Uniformity of Theta Assignment Hypothesis, which motivated a syntactic analysis of Verb Incorporation.

The argument is strengthened by the direct parallels between the distribution of Verb Incorporation and that of Noun Incorporation that have been emphasized throughout this section. This shows that the principles involved have appropriate generality. In fact, generative semantics captured 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,[11] 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^0 movement is articulated as above.

4.3 Case Parameters and Causative Variation

4.3.1 A Problem for Incorporation

Thus far, I have argued that morphological causatives in languages of the world are derived by Incorporation. "Incorporation" in the intended sense is merely Move-Alpha applied to a lexical category rather than a maximal projection, and its behavior is determined 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. Now, 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 clearly 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 how grammatical functions are assigned (see also Marantz (1984)). 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 acts like 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:

(41) 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)):

(42) a. *Buluzi a-na-sek-ets-a ana.*
lizard SP-PAST-laugh-CAUS-ASP children
'The lizard made the children laugh.'

b. *Boma li-ku-sow-ets-a nsomba.*
government SP-PRES-disappear-CAUS-ASP fish
'The government made fish disappear (become unavailable).'

c. *Mulungu a-na-yer-ets-a kunja.*
God SP-PAST-clear-CAUS-ASP sky
'God made the sky clear.'

(42) shows morphological causatives of a range of intransitive verbs, including an agentive intransitive (42a), a nonagentive intransitive (42b), and a stative verb (42c). Each time, the subject (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" (43a) and it becomes the subject NP if the verb complex is passivized (43b):

(43) a. *Buluzi a-na-**wa**-sek-ets-a **ana.***
lizard SP-PAST-**OP**-laugh-CAUS-ASP children
'The lizard made the children laugh.'

b. *Ana a-na-sek-ets-**edw**-a (ndi buluzi).*
children SP-PAST-laugh-CAUS-**PASS**-ASP by lizard
'The children were made to laugh by the lizard.'

This contrasts with the causatives of transitive verbs:

(44) a. *Anyani a-na-meny-ets-a ana kwa buluzi.*
baboons SP-PAST-hit-CAUS-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-CAUS-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) 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 normal word order. Furthermore, the base object can determine object agreement on the verb (45a), and becomes the subject when the verb is passivized (45b):

(45) a. *Anyani a-na-**wa**-meny-ets-a **ana** kwa buluzi.*
baboons SP-PAST-**OP**-hit-CAUS-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-CAUS-**PASS**-ASP to lizard by baboons
'The children were made to be hit by the lizard (by the baboons).'

The causee, on the other hand, never triggers verb agreement or becomes the subject of a passive in these structures:

(46) a. **Anyani a-na-zi-meny-ets-a ana kwa **mbuzi.***
baboons SP-PAST-**OP**-hit-CAUS-ASP children to goats
'The baboons made the goats hit the children.'

b. **Buluzi a-na-meny-ets-edw-a ana*
lizard SP-PAST-hit-CAUS-PASS-ASP children
(ndi anyani).
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 sometimes been claimed that the causative pattern in (41) is the only one allowed in universal grammar (Perlmutter and Postal (1974), Comrie (1976)). However, Gibson shows that this is not true, by demonstrating that Chamorro (Austronesian) causatives in particular have 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:

(47) CAUSATIVE RULE 2:

GF in embedded clause	*GF in surface clause*
subject	object
object	'2d object' [12]

In order to give 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:

(48) *Mphunzitsi a-na-lemb-ets-a* *ana.*
teacher SP-PAST-write-CAUS-ASP children
'The teacher made the children write.'

(49) *Catherine a-na-kolol-ets-a* *mwana wake chimanga.*
Catherine SP-PAST-harvest-CAUS-ASP child her corn
'Catherine made her child harvest the corn.'

(48) is the causative of a verb used intransitively; (49) is the causative of a verb used transitively. In (48), the causee of the base verb (and its only argument) behaves like the direct object of the surface verbal complex. As in the other dialect, this can be seen in that the causee triggers object agreement on the verb (50a), and becomes the subject when the verb is passivized (50b):

(50) a. *Mphunzitsi a-na-**wa**-lemb-ets-a* ***ana.***
teacher SP-PAST-**OP**-write-CAUS-ASP children
'The teacher made the children write.'

b. *Ana a-na-lemb-ets-**edw**-a* *ndi mphunzitsi.*
children SP-PAST-write-CAUS-**PASS**-ASP by teacher
'The children were made to write by the teacher.'

In this respect, the two dialects of Chichewa are identical (compare (50) with (43)). In the causative based on a transitive verb, however, the difference appears. Hence, in (49) 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 and may move to the subject position in passives:

(51) a. *Catherine a-na-**mu**-kolol-ets-a*
Catherine SP-PAST-**OP**-harvest-CAUS-ASP
mwana wake chimanga.
child her corn
'Catherine made her child harvest the corn.'

b. *Mnyamata a-na-kolol-ets-**edw**-a*
boy SP-PAST-harvest-CAUS-**PASS**-ASP
chimanga ndi Catherine.
corn by Catherine
'The boy was made to harvest the corn by Catherine.'

The underlying object of the base verb has none of these object behaviors, however, even though it is unmarked morphologically; it may not trigger object agreement, nor may it become the subject in a passive:

(52) a. **Catherine a-na-**chi**-kolol-ets-a*
Catherine SP-PAST-**OP**-harvest-CAUS-ASP
mwana wake ***chimanga.***
child her corn
'Catherine made her child harvest the corn.'

b. **Chimanga chi-na-kolol-ets-**edw**-a*
corn SP-PAST-harvest-CAUS-**PASS**-ASP
mwana wake ndi Catherine.
child her by Catherine
'The corn was made to be harvested by her child by Catherine.'

Comparing (51) with (46) and (52) with (45), 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 (41), while Trithart's dialect follows the schema of Causative Rule 2 in (47); these two patterns crucially differ when the base verb is transitive. I will call Trithart's dialect Chichewa-B and Mchombo's dialect Chichewa-A (or simply Chichewa). Importantly, in establishing the existence of Causative Rule 2, Gibson (1980) shows that the surface pattern in Chamorro causatives cannot adequately be derived by maintaining only Causative Rule 1 and adding to it the independent effects of other GF changing processes. Rather, she claims that a second causative rule is truly necessary. Other languages that have this second causative pattern include Cebuano (Gibson (1980)), Choctaw (Davies (1981)), Chim-

wiini (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, but 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 possible solution to this problem is 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:

(53) *Amayi a-na-perek-a mtsuko kwa ana.*
woman SP-PAST-hand-ASP waterpot to children
'The woman handed the waterpot to the children.'

(54) *Joni a-na-pats-a nthochi kwa mai wake.* (Chichewa-A)
John SP-PAST-give-ASP bananas to mother his
'John gave the bananas to his mother.'
(Chichewa-B; Trithart (1977, 10))

Only in Chichewa-B, however, can some of these verbs appear in a second context, with two unmarked postverbal NPs:

(55) **Amayi a-na-perek-a ana mtsuko.*
woman SP-PAST-hand-ASP children waterpot
'The woman handed the children the waterpot.'

(56) *Joni a-na-pats-a amai ake nthochi.* (Chichewa-A)
John SP-PAST-give-ASP mother his bananas
'John gave his mother the bananas.'
(Chichewa-B; Trithart (1977, 31))

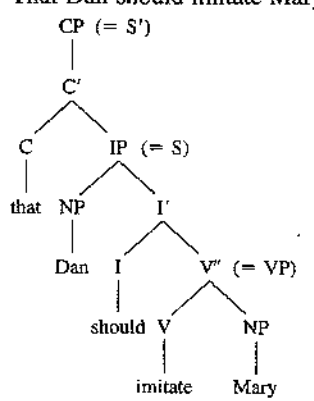
Thus, "dative shift" is possible with simple verbs in Chichewa-B but not in Chichewa-A. Now, in the unmarked situation, a Case-assigning element can only assign Case to one NP (see 3.4.3). Given only this assumption, we expect sentences such as (55) to be ungrammatical, since there will be no way for the second NP, 'waterpot', to receive Case. This case theory

deficiency, however, can apparently be overcome in some way in Chichewa-B (and in English), thereby making (56) possible in that language. Thus, the languages must independently differ in some aspect of case theory. Taking this as a cue, I propose to explain the existence of different kinds of morphological causative constructions, as well as the behavior of surface "direct objects" in each, in terms of general parameters of case theory, like how many Cases of what types the verbs of a given language can assign.

4.3.2 Verb Movement and the Structure of S

The first step toward understanding the variation in causative constructions is to go back and revise a preliminary assumption. Here some technical issues will become important. In 3.2, I took the structure of clauses to be like the structure of Noun Phrases, except that NPs are built around a head noun, while clauses are built around a verb. Recent work in GB suggests that this is an oversimplification, however. Rather, there are two other categories to be considered in the clausal system: namely Infl ("I"; inflection and/or the auxiliary) and the complementizer ("C"). Returning to the assumptions laid out in 2.1.3 (following Chomsky (1986b)), I take these categories to be similar to nouns, verbs, and adjectives with respect to X-bar theory, in that they head their own projections, although they differ from these "major categories" in that they do not semantically select for their specifiers (see 2.2.3). Then, V is the head of VP, which is a maximal projection; S is IP, the maximal projection of I, with the subject as the specifier of I'; and S′ is CP, the maximal projection of the complementizer, with the landing site for *wh*-movement ("Comp") as the specifier of C′. Lexical items (normally) take only CP as an argument. Then the full structure of a clause is:

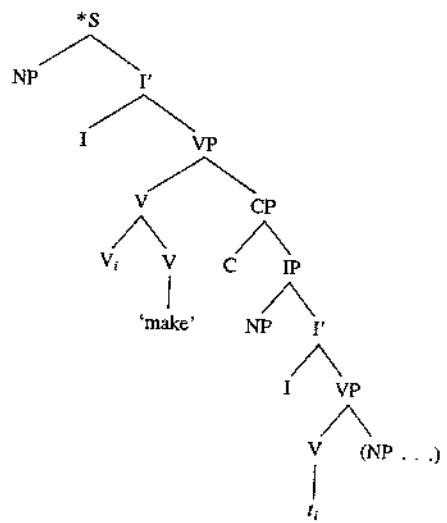
(57) That Dan should imitate Mary (is obvious)



For some purposes, the full articulation of this structure is masked by the nonlexical status of the complementizer and Infl, and by the special relationships between the complementizer and Infl (cf. Stowell (1982)) and between Infl and the verb. This is why V looks like the head of its clause in some ways.

This complex structure for clauses interferes with the proposed analysis of morphological causatives as Verb Incorporation. Suppose that causative morphemes are like other elements that take propositional complements in that they subcategorize for a full S'.[13] Then, the matrix verb does not govern the embedded verb, because the maximal projections of C and I intervene, both of which are barriers because their heads select a phrase which contains the lower verb (IP and VP respectively). Thus, 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:

(58)



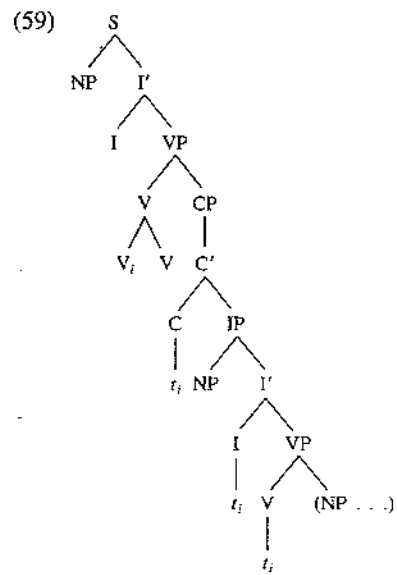
Hence, VI should be impossible in this structure. However, in many cases the matrix verb must find a verb root to affix to in order to satisfy its morphological subcategorization frame at S-structure, as discussed in 3.1.[14]

These conflicting demands put on morphological causative constructions can be met in only one way: the verb must make a preliminary move within the embedded clause to reach a position that is governed by the matrix verb. Then from this new position it can be incorporated into the matrix. In fact, the principles of government-binding theory immediately determine much about the properties of such a construction.

What position could be the destination of this preliminary movement? There are exactly two possibilities: the specifier of C' position (i.e. Comp), or the C position itself. If the verb moved higher in the tree, into the actual VP of the matrix verb, CP would (as in (58)) be a barrier to government between it and its trace. On the other hand, if the verb stays lower than this in the tree, it will still not be close enough to the matrix verb to be governed by it; it will still be in the IP selected by C,[15] so CP remains as a barrier between the two. If, however, the verb can reach one of these two positions, its needs will have been met. The only conceivable barrier between it and the matrix verb is now the CP, which is neither an adjunct type barrier (it is theta-marked by the causative verb) nor a Minimality Condition barrier (its head selects neither itself nor the specifier) with respect to these positions. Movement of material into these positions is licit with respect to the Theta Criterion, because they are not positions to which a theta role is assigned. The specifier of C, in particular, is the normal landing site of *wh*-movement.

What category can move into these positions? Given the "structure preservation" assumptions of Chomsky (1986b) (see 2.2.3), the answer is very different for the two possibilities. The C position is a zero-bar level position, and hence it can only accept a zero-bar level category both for substitution and adjunction. Hence the V may occupy this position if and only if it moves by itself. From there, it will be directly incorporable:

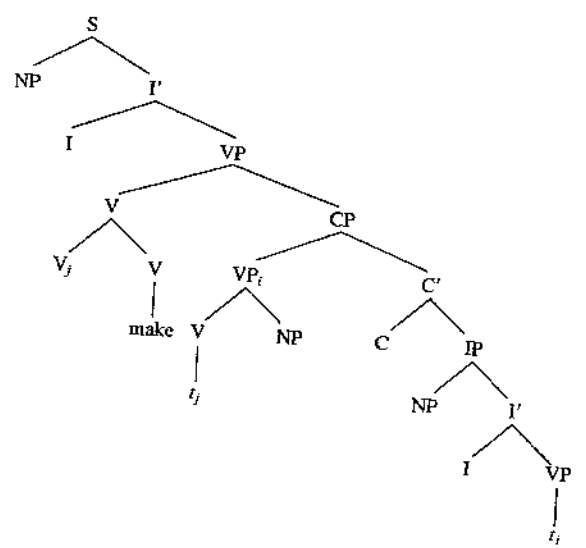
(59)



Note that in this structure, the verb must undergo a kind of successive cyclic movement; it reaches the C position by incorporating first into the embedded I. If it fails to do this, the head of IP will be distinct from C, thereby inducing a Minimality Condition barrier between the C position and the original trace. 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^0 movement is from the head of a phrase to the next highest head, obeying the Head Movement Constraint. Since I assume that C and I select their IP and VP sisters, neither IP or VP will block the traces which are their heads from being properly governed. (For discussion of certain technical issues relating to V-to-I Incorporation and I-to-C Incorporation, see note 7 to chapter 7).

