3 Noun Incorporation

3.1 Basic Properties

Consider the following sentences from Onondaga, an American Indian language of the Iroquoian language family (data from H. Woodbury (1975a)):

(1) a. *Pet wa?-ha-**hwist**-ahtu-?t-a?.*
Pat PAST-3MS-**money**-lost-CAUS-ASP
'Pat lost money.'
b. *(pro) Wa?-ha-**yv?kw**-ahni:nu-?.*
past-3MS/3N-**tobacco**-buy-ASP
'He bought tobacco.'
c. *(pro) T-a-shako-?**ahs**-v:-?.*
CS-PAST-3MS/3F-**basket**-give-ASP
'He handed a basket to her.'

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

(2) a. Pat lost money.
b. He bought tobacco.
c. He handed a basket (to her).

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

(3) a. *Pet wa?-ha-htu-?t-a?* *ne?* *o-hwist-a?.*
Pat PAST-3MS/3N-lost-CAUS-ASP the PRE-money-SUF
'Pat lost the money.'
b. *(pro) Wa?-ha-hninu-?* *ne?* *o-yv?kw-a?.*
PAST-3MS/3N-buy-ASP the PRE-tobacco-SUF
'He bought the tobacco.'
c. *(pro) t-a-shaka-u-?* *(pro)* *ka-?ahsæ:-?*
CS-PAST-3MS/3F-give-ASP PRE-basket-SUF
'He gave her a basket.'

In these examples, as in English, there is no noun root in the verb form. Instead, the object nominal appears as a separate word that heads its own phrase and receives a theta role from the verb in the usual way. Nevertheless, sentences like those in (1) and (3) are "thematic paraphrases" of one another; the same thematic roles and selectional restrictions relate the same verbs (or verb roots) to the same nouns (or noun roots) in both cases. Thus, one morphologically complex word in Onondaga can do the work of two words in a language like English, creating a kind of mismatch between morphology and syntax.

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

(4) ***Seuan**-