In contrast, the other viable position, the specifier of C′, is a maximal projection position by X-bar theory. Thus, the verb can land in this position if and only if it takes its entire VP projection along with it. This yields a structure such as:

(60)



Here, the CP is not a barrier between the antecedent adjoined to the matrix verb and the trace in the VP which is the specifier of C′, as discussed above. The VP itself is also in the right structural configuration to be a barrier between the two, but its head is not distinct from the antecedent or the trace, and it is not an adjunct because it is selected by the embedded I via its D-structure position. Thus, the VP is not an actual barrier either. Therefore, the lower V can incorporate into the matrix verb from this position and still satisfy the ECP.[16]

To summarize, because S′ has an articulated structure which includes CP and IP nodes, the verb of an embedded clause must move internal to that clause before it can be incorporated. Given the independently motivated theory, there are two ways this can be accomplished—by V-to-C movement or by VP-to-Comp movement. I will claim that both these options are attested, and that each underlies one of the two different causative constructions described in the preceding subsection. Specifically, the VP-to-Comp movement configuration (60) will yield a structure in which the underlying embedded object acts like the surface object by the Government Transparency Corollary as in Causative Rule 1; the V-to-C movement configuration (59) will yield an "Exceptional Case Marking"–like structure in which the embedded subject acts like the surface object as in Causative Rule 2.

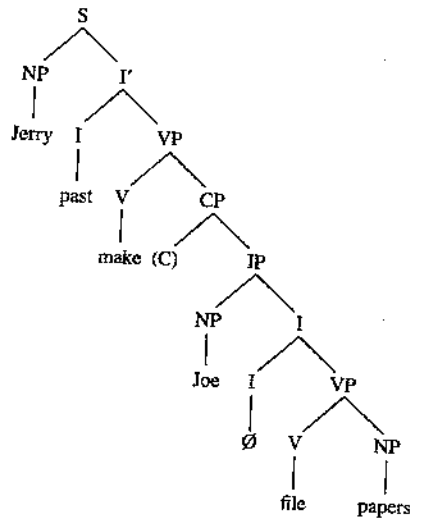
In closing, it should be emphasized that the developments of this subsection do not undermine the explanation of why VI only takes place out of sentential direct objects. The journey of V has been broken down into two steps: first the V(P) becomes a daughter of CP, then Verb Incorporation proper occurs. The first of these steps is independent of the role of the containing clause in the matrix sentence, but the second step is not. In particular, the V^0 trace of the second movement will need to be antecedent-governed, as before.[17] 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 true if and only if the CP is theta-coindexed by a lexical governor. Therefore, VI will be possible out of a sentential direct object, but not out of a sentential subject or an adjunct clause, parallel to NI, as before. Thus, the distribution of Verb Incorporation continues to follow from the theory.

4.3.3 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 argument NP be assigned abstract Case (i.e. be Case-indexed) in a given structure, so that the NP may be visible for theta role assignment. Furthermore, these Case assign-

ments must always be overtly interpreted at PF according to the resources of the particular language. In an English-type periphrastic causative construction, it is easy to see how this requirement might be satisfied:

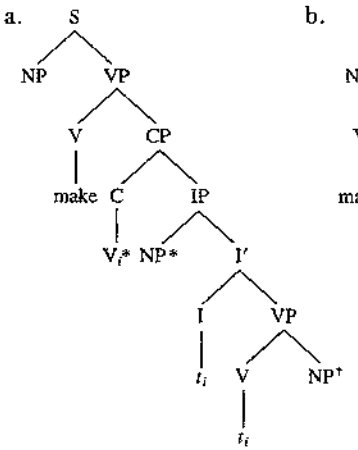
(61) Jerry made Joe file his papers.



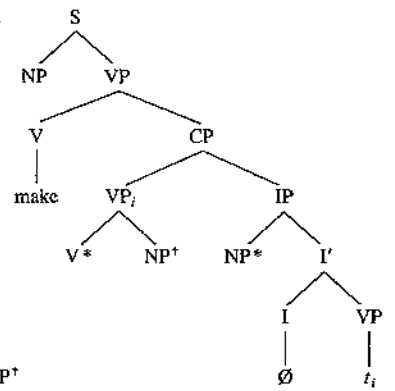
Here the matrix tensed Infl assigns nominative Case to the matrix subject *Jerry*, and the embedded transitive Verb *file* assigns accusative Case to its object *papers*. The null embedded Infl cannot assign Case to the embedded subject *Joe* because it has no agreement features; but the matrix verb *make* can assign accusative to this element in the manner of an "Exceptional Case Marking" verb. Both accusative Case assignments then correspond to strict rightward adjacency relationships in the PF of English. Thus, Case assignment works naturally and straightforwardly.

In languages whose causative morphemes require Verb Incorporation, however, these natural Case-assigning relationships are perturbed by V movement, leading to potential case theory problems. Consider the two possible intermediate structures discovered in the last section, the one based on V-to-C movement (62a) and the other based on VP-to-Comp movement (62b) (the matrix Infl is omitted for simplicity).

(62) a.



b.



Now the trace of a moved lexical category cannot assign structural Case to an NP, as we know from our study of Noun Incorporation (3.4.3). Moreover, a complex verb can only assign as many Case indexes as a simple verb can (the Case Frame Preservation Principle); most often this limit is one. Thus there are fewer available Case assigners in an incorporated structure than there are in a periphrastic structure, but just as many NPs that need Case. This poses problems with respect to case theory. In particular, the movement of V* in (62a) puts it in a position where it can no longer assign Case to its semantic object NP†, especially if the language requires adjacency between Case-indexed items at PF. Hence, NP† is in danger of violating the Case Filter. The movement of VP in (62b) is more considerate to NP† in this regard; here it is moved along with V*, the verb it belongs to semantically. This time NP* has difficulties, however, because the moved VP now intervenes between it and its natural Case assigner 'make'. Again, this is particularly crucial where adjacency is necessary at PF, because NP† intervenes between NP* and all the conceivable Case assigners. Therefore, as long as we restrict our attention to the completely unmarked types of Case assignment, case theory allows no grammatical Verb Incorporation with transitive verbs. Thus, VI will only be made possible in these situations by the existence of marked types of Case assignment, and this is a region where languages differ idiosyncratically. Then, whether or not a particular marked type of Case assignment in a given language can apply in (62a), (62b), both, or neither will determine what type(s) of morphological causative are possible in that language. In fact, there are several subcases,

leading to more than the traditional two types of causatives discussed in 4.3.1.

4.3.3.1 *True Double Accusative Languages*

Some languages appear to be marked in that (some of) their verbs can assign structural Case to more than one NP which they govern. Clearly, directed strict adjacency will not be a requirement for the PF interpretation of Case assignment for at least one of the structural Cases in such a language, since both cannot be adjacent to the verb.[18] In GB theory, most of the distinctive properties of direct objects come from their being governed, theta-marked, and assigned structural Case by the verb (cf. 2.1.4). Now, verbs can generally govern and theta-mark more than one NP, and in these languages they can, by assumption, Case-mark more than one as well. Thus such a language will have true double object verbs, where both of the NPs in question have (nearly) identical objectlike behavior; the existence of such verbs is the characteristic property of such languages. The classic example of this type from the literature is Kinyarwanda, a Bantu language spoken in Rwanda (Kimenyi (1980); see also Gary and Keenan (1977), Dryer (1983), Marantz (1984)):

(63) a. *Umugabo y-a-haa-ye umugore igitabo.*
man SP-PAST-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-e 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 diagnostic "direct object" properties. For example, either—or in fact both—of the postverbal NPs in (63a) can trigger object agreement (i.e. can cliticize) on the verb, a process which I continue to assume is related to structural Case assignment:

(64) a. *Umugabo y-a-**ki**-haa-ye umugore.*
man SP-PAST-**OP1**-give-ASP woman
'The man gave it to the woman.'
b. *Umugabo y-a-**ba**-haa-ye igitabo.*
man SP-PAST-**OP2**-give-ASP book
'The man gave them the book.'

c. *Umugabo y-a-**ki-ba**-haa-ye.*
man SP-PAST-**OP1-OP2**-give-ASP
'The man gave it to them.'

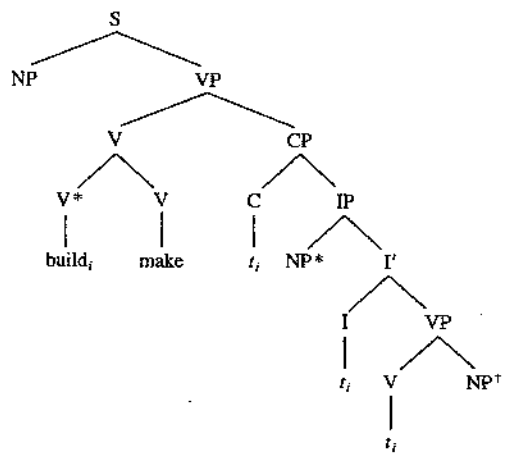
Similarly, either postverbal NP can become the subject when the verb is passivized:

(65) a. *Igitabo cy-a-haa-w-e umugore (n'umugabo).*
book SP-PAST-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-PAST-give-PASS-ASP book 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 be extracted by relativization and by clefting in identical fashion. Thus, Kinyarwanda is simply an exception to the functional generalization (3.4.3 (98)) that languages usually allow their verbs to only PF-identify one argument with a given Case-indexing device.

This special Case-marking property of Kinyarwanda gives it a way of realizing the morphological causative of a transitive verb, since both the causee and the lower object can potentially get accusative Case from the same verb form. In particular, suppose that the V moves to C and then is incorporated into the matrix verb, giving (66) (=(62a)):

(66)



Now, consider the government domain of the derived complex verb 'build-make' in this structure. By the Government Transparency Corollary, a

complex word will govern everything that the categories it incorporates governed in their base positions; this was seen in action in the relationship between noun incorporation and possessor "raising" effects in the last chapter. Since the matrix verb has incorporated V*, I, and C, it will therefore govern everything in the lower clause—including both NP* and NP†. The technical reason for this is that none of the categories CP, IP, or VP has a selecting head which is distinct from the complex V because of the incorporations; yet each of them is selected. Therefore, there are no barriers between the complex verb and either NP, and the government relation holds. We know that Kinyarwanda verbs can have the capability to assign two accusative Cases to NPs which they govern. Presumably, the complex verb in (66) will have this capacity, by virtue of inheriting one accusative Case-assigning feature from each of the verbal elements that it is made up of. Thus, it may assign Case both to the causee and to the lower object. This gives rise to grammatical morphological causatives, in which both NPs originating in the lower clause surface as morphologically unmarked immediately postverbal NPs (from Dryer (1983)):

(67) a. *Umugabo a-ra-som-eesh-a abaana ibitabo.*
man SP-PRES-read-CAUS-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-CAUS-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, which is the union of the theta grids of its constituents. 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 in (for example) governing object agreement on the causative verb:

(68) a. *Umugabo a-ra-**b**-uubak-iish-a inzu.*
man SP-PRES-**OP**-build-CAUS-ASP house
'The man is making them build the house.'
b. *Umugabo a-ra-**y**-uubak-iish-a abakozi.*
man SP-PRES-**OP**-build-CAUS-ASP workers
'The man is making the workers build it.'
c. *Umugabo a-ra-**yi-b**-uubak-iish-a.*
man SP-PRES-**OP-OP**-build-CAUS-ASP
'The man is making them build it.'

Finally, given that (67) is structurally similar to an Exceptional Case Marking structure in that the lower subject is governed by the verb, we expect

that this causee can become the surface subject in a passivized causative. In fact, it can:

(69) *Abakozi ba-r-uubak-iish-w-a inzu n'umugabo.*
workers SP-PRES-build-CAUS-PASS-ASP house by-man
'The workers are made to build the house by the man.'

A language which is otherwise quite different from Kinyarwanda but which also seems to fit in this typological group is Japanese. It would be very misleading to say that Japanese is a "double accusative" language, since its verbs never take two objects with the accusative Case particle *o*. Nevertheless, it seems likely that the "dative Case" particle *ni* can also be a structural Case assigned by the verb. Strong evidence for this is the fact that triadic verbs in Japanese, like their counterparts in Kinyarwanda, allow either of their objects to become the subject of a passive (data from Kuno (1973)):

(70) a. *John ga Mary ni kunsyoo o atae-ta.*
John-NOM Mary-DAT medal-ACC give-PAST
'John gave Mary a medal.'
b. *Mary ga John ni kunsyoo o atae-rare-ta.*
Mary-NOM John-by medal-ACC give-PASS-ASP
'Mary was given a medal by John.'
c. *Kunsyoo ga John ni Mary ni*
Medal-NOM John-by Mary-DAT
atae-rare-ta.
give-PASS-ASP
'The medal was given (to) Mary by John.'

Thus Japanese is at least a "true double structural Case" language. This again should allow morphological causatives on the (66) pattern. The actual structure of a Japanese causative is hard to interpret on face value alone because of its word order properties and its lack of object agreement (from Farmer (1984)):

(71) *Taroo wa Hanako ni sono hon o kaw-(s)ase-ta.*
Taro-TOP Hanako-DAT that book-ACC buy-CAUS-PAST
'Taro made/let Hanako buy that book.'

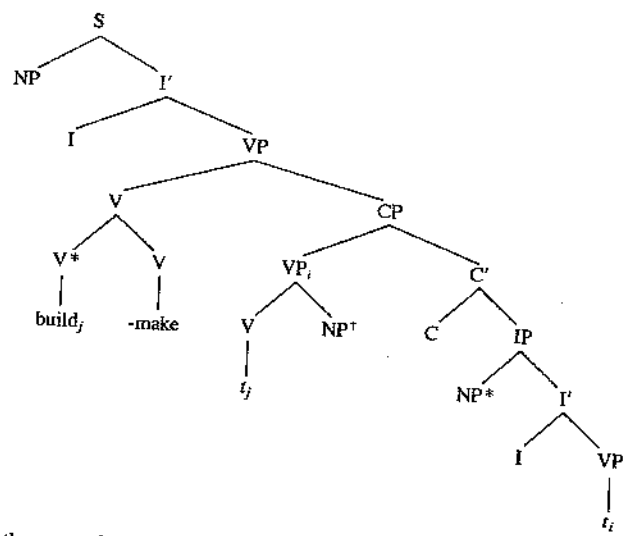
Since Japanese is an SOV language, this word order would be expected whether the causative were derived by V movement or by VP movement in the lower clause. However, the fact that the causee 'Mary' can become the subject of a passive, parallel to Kinyarwanda (69), shows that (66) is indeed the proper structure (see also 4.4.1 and 7.2.4.3):

(72) *Hanako wa Taroo ni sono hon o kaw-asase-rare-ta.*
Hanako-TOP Taro-by that book-ACC buy-CAUS-PASS-PAST
'Hanako was made by Taro to buy that book.'

Thus, we have a second example of this type. Trithart's (1977) dialect of Chichewa also falls into this category of languages according to her description; so too do certain other Bantu languages, including Luyia, Mashi (Gary (1977)), and Kimeru (Hodges (1977)), as well as Choctaw (Davies (1981)) and perhaps Sanskrit (see Aissen (1974)).

To complete the discussion of causatives in "double accusative" languages, note that the property of having verbs that assign more than one structural Case might allow the second causative structure—that of (62b) with VP-to-Comp movement—to be formed as well. This would yield a structure like (73) as an alternative to (66):

(73)



Now, if the complex V governs both NP^t and NP*, then it can assign them both structural Case, making this configuration possible as well. V surely governs NP^t by the GTC, since it has incorporated V*, NP^t's original governor. However, as it stands, V does not govern NP*: CP is a Minimality Condition barrier between the two because its head C is distinct from V and selects IP, where IP contains NP*. Thus, something else is needed for (73) to be possible. CP will, however, cease to be a barrier if the head C is deleted, a process that can be triggered by a lexical property of the matrix verb in some languages. In fact, this is exactly the property of Exceptional Case Marking verbs in English, according to the analysis given in 2.2.3.

Thus, if the causative morpheme of a "double accusative" language has this lexical feature, (73) will be possible; if not, it will not be. Languages, and perhaps even idiolects, would be expected to vary idiosyncratically on this point, since it turns on the existence of a marked lexical feature, having little interaction with the rest of the grammar.

Indeed, this describes correctly the empirical situation insofar as I know it. Thus, there is a difference between Kinyarwanda and Japanese in that the embedded object instead of the embedded subject can become the matrix subject when a causative verb is passivized in Kinyarwanda:

(74) *Inzu i-r-uubak-iish-w-a abakozi n'umugabo.*
house SP-PRES-build-CAUS-PASS-ASP workers by-man
'The house is being by the man made to be built by the workers.'
(cf. (67b), (69))

However, the embedded object cannot become the subject of the corresponding passive in Japanese:

(75) **Sono hon wa Taroo ni Hanako ni kaw-asase-rare-ta.*
that book-TOP Taro-by Hanako-DAT buy-CAUS-PASS-PAST
'That book was by Taro made to be bought by Hanako.'
(cf. (71), (72))

This difference can be explained if we assume that both (66) and (73) are found in Kinyarwanda, but only the former exists in Japanese. Consider first which passives are possible in structure (66). We know from the examples with basic triadic verbs that a passive verb can still assign structural Case to either one of its governed NPs; hence either NP can remain in the VP, allowing the other to move to subject position, with no case theory problems. If, however, the lower object NP^t moves to the matrix subject position, another condition of grammar, namely binding theory, will be violated: the trace is an anaphor which fails to be bound in the domain of the c-commanding subject NP*, thereby violating Condition A of Chomsky (1981). On the other hand, the causee NP* can move to the matrix subject position, because the trace it leaves is governed by the matrix verb and is not in the domain of any subject closer than its binder, satisfying Condition A. This accounts for the grammaticality of the passives in (69) and (72). Now, suppose that (73) is also a possible causative structure. This structure differs crucially from (66) in that here the VP movement has taken the lower object NP^t out of the c-command domain of the embedded subject NP*. NP^t is governed by the matrix verb, so its governing category is now the entire matrix clause. Therefore, this position can contain a trace of NP movement with the antecedent in the matrix subject position. The result of

this line of argument is that the lower object can become the subject of the passive of a morphological causative if and only if structure (73) exists in the language. This sort of passive exists in Kinyarwanda (74) but not in Japanese (75); hence (73) is possible in Kinyarwanda but not in Japanese. Based on the previous paragraph, I conclude that the causative morpheme in Kinyarwanda may trigger C deletion similar to English ECM verbs, but the causative morpheme in Japanese does not. Interestingly, Chichewa-B is like Japanese in barring the second passive of morphological causatives (Trithart (1977, 80–81)), even though it is related to Kinyarwanda both typologically and genetically. This confirms the low-level idiosyncratic nature of this type of ECM.[19]

In closing, I would like to suggest that this analysis of (75) and (74) is of more than narrow technical interest. In particular, the Japanese causatives are superficially identical to underived triadic verbs in the language; compare (70a) and (71). Nevertheless, differences between the two can be found, although only in more complex structures. Thus, they both allow their dative "object" to become the subject of a passive ((70b) and (72)), but only the underived verb allows the accusative "object" to do so ((70c) versus (75)). It is highly unclear why this mysterious gap should suddenly appear in just this place in the paradigm if language is purely a matter of functional requirements or of analogical generalizations from elementary patterns. This point is rather strong, because any patched-up explanation in these terms could not be universal, since there is no gap in the corresponding paradigm in Kinyarwanda. Indeed, this gap is equally mysterious if morphological causatives are taken as being derived purely in the lexicon and are thus assigned the same syntax as underived verbs (e.g. Grimshaw and Mester (1985)). If, however, language includes formal abstract principles (like the Projection Principle and Move-Alpha) that imply complex syntactic structures even when there is little or no immediate functional or analogical motivation for them, and if these principles apply to morphologically complex predicates, then the gap becomes readily explicable in independently motivated terms, as I have shown. More generally, a simple case theory parameter combines with an Incorporation analysis to explain in some detail the properties of morphological causatives in these languages.

4.3.3.2 *Partial Double Object Languages*

In contrast to the situation described in the last section are languages in which some verbs appear with two accusative (or unmarked) noun phrases, but the two NPs do not show the same range of syntactic behavior. I illustrate this from another Bantu language, Chimwiini (Kisseberth and Abasheikh (1977)):

(76) *Ni-m-pele Ja:ma kuja.*
1sS-OP-gave Jama food
'I gave Jama food.'

Superficially, (76) looks very much like its Kinyarwanda analogues in (63), but 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 (76)), but the theme NP may not. Furthermore, only the goal may become the subject of a passive sentence:

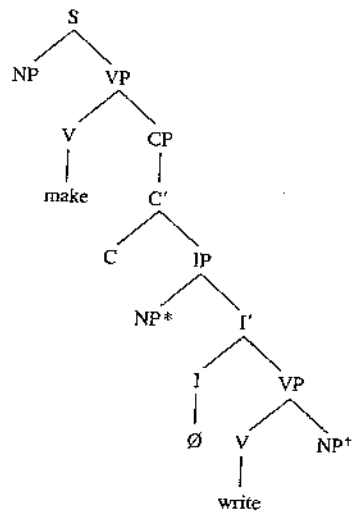
(77) a. *Ja:ma Ø-pel-a: kuja na: mi.*
Jama SP-gave-PASS food by me
'Jama was given food by me.'
b. **Kuja i-pel-a Ja:ma na: mi.*
food SP-gave-PASS Jama by me
'Food was given Jama by me.'

The marginality of the English gloss of (77b) shows that English double object constructions are like those of Chimwiini rather than those of Kinyarwanda in these respects.

I will not attempt a full explanation of these constructions here (see chapter 5). Nevertheless, an outline of a reasonable analysis will be enough to proceed. As usual, both postverbal NPs in (76) must get Case. To account for the contrast with Kinyarwanda, they must not both get structural accusative Case from the verb at S-structure; thus I assume that Chimwiini verbs never assign more than one such Case (cf. 3.4.3). Since it is the goal argument that generally behaves like a surface direct object, it must be the recipient of the one structural Case available. Given this, we can assume that the object agreement in (76) is a PF reflex of this Case, and that it is this Case that 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 receives a kind of INHERENT (accusative?) Case.[20] Inherent Case differs from structural Case in several related ways (cf. Chomsky (1986a)): it is generally associated with a particular thematic role (here theme/patient); it is assigned at D-structure rather than S-structure; and there is no adjacency requirement on its realization. Thus, the marked case theory property of "partial double object" languages like Chimwiini and English is that their verbs may assign this type of inherent Case in certain constructions.

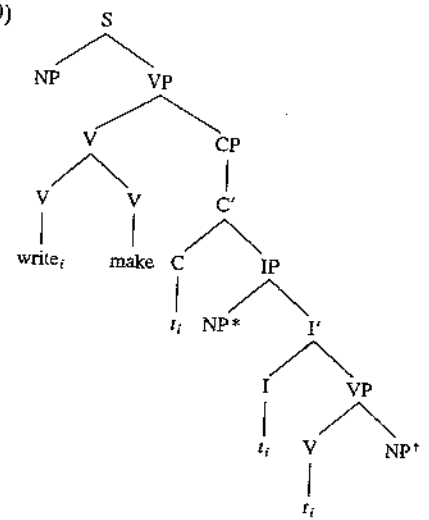
This special Case-marking property gives Chimwiini a way of realizing the morphological causative of a transitive verb similar to that of Kinyarwanda. Consider again the general D-structure for a morphological causative:

(78)



In this language, the lower verb can assign inherent Case to 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 C via I and on into the matrix verb, yielding the (62a) type S-structure, repeated in (79):

(79)



Note that this is structurally identical to (66), the primary structure for Kinyarwanda-type causatives. Now, the complex verb can only assign as many structural Cases as a simple verb in the language can (the Case Frame Preservation Principle); therefore, it is limited to one structural accusative Case this time, in spite of the fact that it is made up of two potential structural Case assigners. As before, the GTC implies that the complex verb governs and may assign Case to the causee NP*. Therefore, this NP will act like the direct object of the causative verb. NP† passes the Case Filter by virtue of its inherent Case, but it does not receive structural Case at S-structure, so it will not behave like a direct object. In fact, we expect this phrase to be by in large syntactically inert, as inherent Case NPs usually are. Note furthermore that in Chimwiini there is no possibility of a grammatical (62b)-type causative structure derived from (78) by moving the whole VP to Comp (see (73)). Even if C deletion took place such that both NPs would be governed at S-structure, the Chimwiini verb cannot assign structural Case to both of them. NP* in particular cannot receive structural Case from the verb because it is necessarily separated from the verb by NP†, making the realization of such Case under adjacency at PF impossible.[21] Nor can NP* receive inherent Case, because it neither meets the thematic restrictions on such Case (it is not a theme or patient), nor the structural restrictions (it is not governed by a verb at D-structure, where such Case is assigned). Thus, NP* can get no Case at all, and this derivation is ruled out by the Case Filter. This leaves (79) as the sole structure for Chimwiini causatives.

The result is that Chimwiini has morphological causative constructions which look like its "double object" verbs, with two unmarked postverbal NPs (data from Abasheikh (1979), cited in Marantz (1984)):

(80) *Mwa:limu Ø-wa-andik-ish-ize wa:na xaṭi.*
teacher SP-OP-write-CAUS-ASP children letter
'The teacher made the children write a letter.'

Moreover, only one NP will act like 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 (80) agrees with the causee 'children' because it assigns it structural Case. The complex verb may not agree with the lower object 'letter'. Furthermore, the causee may become the subject in the passive of a causative, while the lower object may not:

(81) a. *Wa:na wa-andik-ish-iz-a: xaṭi na mwa:limu.*
children SP-write-CAUS-ASP/PASS letter by teacher
'The children were made to write a letter by the teacher.'

b. **Xaṭi a-aṇdik-ish-iz-a wa:na na mwa:limu.*
letter SP-write-CAUS-ASP/PASS children by teacher
'The letter was made to be written by the children by the teacher.'

Here the complex verb's only structural Case has been eliminated by the passive; hence the normal recipient of that Case, the causee, must move to the subject position to find Case as in (81a). Otherwise, the structure will be ungrammatical, as in (81b).[22]

Also of this general type are certain languages which behave essentially the same, but whose "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 circumstances. Chamorro (Austronesian, Gibson (1980)) is an example of this. In this language, goal arguments of morphologically underived verbs most commonly appear as the object of the preposition *pära:*

(82) *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 as the surface direct object. When this happens, the theme argument shows up in the language's oblique case:

(83) *In nä'i si tata-n-mami **nu** i bäbui.*
1PEXS-give PN father-Ø-our **OBL** the pig
'We gave our father the pig.'

This oblique case has many uses in Chamorro, including marking instrumental NPs and the "*by*-phrase" NPs in passives and antipassives. Not surprisingly, it also marks the embedded object in a causative construction, thereby realizing its Case. This frees the embedded verb to move out of its VP to join with the matrix causative verb, which thereby governs and assigns Case to the embedded subject, as in (79). Thus, the causatives of transitive verbs in Chamorro have structural Case causees and oblique Case lower objects:[23]

(84) a. *Ha na'-taitai häm i ma'estru ni esti na lebblu.*
3sS-CAUS-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-CAUS-undress me the doctor OBL clothes-my
'The doctor made me take off my clothes.'

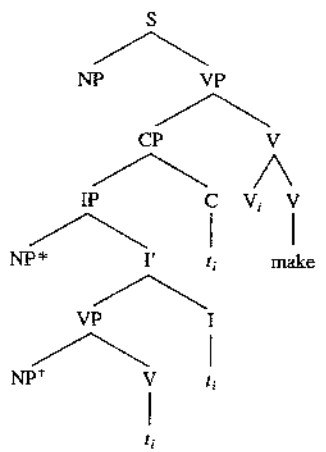
Gibson shows that the causee indeed has the "object" properties expected of an NP governed and assigned structural Case by the matrix verb. For example, it becomes the subject when the causative verb is passivized:

(85) *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.'

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. Thus, Chamorro is in the same typological class as Chimwiini; the only difference is that the inherent Case NP actually looks like it has inherent (i.e. oblique) Case in Chamorro. These languages seem to have what 4.3.1 called 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." I have explained how and why this type of causative exists crucially in languages which independently have underived "partial double object" verbs, thereby obviating the need for an actual rule of causative formation in these languages. Swahili (Bantu, Vitale (1981)) is also a language of this type.

Finally, note that all the languages which I have cited in this section have heads which assign Case to arguments that are on their right, rather than on their left. This is probably not a coincidence. The reason can be seen by looking at what structure (79) looks like when redrawn for a leftward Case assigning, 'SOV' language:

(86)



As usual, the complex verb governs both NP* and NP†. For a language with verbs that can assign two structural Cases, like Japanese, this is all that is needed. If, however, the verb can assign at best one structural and one inherent Case, there is a problem. The only NP that can receive the inherent Case is the lower object NP†, because it is the only one which is governed by a V at D-structure. Unfortunately, this time NP† is also the only NP that the complex verb can structurally Case-index, since it is the only NP which can be left-adjacent to the V at PF. In particular, NP* and NP† cannot switch orders at PF, because of the independent word order parameter which requires that subjects (like NP*) precede their predicates (which includes NP†); cf. Travis (1984). Therefore, the language has two ways to assign Case to NP†, but no way to assign Case to NP*. The conclusion is that the special case theory property under consideration in this section is of no help to SOV languages in forming VI structures, even though it is a help to SVO (and VSO) languages. Thus, my theory predicts a gap in the distribution of causative constructions: there should be no (strict) SOV languages with only partial "double object" triadic verbs which have Causative Rule 2 effects, with the causee alone acting like the surface object of the verb. This is correct for my language sample, although more languages must be checked.

4.3.3.3 *Non-Double Object Languages*

There exists a third class of languages, which can be distinguished from the previous two classes on the basis of their treatment of triadic "dative shift"–type verbs: these are languages which have no underived double object verbs at all. This difference is well known from the European languages: English has dative-shifted double object constructions, but French and the other Romance languages do not:

(87) a. John gave a book to Mary.
b. John gave Mary a book.

(88) a. *Jean a donné un livre à Marie.*
b. **Jean a donné Marie un livre.*
**Jean a laissé ses enfants beaucoup d'argent.*
**Ils ont envoyé Jean une lettre recommandée*, etc.

Chichewa-A (Mchombo) and Chichewa-B (Trithart) differ in exactly this way, as we saw in 4.3.1. Chichewa-A has verbs which select for two internal arguments, one a theme and the other a goal:

(89) 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. *Agalu a-na-tumiz-a nsomba kwa fisi.*
dogs SP-PAST-send-ASP fish to hyena
'The dogs sent some fish to the hyena.'
c. *Mvuu zi-na-lemb-a kalata kwa amalinyero.*
hippos SP-PAST-write-ASP letter to sailors
'The hippos wrote a letter to the sailors.'

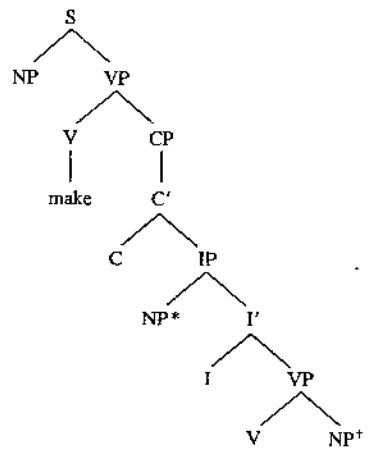
However, no morphologically underived verb can appear in a dative-shifted, double object frame:[24]

(90) a. **Mbidzi zi-na-perek-a nkhandwe msampha.*
zebras SP-PAST-hand-ASP fox trap
'The zebras handed the fox the trap.'
b. **Agalu a-na-tumiz-a fisi nsomba.*
dogs SP-PAST-send-ASP hyena fish
'The dogs sent the hyena some fish.'
c. **Mvuu zi-na-lemb-a amalinyero kalata.*
hippos SP-PAST-write-ASP sailors letter
'The hippos the sailors wrote a letter.'

The obvious way to account for the ungrammaticality of the examples in (90) and (88b) 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 Cases, and the ability of Chimwiini verbs to assign an extra inherent Case.

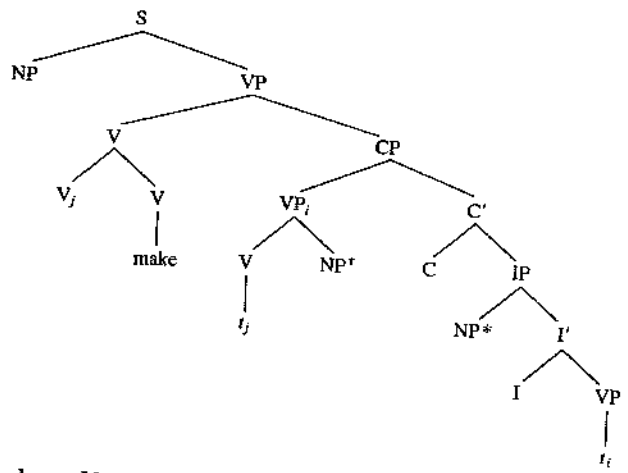
This Case-making property has different consequences for the syntax of morphological causatives. Consider again the standard VI construction D-structure:

(91)



As usual, the lower verb must 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-A there is no inherent Case which can be assigned to NP^{t} at D-structure, before the verb moves. Then, if the verb does move, stranding NP^{t}, NP^{t} will have no chance of getting Case, since verbal traces cannot assign Case, and NP* will intervene between it and the matrix V, given that it, as a subject, must precede its predicate. Thus, the structure will be ungrammatical. The only solution is for the verb to take NP^{t} along with it; thus, the entire lower VP must move to Comp, with the verb continuing on to the matrix. This yields a (62b)-type causative structure:

(92)



Here, the lower V governs NP^{t} before it incorporates; thus the verbal complex governs NP^{t} at S-structure, by the GTC. NP^{t} is also right-adjacent to the verb complex, so it can both receive accusative Case from V and realize that Case at PF without any difficulties. The problem now is NP*. As we saw in the discussion of Kinyarwanda and Japanese above (4.3.3.1), this NP will be governed by the verbal complex if and only if the causative verb is an Exceptional Case Marker, which triggers deletion of the C head of its clausal complement, thereby keeping CP from being a Minimality Condition barrier. Suppose that the causative morpheme does have this property. Even so, Chichewa-A verbs have the general property that they can assign only one Case each (cf. 3.4.3), whatever their internal structure, and here that Case has been claimed by NP^{t}. At this point, the special case theory

property of Chichewa-A comes to light—it has a very particular Case insertion rule which inserts a preposition before NP* in this configuration, thereby allowing it to pass the Case filter.[25]

These assumptions lead us to expect a morphological causative for Chichewa-A in which the thematic lower object behaves like the Case-marked direct object of the surface causative verb, while the causee is obliquely marked and relatively inert syntactically. This is correct:

(93) a. *Anyani a-na-meny-ets-a ana kwa buluzi.*
baboons SP-PAST-hit-CAUS-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-CAUS-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:

(94) a. *Anyani a-na-**wa**-meny-ets-a **ana** kwa buluzi.*
baboons SP-PAST-**OP**-hit-CAUS-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-CAUS-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:

(95) a. *Ana a-na-meny-ets-edw-a kwa buluzi (ndi anyani).*
children SP-PAST-hit-CAUS-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-CAUS-PASS-ASP children by baboons
'The lizard was made to hit the children by the baboons.'

Here the "lower object" can move to the matrix subject position without its anaphoric trace violating the binding theory because VP movement has taken it out of the domain of the embedded subject; the lower object (rather than the causee) must move because the structural Case it would normally receive within the VP disappears in the passive. In the terminology of 4.3.1, Chichewa-A 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 Mohanan (1983), the Dravidian language Malayalam seems to be a typologically different language which is 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,[26] and it alone can become the subject of a passive verb:

(96) *Amma kuṭṭikkə **aanaye** koṭuṭṭu.*
mother-NOM child-DAT **elephant-ACC** gave
'Mother gave the elephant to the child.'

(97) a. *Ammayaal kuṭṭikkə **puṣṭakam** 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** puṣṭakam 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 inherent Case to a theme/patient NP. Hence, it is assumed that neither possibility exists in the language. As expected, 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:

(98) a. *Amma kuṭṭiye-kkoṇṭə annaye ṇuḷḷ-icc-u.*
mother child-ACC with elephant-ACC pinch-CAUS-PAST
'Mother made the child pinch the elephant.'

b. *Raajaawəjoonine-kkoṇṭə meeṙiye keṭṭ-icc-u.*
king-NOM John-ACC with Mary-ACC tie-CAUS-PAST
'The king made John marry Mary.'

Furthermore, the thematic lower object becomes the subject of the passive of a causative verb; the causee cannot:

(99) a. *Ammayaal aana ṇuḷḷ-ikk-appeṭṭ-u.*
mother-INSTR elephant-NOM pinch-CAUS-PASS-PAST
'The elephant was caused to be pinched by mother.'

b. **Ammayaal kuṭṭi annaye ṇuḷḷ-ikk-appeṭṭ-u.*
mother-INSTR child-NOM elephant-ACC pinch-CAUS-PASS-PAST
'The child was made to pinch the elephant by the mother.'

Indeed, the correlation between lacking a dative shift structure and having a Rule 1 morphological causative is quite general. In addition to Chichewa and Malayalam, this class of languages includes Turkish, Jacaltec, Finnish, Quechua (in part), and many others. In 4.3.5 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 SOV languages which have partial double object constructions also need a special, causative-specific Case-marking process in order to have VI structures with transitive verbs. Thus, Chichewa-A has no extra provision for triadic verbs which it can use in causatives; these languages have such a provision, but not one which helps. The final result is the same. However, these SOV languages can use the same mechanisms for causatives that Chichewa-A does: VP-to-Comp movement plus incorporation; structural Case assignment to the adjacent lower object; C deletion and Case insertion for the embedded subject. The result will be Rule 1 causative patterns. The Eskimo languages seem to be of this last type.[27] West Greenlandic, for example, has triadic verb roots which can express either their theme or their goal in absolutive (structural) Case (Fortescue (1984)):[28]

(100) a. *Aningassa-t Niisi-mut tuni-ut-pai.*
money-PL(ABS) Niisi-DAT give-*ut*-3sS/3pO
'He gave money to Niisi.'

b. *Niisi aningaasa-nik tuni-vaa.*
Niisi(ABS) money-INSTR(PL) give-3sS/3sO
'He gave Niisi money.'

When the goal is absolutive, the theme argument appears in an oblique case (instrumental) which is widely used in the language. Only the absolutive NP can become the subject if either of these patterns is passivized (see Johns (1984)). Thus in these sentences, West Greenlandic looks like Chamorro. Nevertheless, its causative patterns are clearly like Chichewa-A and Malayalam, rather than like Chamorro (from Fortescue (1984)):

(101) a. *Quaq uatsin-nut niri-qqu-aa.*
frozen.meat(ABS) us-DAT eat-tell-3sS/3sO
'He told us to eat the frozen meat.'

b. *Irnirmi-nut akiqqani tuqu-qqu-ai.*
son-DAT enemies(ABS) kill-want-3sS/3pO
'He wanted his son to kill his enemies.'

Here the thematic lower object is clearly the structurally Case-marked NP, as shown by its absolutive case and its effects on the verbal agreement morphology, while the causee appears in oblique (dative) case. Moreover, the lower object may become the subject if one of these complex verbs is pas-

sivized, while the causee may not (A. Woodbury (personal communication)). Thus, West Greenlandic shows typical Causative Rule 1 behavior, in spite of having some "dative shift"; this is just as my theory expects, given that it is an SOV (head-last) language.

Before leaving this subsection, let us consider in more detail the special rule for Case-marking the causee in these languages. The invocation of such a rule is perhaps the least appealing and least principled aspect of the whole VI account of morphological causatives. Nevertheless, the evidence confirms that the process involved has exactly this nature. The rule is odd in that it introduces Case which is neither purely structural nor purely inherent: it cannot be structural, because the structural Case-assigning potential of the items involved is already exhausted by other NPs; it cannot be inherent, because the Case is neither thematically motivated nor present at D-structure. In fact, 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 usually not possible with the obliquely marked causee. On the other hand, if the causee were associated with inherent Case, this Case should be thematically relevant. Yet languages with similar Case systems differ 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 seems 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. Instead, it seems that the case ending or preposition is simply not involved in giving a theta role to the causee NP, but rather is idiosyncratic.

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 (see 4.3.5) mark causees of transitive verbs with the preposition which marks 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:

(102) 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:[29]

(103) a. *Ana a-na-ik-a mtsuko pa mpando.*
children SP-PAST-put-ASP waterpot on chair
'The children put the waterpot on the chair.'

b. **Amayi a-na-ik-its-a mtsuko*
women SP-PAST-put-CAUS-ASP waterpot
pa mpando kwa ana.
on chair to children
'The women made the children put the waterpot on the chair.'

In Italian, sentences parallel to (103b) are acceptable (Rizzi (personal communication)), suggesting that the Italian insertion rule is somewhat more tolerant in this respect. This low-level, detailed, idiosyncratic variation between languages is not the behavior we would expect of a central principle of case theory. It is, however, exactly what one would expect of a rule that must be explicitly learned as a part of the marked periphery of the language.[30]

The final proof that Case-marking of the causee is accomplished by a special rule comes from Gilyak, as cited by Comrie (1976). In this language, the causee is marked with a case ending which reportedly has no other use anywhere in the language. Clearly, this cannot be the automatic byproduct of some more general Case-marking process; it is, however, natural enough if Case assignment is by a special insertion rule.

Thus, 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 my analysis, which was forced to this conclusion on theoretical grounds. Once again, simple knowledge about the Case properties of a language permits us to explain the syntax of its morphological causatives in some detail.

4.3.3.4 *Other Languages*

At the beginning of this section, I observed that verb movement in causative constructions disrupts government and adjacency relations in a way that creates problems for case theory. The preceding three subsections have shown how special processes of Case assignment in different languages overcome these problems, thereby allowing causative constructions: some allow two accusative Cases per verb; some provide an inherent Case for theme arguments; some include a Case insertion rule to rescue stranded causees. All these processes are marked, however, and need explicit positive evidence in order to be learned. This leads 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 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 3 gives a way in which a NP can escape the Case Filter—its head can incorporate into the governing verb (3.4). This satisfies the crucial morphological identification requirement for theta role assignment, without taxing the verb's lexically specified Case-assigning abilities. In this light, consider dative shift–type verbs in Southern Tiwa. Incorporation of an unmodified animate noun is generally optional in this language. Yet, when the sentence contains a triadic verb with the goal appearing as the direct object (morphologically unmarked and governing verb agreement), incorporation of the theme nominal becomes obligatory (AGF):

(104) a. *Ta-'u'u-wia-ban hliawra-de.*
1s:A/A-**baby**-give-PAST woman-SUF
'I gave the woman the child.'

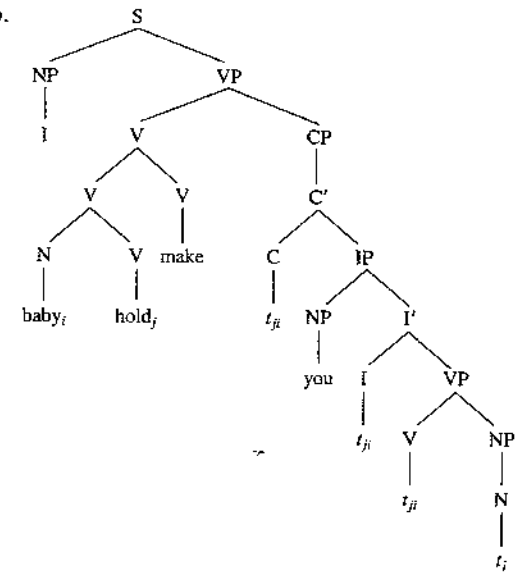
b. **Ta-wia-ban hliawra-de 'u'u-de.*
1s:A/A-give-PAST woman-SUF baby-SUF
'I gave the woman the child.'

(104b) 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, in Noun Incorporation. The theme NP may and must incorporate, thereby satisfying the Case Filter and still leaving the verb's one accusative Case for the goal NP. This explains why NI is obligatory in this structure.

Now, consider causatives. Here, the same strategy can be used: the lower verb can avoid a case theory bind in transitive sentences by incorporating its object N before it moves. This yields structures like the following:

(105) a. *I-'u'u-kur-'am-ban.*
1sS:2sO-**baby**-hold-CAUS-PAST
'I made you hold the baby.'

b.



Here, the lower object 'baby' is incorporated into the governing V, and thereby satisfies the Visibility Condition plus the Principle of PF Interpretation. Meanwhile, the causee 'you' is governed by the verb complex by virtue of Verb Incorporation; therefore it can receive accusative Case from this V. Hence, the sentence is grammatical, with the causee acting as the surface object in (for example) determining object agreement on the verb. If, however, the object is not incorporated, it will need to receive Case. The verb cannot strand the object NP, because there is no inherent Case to sustain it; the verb cannot take the object along, because there is neither an extra accusative Case nor a specially inserted Case marker to rescue the embedded subject. Therefore, NI is obligatory in Southern Tiwa causatives:

(106) **'U'ude i-kur-'am-ban.*
baby 1sS:2sO-hold-CAUS-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 construction. Essentially the same analysis seems to hold in Labrador Inuttut Eskimo, where Smith (1982) claims that only intransitive verbs can incorporate. If a semantically transitive verb is embedded under an affixal verb, it must

undergo Antipassive (or Passive) before it can move into the matrix verb. Given that Antipassive is a special subtype of Noun Incorporation (3.5.1), this strategy is essentially identical to that of Southern Tiwa.

The last possible situation is where the language has VI causatives, but has absolutely no special resources for satisfying or avoiding the Case Filter. Here, causatives of transitive verbs will simply be ungrammatical, ruled out by the Case Filter. This may be true in Moroccan Berber, in which causatives of intransitive verbs are free and productive, while causatives of transitive verbs are systematically impossible (Guerssel (personal communication)).[31]

(107) a. *Y-ss-jen Mohand arba.*
3sS-CAUS-sleep Mohand boy
'Mohand made the boy sleep.'

b. *Y-ss-iwd wydi arba.*
3sS-CAUS-fear dog boy
'The dog made the boy afraid, scared the boy.'

c. *Y-ss-ttc wryaz arba.*
3sS-CAUS-eat man boy
'The man made the boy eat, fed the boy.'

(108) a. **Y-ss-wt wryaz aggzin i-wrba.*
3sS-CAUS-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-CAUS-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)).[32]

4.3.4 On the Nature of Causative Variation

In this section, we have considered the following challenge to a Verb Incorporation analysis of morphological causatives: if there is no explicit rule of causative formation, how can differences between 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 (1984), and others? The preceding subsections have defended the thesis that a single, general process of V movement is indeed the heart of all morphological causative constructions, and that this process does not (indeed cannot) have intrinsic conditions on its application. Rather, the behavior of V movement in a given language is determined by the external

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 and theoretically attractive answer to the original question.

Indeed, there is one important domain in which the unity of causative constructions can be observed relatively directly: the causatives of intransitive verbs. Regardless of their differences in the causatives of transitive verbs, all the languages discussed in this section treat intransitive verbs similarly; the causee consistently acts like the direct object of the matrix clause with respect to government and Case. This can be seen in that the causee appears unmarked or in accusative case, triggers object agreement on the verb, and becomes the subject in passives, according to the properties of the language in question. Thus, in Kinyarwanda both causee and lower object behaved like surface objects in the causative of a transitive verb:

(109) *Umugore a-ryaam-iish-ije abaana.*
woman SP-sleep-CAUS-ASP children
'The woman made the children (go to) sleep.'
(Kinyarwanda; Kimenyi (1980))

In Chamorro, only the causee acted like a surface object:

(110) *Hu na'-kati si Maria.*
1S-CAUS-cry PN Maria
'I made Maria cry.' (Chamorro; Gibson (1980))

(111) *Ni-na'-fata'chung si Jose ni ma'estru gi ringkon.* (passive)
PASS-CAUS-sit PN Jose OBL teacher LOC corner
'Jose was made to sit in the corner by the teacher.'

In Chichewa-A (Mchombo) and Malayalam, only the thematic lower object acted like a surface object:

(112) a. *Buluzi a-na-sek-ets-a ana.*
lizard SP-PAST-laugh-CAUS-ASP children
'The lizard made the children laugh.' (Chichewa-A)

b. *Mulungu a-na-yer-ets-a kunja.*
God SP-PAST-clear-CAUS-ASP sky
'God made the sky clear.'

(113) a. *Buluzi a-na-**wa**-sek-ets-a **ana.*** (object agreement)
lizard SP-PAST-**OP**-laugh-CAUS-ASP children
'The lizard made the children laugh.'

b. *Ana a-na-sek-ets-edw-a (ndi buluzi).* (passive)
children SP-PAST-laugh-CAUS-PASS-ASP by lizard
'The children were made to laugh by the lizard.'

(114) *Acchan kuṭṭiye kaṟay-icc-u.* (case form)
father-NOM child-ACC cry-CAUS-PAST
'Father made the child cry.' (Malayalam; Mohanan (1983))

(115) *Acchanaal kuṭṭi . . . kaṟay-ikk-appeṭṭ-u.* (passive)
father-INSTR child-NOM . . . cry-CAUS-PASS-PAST.
'The child was made to cry by the father . . .'

Finally, in Berber causatives of transitive verbs are completely ungrammatical. Nevertheless, causatives of intransitive verbs have the same syntax as they do in these other languages:

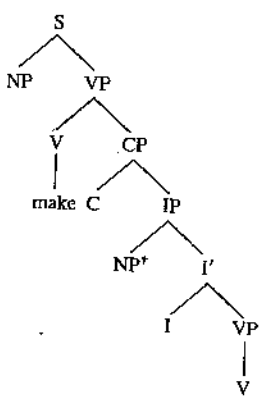
(116) *Y-ss-jen Mohand arba.*
3sS-CAUS-sleep Mohand boy
'Mohand made the boy sleep.'
(Berber; Guerssel (personal communication))

(117) *Y-ttw-s-ru wrba.* (passive)
3sS-PASS-CAUS-cry boy
'The boy was made to cry.'

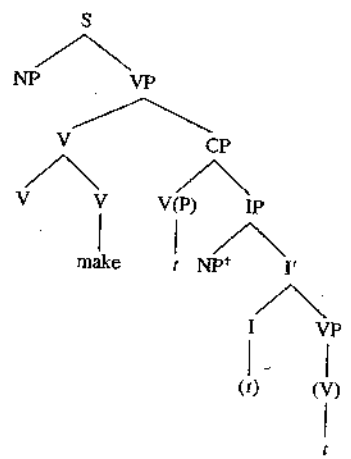
Over this range of data, it seems as though there is only one universal causative process after all.

This lack of idiosyncratic cross-linguistic variation in the causatives of intransitive verbs is explained by the VI analysis. With these verbs, the Case-marking pressures on causative constructions which were the driving force behind their variation across languages are completely absent, because there is one less NP which needs Case. The relevant structures are:

(118) a.



b.



Either the lower V or the whole VP may move to clause-peripheral position 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 it must take the VP along; nor is there any reason why it cannot. Either way, once the verb has incorporated into the matrix, the Government Transparency Corollary (plus possibly C Deletion) allows the causee NP† to be governed by the matrix verb complex. Therefore, NP† may receive accusative Case from the matrix. There is no competition for this Case since there are no other NPs in the VP. Thus the structure will be grammatical, with the causee showing "object" behavior with respect to the surface causative verb. Crucially, this result is independent of whether V or VP initially moves, and it does not depend on any of the marked parameters of case theory. Thus, the theory accounts for the fact that the causatives of intransitive verbs will be more or less identical in all verb incorporating languages.

This result is important, because if one assumes, contra my hypothesis, that causatives are generated by construction-specific GF changing rules, there is no clear reason why causatives should not vary as much with intransitive verbs as they do with transitive verbs. For 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 (112), Chichewa would have sentences like those in (119):

(119) a. **Buluzi a-na-sek-ets-a **kwa** ana*
lizard SP-PAST-laugh-CAUS-ASP *to* children
'The lizard made the children laugh.'

b. **Mulungu a-na-yer-ets-a **kwa** kunja*
God SP-PAST-clear-CAUS-ASP **to** sky
'God made the sky clear.'

This hypothetical causative rule could be schematized as follows:[33]

(120) CAUSATIVE RULE 1′: (unattested, cf. (41), (47))

GF in embedded clause	*GF in surface clause*
subject	oblique
object	object

Such a pattern would a priori be at least as simple as the one Chichewa actually follows ((41)); if anything it would be simpler, since it treats thematic subjects the same regardless of the transitivity of the lower verb. Nevertheless, this does not happen in Chichewa or other languages of the same Case-marking type. There is no immediate account of this in a system that includes explicit causative formation rules, but there is in the Verb In-

corporation analysis. Indeed, the fact that uniformity appears as soon as marked processes are not needed illustrates the fundamental unity of morphological causative constructions.

In fact, this last issue is a very general one for any framework which defines particular relation-changing "rules" over the grammatical functions such as "subject" and "object," whether in lexical or syntactic terms. Such an approach can trivially deal with the question of diversity in morphological causatives by stipulating different GF 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, when many other permutations are conceivable? A theory that seeks to explain the structure and typology of natural language clearly must address this question as well. The theory developed here felicitously avoids the whole question, for the simple reason that if there is no causative rule stated in the grammar, then (120) cannot be the causative rule. Rather, causatives are formed by the general process of movement with independently known properties, interacting with the parameterized constraints of universal grammar. It so happens that the structures so constructed can follow patterns (41) and (47) but not (120), now for fundamental reasons.

Finally, any theory that includes a specific rule of causative formation claims implicitly that what type of causative construction a language has is independent of the Case-marking possibilities for triadic verbs in that language. However, we have seen in detail that the two are not independent; rather, the causative type is determined by these Case-marking properties.[34] Here the comparison of Chichewa dialects in 4.3.1 is especially striking: the language apparently switched causative types, but necessarily the "dative shift" verb constructions changed as well. Thus, all theories with such construction-specific rules miss an important generalization.[35] This generalization is captured in the incorporation theory, where it is exactly this Case theoretic variation that, through complex interaction with other principles, induces variation in causatives. I conclude that causative variation, which at first made the pure Incorporation analysis look unlikely, has in fact provided some of the strongest evidence in favor of it, since it has unveiled and explained a deep correlation between different syntactic constructions.

4.3.5 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 (1986)). Simple examples are:

(121) 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 shows the same Rule 1 causative pattern as Chichewa-A and Malayalam (4.3.3.3). This result is confirmed in that the causee argument of (121a) and the lower object argument of (121b) may each appear as direct object clitics on the matrix verb:

(122) a. *Maria lo fa lavorare e.*
Maria him makes work
'Maria makes him work.'
b. *Maria la fa riparare e 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:

(123) a. *Giovanni è stato fatto lavorare (molto).*
Giovanni was made work (a lot)
'Giovanni was made to work.'
(Belletti, personal communication)
b. *La macchina fu fatta riparare a Giovanni.*
The car was made fix to Giovanni
'The car was made to be fixed by Giovanni.'

Thus 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 systemati-

cally lack dative shift constructions. Thus, the correlation between Case marking and causative construction type discussed above generalizes to Romance.

Nevertheless, the causative verb *fare* and the lower verb simply do not become a single word morphologically. Thus, in examples like (121), 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 elements. 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 appear between the two.[36] Normal morphological words can, of course, not be so interrupted.

This collection of facts suggests 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 the study of Romance causatives in which two independent verbs become "reanalyzed" somehow as one verb (e.g. Rouveret and Vergnaud (1980)). In the current context, this Reanalysis 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 (124) are equivalent:

(124) a. $[_{YP} \ldots [X_i{+}Y]_Y \ldots [_{XP} t_i \ldots]]$
b. $[_{YP} \ldots Y_i \ldots [_{XP} X_i \ldots]]$

In effect, the same relationship holds between the two head positions in both cases, and it does not matter where the lower head actually happens to appear phonologically.

In the GB framework, it is natural to 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^0 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; 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 is the primary principle which determines the distribution of Incorporation, the distribution of LF Incorporation will be exactly the same. Thus, LF Incorporation is exactly the "incorporation without the incorporation" which we sought; I will maintain that the proper content of the notion "reanalysis" is exactly this.[37]

Once this notion is available, we have an account of why the syntax of Italian causatives is identical to that of Chichewa causatives. *Fare* is not an incorporater, but it is a "reanalyzer" (an LF affix?) and must enter into the Reanalysis relationship with another verb at LF. This may be a semi-semantic property of the verb, to the effect that it forms "complex semantic predicates," since 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 imply that the matrix verb will govern and Case-index the object of a transitive verb or 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 dative insertion rule. This analysis is an heir of the VP-preposing analyses of Romance causatives (Kayne (1975), Rouveret and Vergnaud (1980), Burzio (1981; 1986), and others).[38] However, it adds to these the insight that possible Reanalysis structures are the same as possible instances of overt morphological merger. This increases the empirical

content of the theoretically very slippery notion of Reanalysis. Hereafter, I will consider instances of Reanalysis to be instances of Incorporation in good standing.

4.3.6 Verb Incorporation and Control Predicates

Finally, there is one more type of GF changing pattern frequently observed in Verb Incorporation structures that remains to be discussed. In this pattern, the object of the lower clause acts like the object of the complex verb if there is one, and the subject of the lower clause is obligatorily missing. If we were to write a descriptive rule similar to (41) and (47) to express this, it would be:

(125) RULE 3

Initial GF	*Final GF*
embedded object	object
embedded subject	Ø
matrix subject	subject

Furthermore, the thematic subject of the lower verb which is missing on the surface is always interpreted as being coreferential with the matrix subject. The distinction between this and the other "causative" patterns has been noted by many; it is made very clearly in Smith (1982), Grimshaw and Mester (1985), and (in somewhat different terms) in Rizzi (1982) and Burzio (1986).

Rather than being an alternative VI pattern which shows up in a typologically definable group of languages, the Rule 3 pattern generally coexists in a single language with one of the other patterns already discussed, and the specific matrix verb determines which GF changing pattern appears. The following examples illustrate these facts in a variety of languages:

(126) *Kambuku a-ku-**umb-its**-a mtsuko kwa kadzidzi.*
leopard SP-PRES-**mold**-CAUS-ASP waterpot to owl
'The leopard is making the owl mold a waterpot.' (Chichewa)

(127) a. *Ndi-**ka-pemp**-a pamanga.*
1sS-**go-beg**-ASP maize
'I am going to beg maize.'
b. *Kati madzi banu **dza-man**-e-ni ine.* (Watkins (1937))
if water your **come-refuse**-ASP-IMPER me
'If it is your water, come (and) refuse me.'

(128) *Acchan kuṭṭiye kaṙay-icc-u.*
father-NOM child-ACC cry-CAUS-PAST
'Father made the child cry.' (Malayalam; Mohanan (1983))

(129) *Kuṭṭikkə **uraŋŋ-anam.*** (cf. *kutti urann-i,*
child-DAT **sleep-want** 'The child slept')
'The child wants to sleep.'

(130) *Angutik anna-mik **taku-Ø-kqu**-ji-juk siitsi-mik.*
man(ABS) woman-INSTR **see**-APASS-**ask**-APASS-3sS squirrel-INSTR
'The man asks (wants, orders) the woman to see the squirrel.'
(Labrador Inuttut Eskimo; Smith (1982))

(131) a. *Angutik-p annak **taku-guma**-vaa.*
man-ERG woman(ABS) **see-want**-3sS/3sO
'The man wants to see the woman.'
b. *Pisu-**gunna**-gunna-i-tuk.*
walk-**be.able**-be.able-NEG-3sS
'He is not able to walk now.'

(132) *Li ho **fatti** leggere e a Mario.*
them have **made** read to Mario
'I have had Mario read them.' (Italian; Burzio (1986))

(133) *Li ho **voluti** leggere e.*
them have **wanted** read
'I have wanted to read them.'

For each language, the first example is a causative, with the embedded subject appearing either as an oblique (e.g. (126)) or a direct object ((128)) depending on the transitivity of the base verb. The remaining examples in each group illustrate complex predicates that are characterized by (125): the embedded subject is null, and when there is an embedded object it appears as a direct object. This last fact is particularly obvious in the Labrador Inuttut sentence (131a), where the embedded object 'woman' appears in absolutive Case and governs object agreement on the verb, and in the Italian (133), where the object pronoun cliticizes to the matrix verb. The lower object can even become the subject of (one type of) passive in Italian:

(134) *Quei libri si vorrebbero leggere t subito.*
these books 'PASS' would-want read immediately
'These books (we) would want to read immediately.'

In the traditional Eskimo literature, affixes like *-guma-* are distinguished from affixes like *-qqu-*, the latter being called "double transitive postbases." In the recent generative literature, structures like (133) are called RESTRUCTURING constructions, in contrast to the causatives (Rizzi (1982), Burzio (1986)).[39]

The difference between these two types of Verb Incorporators becomes understandable when one compares their English glosses:

(135) a. The leopard is making [the owl mold a waterpot].
b. Father made [the child cry].
c. The man asks [the woman to see the squirrel].
d. I have had [Mario read them].

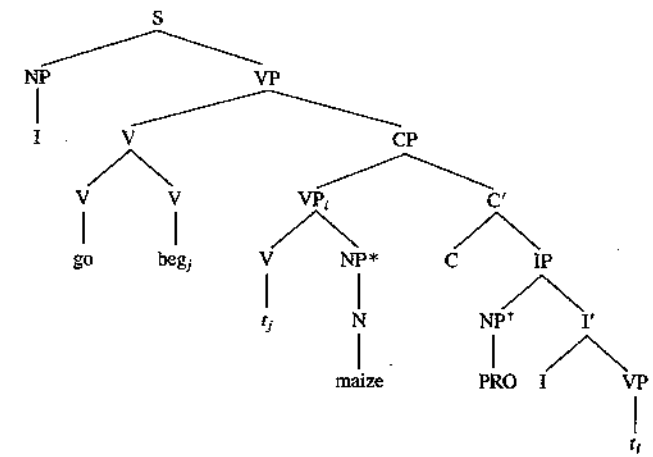
(136) a. I am going [PRO to beg maize].
b. The child wants [PRO to sleep].
c. The man wants [PRO to see the woman].
d. He is not able [PRO to walk] now.
e. I have wanted [PRO to read them].

(136) has the English translations of the new Rule 3 structures, while (135) has the translations of the old Rule 1 or Rule 2 structures. Note that (136) is exactly like its VI counterparts in that the thematic subject of the lower clause is phonologically null and is interpreted as coreferent with the matrix subject. (135), on the other hand, is like its counterparts in that the lower clause subject appears as an overt lexical NP which is disjoint from the matrix subject in reference. Now the difference between (135) and (136) is very familiar: in GB terms it is the difference between Exceptional Case Marking verbs and Control verbs. Thus we can develop an account of Rule 3 VI constructions by setting up an analogy—ECM is to Control as causatives are to Rule 3 predicates—and solving for the unknown element.

The key difference between ECM and Control is one of government. In the ECM constructions, the matrix verb governs the subject of its complement. This means that it can assign Case to that subject, allowing lexical NPs to appear; however it bars the null pronominal anaphor PRO from appearing, since binding theory would be violated (see 2.1.3). The Control verbs, on the other hand, do not govern the subject of their complements. This time lexical NPs cannot appear in this position since they will not receive Case, but PRO (which does not need Case) may, since it will have no governing category and hence avoids the binding theory. The theory of control determines that PRO must have the matrix subject as an antecedent. The question then becomes, why do ECM verbs govern into their complements while Control verbs do not? The usual answer is that ECM verbs have a lexical property which sanctions something that causes there to be less material between the verb and the lower subject than normally expected. The particular process which I have chosen is COMPLEMENTIZER DELETION, which removes the C of the lower clause without otherwise affecting its structure (see 2.2.3). The effect of this is that CP will no longer be a Minimality Condition barrier at the relevant level, since it has no head distinct from the verb. Hence, the lower clause will be transparent for government. Control verbs do not sanction this process, and CP remains a barrier.

Now, recall that this same C Deletion process played a role in the account of causatives. In particular, it was needed in the VP-to-Comp causative constructions in order to make Case marking of the embedded subject possible (4.3.3.1 and 4.3.3.3). Thus, the causative morphemes in these languages were assumed to have essentially the same lexical feature as ECM verbs in English, and for essentially the same reason. Then, we can say that the verbal morphemes in (127), (129), (131), and (133), like English Control verbs, lack this feature. This means that the embedded subject will remain ungoverned. Case theory and binding theory then imply that PRO and only PRO may appear there as before. Hence, no overt embedded subject will ever surface with these verbs. Furthermore, control theory will require that the matrix subject be the antecedent of this PRO, just as in (136). Thus, the interpretation as well as the form of these sentences follows from independent principles. The S-structure of these constructions is:

(137) (cf. (127a))



where C is phonologically but *not* syntactically null. Note that since PRO does not need Case, there is at most one NP, the lower object, which needs Case from the verbal complex. Thus, core Case assigning properties are enough to make these constructions possible. In this way, they are like the causatives of intransitive verbs, where there is no competition for the matrix verb's structural Case. Hence, their syntax should be relatively uniform across languages, like the causatives of intransitives but unlike those of transitives, where marked additions to case theory are needed. This seems to be true, the examples in (127)–(133) serving as partial illustration.

In conclusion, the analysis of causative constructions in terms of VI extends in a natural way to include this final type of complex predicate for-

mation. Indeed, no principles or stipulations are needed to explain its properties beyond those already in use for complementation in English. This nicely rounds out the demonstration that the theory of X^0 movement explains both the variation seen in complex predicate formation and the limits of that variation.

4.4 The Complex Structure of Verb Incorporation Constructions

Structures in which Verb Incorporation has taken place look very much like simple, underived monoclausal sentences. One reason for this is that they have only one morphological verb. Even more strikingly, the Case patterns seen in VI constructions are almost always Case patterns seen with solitary underived verbs. In particular, VI verb complexes look like dative shift–type verbs, as documented in detail in the preceding section. To repeat some of the most striking examples, Kinyarwanda has full double objects in both instances:

(138) a. *Umugore y-iim-ye abaana ibiryo.*
woman SP-refuse-ASP children food
'The woman refused the children food.'
b. *Umugabo a-r-uubak-iish-a abaantu inzu.*
man SP-PRES-build-CAUS-ASP people house
'The man is making the people build the house.'

Chimwiini has one "true" object and one unmarked inherent Case object in both:

(139) a. *Ni-m-pele Ja:ma kuja.*
1sS-OP-gave Jama food
'I gave Jama food.'
b. *Mwa:limu Ø-wa-andik-ish-ize wa:na xati.*
teacher SP-OP-write-CAUS-ASP children letter
'The teacher made the children write a letter.'

Chichewa (the "A" dialect) must mark one of the postverbal NPs with the dative preposition *kwa* in the two constructions:

(140) a. *Mbidzi zi-na-pereka msampha kwa nkhandwe.*
zebras SP-PAST-hand trap to fox
'The zebras handed the trap to the fox.'
b. *Anyani a-na-meny-ets-a ana kwa buluzi.*
baboons SP-PAST-hit-CAUS-ASP children to lizard
'The baboons made the lizard hit the children.'

And Southern Tiwa must incorporate one of them:

(141) a. *Ta-'u'u-wia-ban hliawra-de.*
1s:A/A-**baby**-give-PAST woman-SUF
'I gave the woman the child.'
b. *I-'u'u-kur-'am-ban.*
1s:2s-**baby**-hold-CAUS-PAST
'I made you hold the baby.'

These similarities between VI and underived structures have led some researchers to completely assimilate morphological causatives to basic double object verbs, by forming the complex verbs in the lexicon and/or the morphological component (e.g. Mohanan (1983), Grimshaw and Mester (1985), Williams and DiSciullo (to appear)). Then the syntax of both is the same in every way. Others begin with a biclausal structure but collapse the structures into one before surface structure, thereby assimilating causatives to triadic verbs at that level (Gibson (1980) and other RG works; Marantz (1984)).

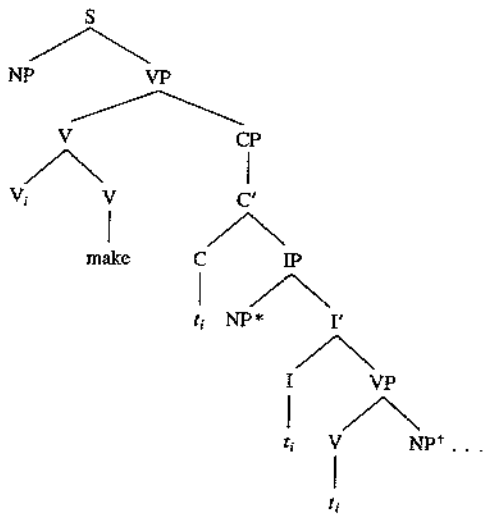
In the view put forth here, in contrast, the Uniformity of Theta Assignment Hypothesis and the Projection Principle require an initial biclausal structure for causatives, and that structure must be maintained at all syntactic levels. Thus, the (b) examples are hypothesized to be systematically different from the (a) examples above in that the (b) examples all have extra S nodes that categorially represent the complementation properties of the causative affixes. True, there are well-motivated reasons why this difference will be hard to see on the surface. In particular, it will not show up with respect to government theory, since the complex causative verb, like its underived counterpart, governs everything in its VP (the Government Transparency Corollary). Similarly, the difference will not show up with respect to case theory,[40] since the complex causative verb can assign (only) as many Cases as its underived counterpart, given that all Case dependencies must be morphologically interpretable by PF. However, the extra clausal node should have effects for the other subtheories of the grammar, in particular for binding theory and bounding theory. In both of these subtheories, S (=IP) nodes play an important role, either in defining the domain in which anaphoric elements must be bound, or in determining how far a particular element can move. Hence, the presence of the extra phrase structure in the (b) sentences as compared to the (a) sentences should be detectable from these viewpoints. This section will be devoted to showing that biclausal effects are indeed found in morphological causatives with respect to these two subtheories. This will provide solid evidence for the V movement analysis. Furthermore, it will support the va-

lidity of the Projection Principle in its strongest, most natural, and most restrictive form.

4.4.1 Binding Theory

Consider the causatives which are formed by preliminary V-to-C movement. By the Projection Principle, they have an S-structure such as:

(142) a.



Note that NP†—and indeed all the dependents of the lower verb—is in a clause with a "specified subject" accessible to NP†, namely NP*. Thus, the embedded clause is the governing category of these elements, and their anaphoric possibilities should therefore be determined by this clause, rather than the matrix. In fact, causatives in these languages are essentially like Exceptional Case Marking structures, in that a nominal (NP*) looks like an object because it receives accusative Case from the matrix verb, but still acts like a subject in creating a referentially opaque domain for elements it c-commands.

Indeed, there is strong evidence that this is correct in many languages, as pointed out by Marantz (1984). For example, Chimwiini is a "partial double object" language and has causatives of the V-to-C type (4.3.3.2). It also has a reflexive anaphor *ru:hu-* which appears in "object" positions and which must take a subject antecedent within its governing category (Abasheikh (1979)). A simple example is:

(143) *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:

(144) a. *Mi m-phik-ish-ize ru:hu-y-a cha:kuja.*
I 1sS-cook-CAUS-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-CAUS-ASP child himself
'I made the child hit himself.'

An anaphor in the embedded object position cannot take the matrix subject as an antecedent, however:

(145) **Mi ni-m-big-ish-ize Ali ru:hu-y-a.*
I 1sS-OP-hit-CAUS-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, and in that it blocks the anaphor from taking a more distant antecedent. Indeed the pattern of grammatical sentences in Chimwiini is exactly the same as that in the English glosses, which are typical examples of ECM in this regard. This is exactly as expected, since the causee NP* is still a structural subject. The grammaticality pattern here is the opposite of the one that would appear with underived words, where the morphologically defined object could not be an antecedent and the subject could be.

Gibson (1980) illustrates a similar situation 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:

(146) *In ätan **maisa** häm gi hänum.*
1P.EX-look **self** we LOC water
'We saw ourselves in the water.'

Maisa cannot signal a link between a pronoun and an antecedent outside its governing category:

(147) **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:*

(148) *Siempri un na'-malangu-n maisa hao.*
surely 2sS-CAUS-sick self you
'You will make yourself sick.'

More significantly, the causee acts like a subject in that a referential link between it and the embedded object can also be signalled by *maisa:*

(149) *In na'-fa'gasi-n maisa gui' si Juan ni häpbun.*
1P.EX-CAUS-wash self him PN Juan with soap
'We made Juan wash himself with soap.'

Again, we see the "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.

Japanese is typologically different from Chimwiini and Chamorro, in that it can assign two structural Cases rather than only one. However, it is like them in that its causatives take the (142) pattern (4.3.3.1). Also like them, the causee behaves like a subject in being a valid antecedent for a reflexive element inside the lower VP, even though it is Case-marked like an object (data from Kuno (1973)):[41]

(150) *John ga Mary ni zibun no uti de hon o yom-(s)ase-ta.*
John-NOM Mary-DAT self-GEN house in book-ACC read-make-PAST
'John made Mary read the book in her own house.'

This is true in spite of the fact that, with underived verbs, NPs in the object cases cannot be antecedents of reflexives:

(151) **John ga Mary o zibun no uti de korosi-ta.*
John-NOM Mary-ACC self-GEN house in kill-PAST
'John killed Mary in her own house.'

Indeed, there are minimal contrasts between causatives and underived verbs with the same Case frames: the latter can have the nominative NP as an antecedent, but not the dative NP:

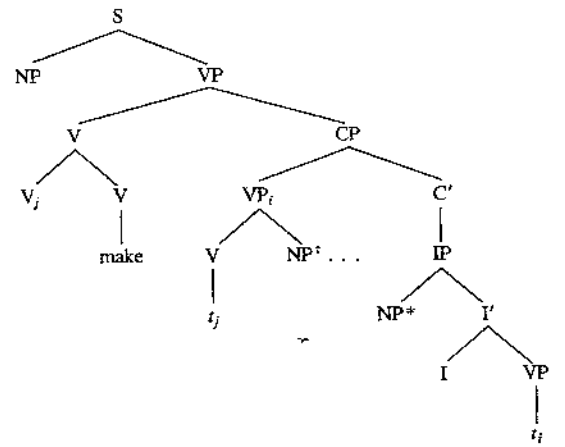
(152) *John ga Bill ni zibun no syasin o mise-ta.*
John-NOM Bill-DAT self-GEN picture-ACC show-PAST
'John$_i$ showed Bill$_j$ a picture of himself$_{i,*j}$'

This well-known and striking contrast is explained by the Projection Principle, which (together with the UTAH) requires a complex biclausal structure with two subjects for (150), but forbids one for (152).[42]

In contrast to these cases, causatives which are derived by VP movement change the c-command relationships between NPs in the course of the derivation. In particular, object NPs are taken out of the domain of their

original subject, thereby changing their governing category. Thus, we expect the anaphoric possibilities to be somewhat different in languages with these causatives. The relevant S-structure will have the following form:

(153)



Now, a subject-oriented anaphor in the original embedded VP—either NP† or something contained in one of its sisters—is no longer c-commanded by NP*; thus NP* cannot be its antecedent in this type of causative construction.[43] However, the anaphor is now governed by the matrix verb complex by the GTC, and the smallest category with a possible antecedent for it is the matrix clause. Thus, the whole matrix clause will be its governing category, and the matrix subject will be a viable antecedent. The result is that the anaphoric possibilities of lower VP material in these languages will be the same as those of underived verbs. Biclausal binding theory effects disappear, because everything moves out of the lower clause.

Malayalam has no "dative shift" structures, and thus has causatives with the structure of (153) (4.3.3.3). Indeed, Mohanan (1983) describes the predicted distribution for the Malayalam reflexive *swa-* 'self', which necessarily takes a subject as antecedent: the matrix subject can fulfill this role, but the embedded subject causee cannot (from Marantz (1984)):

(154) *Amma kuṭṭiyekkoṇṭə aanaye **swaṇṭam** wiiṭṭil weccə*
mother-N child-ACC with elephant-ACC self's house at
ṇuḷḷ-icc-u.
pinch-CAUS-PAST
Mother made the child pinch the elephant at **mother's/*child's** house.

This is the opposite pattern of that found in V-to-C causatives, where the nominal contents of the VP remain in the embedded clause; compare Chinwiini (144)–(145) above. The difference is fully explained by the movement analysis of causatives.

These results are confirmed and extended by the Eskimo languages, which are VP-to-Comp even though they allow some dative shift, because of their SOV word order (4.3.3.3). Thus, an anaphoric possessor of the thematic lower object can only have the matrix subject as its antecedent and not the dative case causee (Central Alaskan Yupik; A. Woodbury (personal communication)):

(155) *Arna-m annga-ni tuqute-vkar-aa ing'u-mun.*
woman-ERG brother-3REFL(ABS) kill-make-3sS/3sO guy-DAT
'The woman made the guy kill her/*his brother.'
(Cf. *Ing'u-m annga-ni tuqut-aa.* 'That guy killed his brother.')

This is parallel to Malayalam (154). However, anaphoric possessors of certain oblique Case constituents of the embedded clause show the opposite behavior: they have the causee as antecedent, and not the matrix subject. The following illustrates this for an instrumental case phrase in West Greenlandic Eskimo (Woodbury and Sadock (1986), from Kleinschmidt):

(156) *Isuma-mi-nik oqalo-rqu-vaa.*
mind-REFL-INSTR speak-order-3sS/3sO.
'He$_1$ orders him$_2$ to speak *his$_1$/his$_2$ own mind.'
(cf. *Isuma-mi-nik oqalug-poq* 'He$_2$ speaks about his$_2$ own mind')

This pattern is more reminiscent of Chimwiini than of Malayalam. The contrast between (156) and (155) is readily explained if we simply assume that oblique phrases like 'about his mind' are not generated in the (smallest) VP projection. Then, when the VP moves to Comp, they, unlike objects, will be left behind within the domain of the subject NP*. The embedded S is therefore still their governing category, and only NP* is close enough to be a valid antecedent.[44]

In conclusion, VI constructions do not always behave like underived monoclausal structures with respect to binding theory, as a simple lexicalist account would expect. Rather, "causees" that look like objects often act like additional subjects, thereby qualifying as antecedents for anaphors and creating opacity effects between the anaphors and the obvious subject. Moreover, it is wrong to simply patch this up by stipulating that "causees" always have these effects, perhaps because they could have been subjects under other circumstances (e.g. Farmer (1984)): they do not have the effects in Malayalam and Eskimo, for example. In order to make the necessary distinctions, the more complex phrase structures for VI constructions

implied by the Projection Principle and the independently motivated V movement options are needed. Given these structures, one can account for when the causee does and does not create opacity effects with respect to a given anaphor purely in terms of standard binding theory.

4.4.2 Bounding Theory

Binding theory gives strong evidence for the syntactic biclausality of V-to-C type VI structures, but most of this evidence disappears in VP-to-Comp type VI structures for independent reasons. Nevertheless, the structure of VP-to-Comp causatives is such that another type of evidence for their biclausality appears, evidence from bounding theory. The work of Rizzi (1982) has shown that Subjacency, the core principle of bounding theory, is parameterized, coming in both more and less restrictive versions. Hence, the discussion will be broken into two parts, one for each setting of this bounding theory parameter.

4.4.2.1 *Strong Subjacency: Chichewa*

Consider the following paradigms from relative clauses in Chichewa:[45]

(157) 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-ASP
'This is the elephant that the hare hit.'

(158) a. *Kalulu a-na-lir-its-a njovu.*
hare SP-PAST-cry-CAUS-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-CAUS-ASP
'This is the elephant which the hare made cry.'

(159) a. *Kalulu a-na-bay-its-a njovu kwa alenje.*
hare SP-PAST-stab-CAUS-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 alenje.*
This is elephant which hare SP-PAST-stab-CAUS-ASP to hunters
'This is the elephant which the hare made the hunters stab.'

(157a) is an ordinary transitive sentence; (157b) contains a relative clause based on this sentence. The structure is similar to that of English, with a relative pronoun (*imene*) moving from the object position to become adja-

cent to the head noun. (158a) is the causative of an intransitive verb; apart from the verb form's internal morphological structure, (158a) looks exactly like the ordinary transitive (157a). Surprisingly, however, when a relative clause is formed by extracting the "object" in this structure ((158b)), the result is noticeably worse than its counterpart (157b). A final twist comes in (159). (159a) is also a causative, this time of a transitive verb instead of an intransitive one. When its "object" is extracted (143b), the result is better again. The same curious pattern occurs in the cleft construction:

(160) 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.'

(161) a. *Asilikari a-na-vin-its-a atsikana.*
soldiers SP-PAST-dance-CAUS-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-CAUS-ASP
'It's the girls that the soldiers made to dance.'

(162) a. *Kalulu a-na-meny-ets-a mbuzi kwa mkango.*
hare SP-PAST-hit-CAUS-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-CAUS-ASP to lion
'It's the goats that the hare made the lion hit.'

Why should there be difficulty in extracting the causee in causatives of intransitive verbs? Once again, the Projection Principle together with the syntactic movement analysis of causatives holds the answer; the difference is precisely that there are still embedded clausal nodes in the causatives (158) and (161), which have no counterparts in the basic transitives (157) and (160). These clausal nodes then trigger a (mild) Subjacency violation when the causee is moved.

Before developing this idea, we must study Chichewa relative clause and cleft constructions enough to establish their properties 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" on the surface:

RELATIVES:

(163) a. *Iyi ndi njovu imene ndi-ku-ganiz-a*
This is elephant which 1sS-PRES-think-ASP
kuti kalulu a-na-meny-a.
that hare SP-PAST-hit-ASP
'This is the elephant that I think the hare hit.'

b. *Iyi ndi mfumu imene ndi-na-nen-a kuti*
This is chief which 1sS-PAST-say-ASP that
Mavuto a-na-on-a.
Mavuto SP-PAST-see-ASP
'This is the chief that I said Mavuto saw.'

CLEFTS:

(164) a. *Ndi kwa mfumu kumene Mavuto a-na-nen-a*
be to chief which Mavuto SP-PAST-say-ASP
kuti ndi-na-tumiz-a chipanda cha mowa.
that 1sS-PAST-send-ASP 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*
be waterpot which 1sS-PAST-say-ASP
kuti Mavuto a-na-umb-a.
that Mavuto SP-PAST-mold-ASP
'It's the waterpot that I said that Mavuto molded.'

However, 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 (weak Complex Noun Phrase Constraint violations):

RELATIVE:

(165) ??*Iyi ndi mfumu imene ndi-ku-tsuts-a funda yoti*
This is chief which 1sS-PRES-dispute-ASP claim that
nyani a-na-on-a.
baboon SP-PAST-see-ASP
'This is the chief which I dispute the claim that the baboon saw.'

CLEFT:

(166) **Ndi njovu imene ndi-na-mr-a mphekesera yoti*
be elephant which 1sS-PAST-hear-ASP rumor that
Mavuto a-na-ph-a.
Mavuto SP-PAST-kill-ASP
'It's an elephant that I heard the rumor that Mavuto killed.'

Chichewa clefts and relatives are also degraded when they extract an NP out of an indirect question (*wh*-Island violations):

RELATIVES:

(167) a. *?Iyi ndi mfumu imene ndi-ku-dziw-a amene*
This is chief which 1sS-PRES-know-ASP who
a-na-on-a.
SP-PAST-see-ASP
'This is the chief who I know who saw.'

b. *?Uku ndi ku sukulu kumene nkhuku zi-ku-dziw-a amene*
there is to school where chickens SP-PRES-know-ASP who
a-na-tumiz-a mitolo ya udzu.
SP-PAST-send-ASP bundles of grass
'That way is (to) the school to which the chickens know who sent bundles of grass.'

CLEFTS:

(168) a. *?Ndi njovu imene ndi-na-funs-a ngati kalulu*
be elephant which 1sS-PAST-ask-ASP if hare
a-na-meny-a.
SP-PAST-hit-ASP
'It's the elephant which I asked if the hare hit.'

b. *?Ndi mtsuko umene ndi-ku-dziw-a amene*
be waterpot which 1sS-PRES-know-ASP who
a-na-umb-a.
SP-PAST-mold-ASP
'It's the waterpot that I know who molded.'

These judgments show that Chichewa relative pronoun movement obeys bounding theory in essentially the same way English does. In the theory of Chomsky (1977), these facts are explained in the following way. Movement is in fact not unbounded; it can never take a phrase out of more than one "bounding category" at a time (the Subjacency condition), where any NP or IP is a bounding category in English and (as we now see) Chichewa. The apparent unboundedness of movement in examples like (163) and (164) is in fact the result of a number of bounded movements: the relative pronoun moves from its base position to the specifier of the smallest CP containing it ("Comp"), and from there to the specifier of the next smallest CP, and so on "successive cyclically" until it reaches the Comp adjacent to the head NP. Each of these individual movements goes out of only one S-type bounding node. The true boundedness of movement is seen, however, when no such Comp position is available as a "resting place" immediately outside the bounding node. This will always be the case for NPs, which are never

selected by C. Hence when movement occurs out of an NP as in (165) and (166), two bounding nodes will always be crossed (one NP and one S), violating Subjacency. Embedded questions like those in (167) and (168) do have Comp positions, but Comps which are by hypothesis already filled with another *wh*-element. Therefore, the position is not available for the relative pronoun to move through successive cyclically; it must take a longer step, out of two Ss, again violating Subjacency. The following are the substructures of the sentences which illustrate these points, with crucial bounding categories circled:

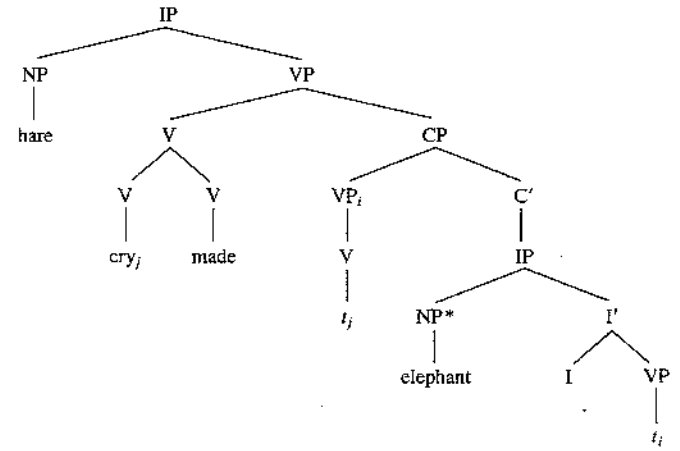
(169) a. . . . chief $[_{CP}$which$_i$ $[_{\textcircled{IP}}$I said $[_{CP}t_i$ $[_{IP}$Mavuto saw $t_i]]]]$
b. . . . elephant $[_{CP}$which$_i$ $[_{\textcircled{IP}}$I heard $[_{\textcircled{NP}}$ rumor $[_{CP}t_i$ that . . .$]]]]$
c. . . . waterpot $[_{CP}$which$_i$ $[_{\textcircled{IP}}$I know $[_{CP}$who$_j$ $[_{\textcircled{IP}}t_j$ molded $t_i]]]]$

On the basis of these examples, we may conclude that relativization and clefting are instances of movement in these constructions in Chichewa,[46] and that they are subject to the same principles as English *wh*-movement is.[47]

With this established, let us return to causative constructions. Given the Incorporation analysis and the Projection Principle, these have the following S-structure:

(170) a. *Kalulu a-na-lir-its-a njovu.*
hare SP-PAST-cry-CAUS-ASP elephant
'The hare made the elephant cry.'

b.



This structure is very similar to that of a *wh*-island, in that the VP has moved out of the embedded IP, filling its Comp position. This makes the position unavailable to NPs from the lower clause for successive cyclic

movement. Therefore, extraction of the causee 'elephant' must go in one step, out of two bounding nodes: the embedded IP and the superordinate IP. Hence, extraction of the causee will violate Subjacency. This accounts for the marginality of (158b), (161b) repeated here:

(171) a. *?Iyi ndi njovu i-mene kalulu a-na-lir-its-a.*
This is elephant AGR-which hare SP-PAST-cry-CAUS-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-CAUS-ASP
'It's the girls that the soldiers made dance.'

Specifically, given the well-known fact that there is a gradation of badness in Subjacency violations (cf. Chomsky (1986b)), we predict that the violation should have the status of a weak *wh*-island violation in the language: that of mild but noticeable oddness. This is exactly correct; both (171) and (167), (168) are better than the Complex NP Constraint violations (165) and (166), but worse than normal instances of successive cyclic movement like (163) and (164). Thus the causee behaves in many ways like the object of the matrix verb, but it cannot be *wh*-moved like the object of a matrix verb; it is a government and case theory "object," but not a bounding theory "object."

There is one important breakdown in the parallelism between (171) and extraction from *wh*-islands that is worthy of mention, however. Note that in (171) it is the SUBJECT of the embedded clause that is moved "long-distance." Normally, this produces much stronger violations than when the object is extracted, in Chichewa as in English:

(172) a. *?Ndi njovu imene ndi-na-funs-a ngati kalulu*
be elephant which 1sS-PAST-ask-ASP if hare
a-na-meny-a t.
SP-PAST-hit-ASP
'It's the elephant that I asked whether the hare hit.'
b. **Ndi kalulu amene ndi-na-funs-a ngati t a-na-meny-a*
be hare which 1sS-PAST-ask-ASP if SP-PAST-hit-ASP
njovu.
elephant
'It's the hare which I wonder whether hit the elephant.'

This contrast is due to the ECP (Chomsky (1981)). The trace of the *wh*-movement must be properly governed, i.e. governed by a category co-indexed with it either by theta marking or by Move-Alpha. In these cases of long-distance movement, the antecedent will never be able to govern, so

proper government can only come from a lexical theta role assigner. The object has such a theta assigner (the verb), while the subject does not; hence the subject-object asymmetry in (172). Now, the sentences in (171) have the grammatical status of (172a), not (172b); for the ECP they act like objects again, even though the Projection Principle implies that they are subjects. This is not particularly surprising, since the ECP depends on government, and we have much evidence that with respect to government theory the causee is an object. In particular, the formerly lower verb root governs the causee in (170), since it c-commands the causee, and neither CP nor IP has a head that selects (a category containing) the causee. Moreover, it is this verb root which is responsible for the causee's theta role; thus we may assume that they are coindexed, making the verb a proper governor for the causee. Thus, 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, failing on the c-command condition. When in a causative construction, the verb moves to Comp and ultimately onto the matrix verb, this failing is then remedied.[48] Therefore, the ECP is satisfied in (171), 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:

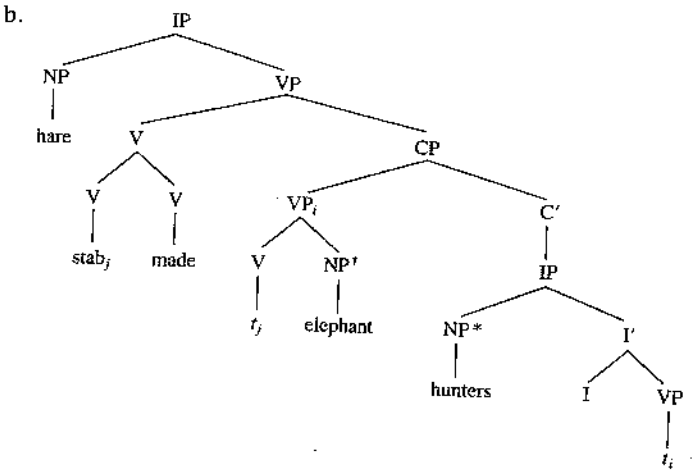
(173) *Mu-ku-ganiz-a kuti kalulu a-na-lir-its-a* ***chiyani***?
2sS-PRES-think that hare SP-PAST-cry-CAUS-ASP what
'What do you think that the hare made cry?'

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 perfect grammaticality of (173) confirms that the causee is properly governed. Furthermore, the fact that LF movement is better than overt movement confirms that Subjacency, an S-structure condition, is responsible for the deviance of the latter.

Now, consider extraction from the causatives of transitive verbs. Here, the oddness of extracting the surface object disappears again: (159) and (162) compared with (158) and (161). 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. In a VI analysis that obeys the Projection Principle, the structure of the causative of a transitive verb in Chichewa is:

(174) a. *Kalulu a-na-bay-its-a njovu kwa alenje.*
hare SP-PAST-stab-CAUS-ASP elephant to hunters
'The hare made the hunters stab the elephant.'

b.



As before, we are considering the extraction of the NP 'elephant'. This time, however, 'elephant' is the object of the lower verb, and (for Case 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, its structural position is different from that of the subject of an intransitive verb. In particular, it is no longer contained in the embedded IP. Hence, when it moves to the matrix Comp, it goes out of one but not two IPs, satisfying Subjacency. In effect, the NP has undergone a kind of successive cyclic movement, the first step of which it traveled piggy-back on the VP. Thus, we explain why sentences like (162) are fully grammatical:

(175) a. *Iyi ndi njovu i-mene kalulu a-na-bay-its-a*
This is elephant which hare SP-PAST-stab-CAUS-ASP
(kwa alenje).
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-CAUS-ASP to lion
'It's the goats that the hare made the lion hit.'

This discussion suggests one final type of NP in Chichewa causatives whose extraction possibilities we might consider: the causee in sentences with transitive embedded verbs. The position of this phrase is identical to that of the causee of an intransitive verb in all the relevant structural respects (compare (174) with (170)); both are governed from the matrix, but separated from it by an IP node, a CP node, and a filled Comp. Therefore, the extraction of transitive causees will also yield relatively mild subjacency violations. In fact, in many cases, the violation is much worse than expected:

(176) ***Uwu ndi (kwa) alenje amene kalulu a-na-bay-its-a*
This is to hunters which hare SP-PAST-stab-CAUS-ASP
njovu.
elephant
'These are the hunters which the hare made stab the elephant.'

This is the result of 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 theoretic reasons. Now, objects of prepositions in general simply cannot be moved in relatives, whether by preposition stranding, by pied piping, or by omitting the preposition entirely. This is true even in uncontroversial cases of "short" movement:

(177) a. *Atsikana a-ku-nen-a _ za mfumu.*
girls SP-PRES-talk-ASP **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-ASP about
'This is the chief that the girls are talking about.'

c. **Iyi ndi (za) mfumu zi-mene atsikana*
This is (about) chief **about**-which girls
a-ku-nen-a.
SP-PRES-talk-ASP
'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-ASP
'This is the chief which the girls talk.'

This effect rules out (176). For unknown reasons, however, clefting in Chichewa differs from relativization in that the ban against preposition pied piping is lifted. Thus there is a grammatical cleft of (177a):

(178) *Ndi za mfumu zi-mene atsikana a-ku-nen-a.*
be about chief about-which girls SP-PRES-talk-ASP
'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 has the intermediate status we expect:

(179) ??*Ndi kwa alenje ku-mene kalulu a-na-bay-its-a njovu.*
be to hunters to-which hare SP-PAST-stab-CAUS-ASP elephant
'It's the hunters that the hare made stab the elephant.'

As with the intransitive causee, movement of the transitive causee appears to violate Subjacency but not the ECP. This is again confirmed by the fact that *wh*-in-situ question words are grammatical in this position, implying that it is properly governed, and that the deviance of (179) is an S-structure phenomenon:

(180) *Asilikali a-na-phik-its-a nsima kwa **yani**?*
soldiers SP-PAST-cook-CAUS-ASP cornmush to **who**
'Who did the soldiers make to cook cornmush?'

Thus, all the clausal nodes implicated by the Projection Principle degrade movements in the way that Subjacency predicts, even when Incorporation makes those clauses invisible on the surface.

4.4.2.2 *Weak Subjacency: Italian*

It is important to note that the degradation in extractions from causatives found in Chichewa depends crucially on a parameterized aspect of bounding theory: the fact that IPs are bounding categories.[48] Apart from causatives, this parameter determines whether a simple indirect question will be an "island" in a particular language. Therefore, if this analysis can truly be integrated with standard GB assumptions about parameters, we expect that languages which do not respect *wh*-islands, but are otherwise similar to Chichewa, will allow extraction of the causee as well.

The original example of a language with "Weak Subjacency" is Italian.[49] Here, simple *wh*-island violations are possible (Rizzi (1982)):

(181) *Il solo incarico [che$_i$ [non sapevi [$_{CP}$a chi [avrebbero affidato t_i]]]]*
. . . (. . . 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 (167), (168), which are marginal. Now, given 4.3.5, Italian does have causative structures similar to those in Chichewa. As expected, the *wh*-movements of causees that are marginal in Chichewa are perfect in Italian:

(182) a. *Maria fa lavorare Giovanni.*
Maria makes work Giovanni
'Maria makes Giovanni work.'
b. *Chi fa lavorare t?*
'Who does he make work?'

(183) 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 t?*
'Who did she make fix the car?'

The simple fact that IP is not a bounding node in Italian does not imply that the subjacency condition is without effect, however. On the contrary, Rizzi (1982) has shown that it has many predictable consequences which follow if NP and CP (rather than NP and IP) are taken to be the relevant bounding categories. Thus, in (181)–(183) the movement is out of only one CP (although out of two IPs), so they are grammatical in Italian; however, movement out of a complex NP will still be blocked by Subjacency. More significantly for current purposes, a Subjacency effect also appears when a relative pronoun is *wh*-moved out of a DOUBLE *wh*-island construction. To give only one of Rizzi's examples:

(184) 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 pass over two Comps without leaving a trace, due to the interfering question words in them. The CP nodes associated with each of these Comps are bounding categories, and Subjacency is therefore violated:

(185) $[_{NP}$*incarico* $[_{CP}O_i$ [. . . $[_{CP}$*chi* $[_{IP}$ . . . $[_{CP}$*a chi* $[_{IP}$. . . t_i]]]]]]]

We can use this fact that Italian respects double *wh*-islands to test whether the biclausal structure of causatives is maintained in Italian as it is in Chichewa. The crucial structure will be one in which a "causee" is extracted out of an embedded question. Then movement will be out of two clauses, but the VP in Comp because of causative formation will eliminate one possible stopover site, and the question phrase in the next Comp will eliminate the second. Thus, a noticeable degradation due to Subjacency is expected. This movement should contrast minimally with the extraction of some constituent of the lower VP of the causative from out of an embedded question. In this case, as in Chichewa, VP movement will have taken the NP out of the lowest clausal node already,[50] and hence the *wh*-movement will have to cross over only a single CP with a filled Comp. Hence, this movement

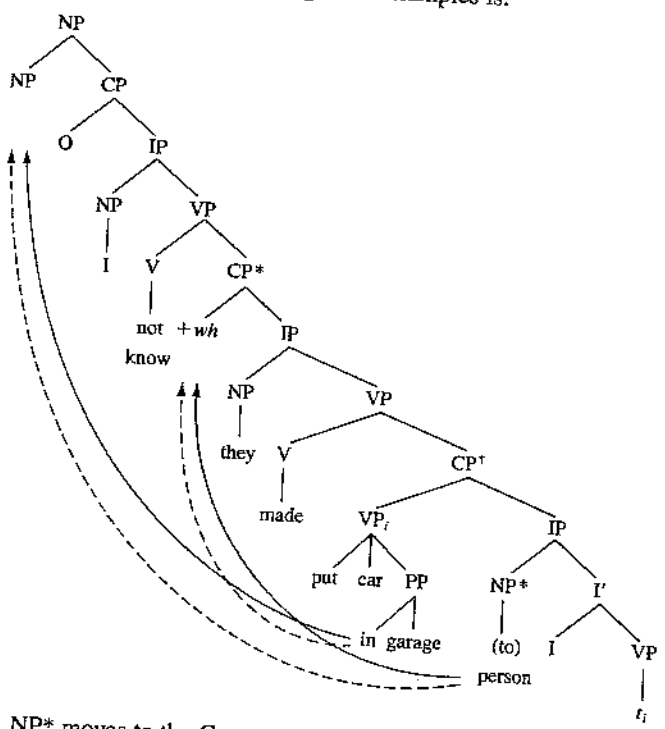
should be good as (169) is. In fact, when other factors are controlled for, a subtle but consistent difference is observed between these two:

(186) a. *Questo è il garage in cui$_i$ non so a chi$_j$ han fatto mettere la macchina t_i t_j.*
'This is the garage in which I don't know who they made put the car.'

b. ??*Questo è la persona a cui$_j$ non so in che garage$_i$ han fatto mettere la macchina t_i t_j.*
'This is the person who I don't know in which garage they made put the car.'

These examples show that the long extraction of a subcategorized PP is noticeably better than the long extraction of the causee, in exactly the predicted way. The structure underlying these examples is:

(187)



In (186a), NP* moves to the Comp of CP* and the PP moves to the highest Comp (*solid arrows*); each goes out of only one bounding category, and all is well. In (186b), the same phrases move to the opposite Comps (*dotted arrows*). This time the movement of NP* violates Subjacency, since CP† as well as CP* is a bounding category for its movement, although not for the movement of the PP (see note 50).[51]

These results can be confirmed with other structures. The verb *dire* optionally takes a dative object and appears in the lowest clause in (188). In (188a), its dative argument appears and is extracted out of a *wh*-island with perfect results. In the minimally different (188b), the verb does not take an indirect object, but it is causativized, giving rise to a dative causee. This causee is then extracted out of the *wh*-island, and the result is worse:

(188) a. *È a Gianni che mi domando che cosa abbiano detto.*
'It's to Gianni that I wonder what they have said *t t*.'

b. ?*È a Gianni che mi domando che cosa abbianno fatto dire.*
'It's Gianni that I wonder what they made *t* say *t*.'

This example shows that the structure of a causative in Italian is not simply that of a basic ditransitive verb either; rather, there is a full lower clause structure which is retained in the derivation. Only the lower subject remains fully in this category, but its presence still shows up in the form of Subjacency violations when this subject is moved. This accounts for the difference between (188a) and (188b). The syntactic analysis of causatives and the Projection Principle are thus vindicated again.

We see that the Incorporation account of causative constructions interacts with the parameters of bounding theory in exactly the right way: extractions from causatives in Italian differ from corresponding extractions in Chichewa, and this difference can be related to an independent difference in extraction from *wh*-island constructions in an explanatory way.

4.4.3 Implications for Syntactic Theory

The second half of this section has 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." They appear morphologically unmarked, trigger object agreement, and become subjects of passives. This was accounted for under the VI analysis in 4.3; it is also consistent with theories in which causatives are monoclausal at surface structure, either because they 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" and normal objects in simple structures. Thus, the first two but not the second

two fail to undergo *wh*-movement naturally. 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 standard "island" phenomena in Chichewa and other languages.

Similarly, the first half of this section showed that NPs in causatives group in two different ways in Chimwiini as well. This time, transitive causees group together with standard objects with respect to case theory, but they group together with standard subjects with respect to binding theory. Again, the first grouping is readily explicable on a lexical analysis, but the second is not; the VI analysis explains both. Binding and extraction facts thus give reasonably direct support for the syntactic incorporation analysis, and the assumptions that underlie it: notably the Projection Principle, the UTAH, and the view of the interaction of morphology and syntax.

In fact, an even more general theoretical point is at issue here: these facts argue that there is no single well-defined concept of the grammatical functions such as "subject" and "object" which corresponds to the intuitive sense of the term which many syntacticians try to formalize. In particular, these notions cannot be fundamental in the way that they are taken to be in, for example, Relational Grammar or Lexical Functional Grammar. To see why, suppose we ask the question: in Chichewa, is the causee in the causative of an intransitive verb an object or not? There is no single, principled answer to this question; all one can say is "In some ways yes; in some ways no." This is unacceptable if the notion "object" is fundamental. If, however, "subject" and "object" are merely defined in terms of some canonical structural or thematic properties, this situation is harmless, indeed expected, in a modular theory. The "intransitive causee" simply has some of the structural and thematic characteristics of canonical direct objects and lacks others. From the point of view of one modular subtheory, it may be an "object" (in that it is identical to canonical objects in the relevant ways), whereas from the point of view of another subtheory it may not be. How we actually use the word "object" is then no more than an unproblematic matter of terminology. Since morphological causatives show "hybrid" GF behavior, they provide very strong support for this government-binding theory perspective on grammatical relations and on the nature of grammar more generally (cf. 2.1.4).

5 Preposition Incorporation

Up to this point, we have considered at length constructions in which a single morphologically complex verb stands for both a verb and the head noun of its direct object, and those in which it stands for both a verb and the main verb of its sentential complement. It was argued that these were instances of Noun Incorporation and Verb Incorporation respectively, where "Incorporation" is the syntactic movement of an X^0 category to adjoin to its X^0 governor. Given this, we might expect the incorporation process to generalize across categories in languages of the world. In particular, given that nouns and verbs incorporate into governing verbs, there is no reason why prepositions should not do the same. In this chapter, I will explore the hypothesis that they do, and that this is the source of the GF changing processes called "applicative" and "dative shift" in chapter 1. In this way, yet another GF changing process will be reduced to Incorporation without the need of particular GF changing rules.

5.1 Applicative Constructions as Preposition Incorporation

Consider the following paradigms from English and Chichewa:

(1) a. The zebras handed the trap to the fox.
b. I sent a sixpack of beer to the mayor.

(2) 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. *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.'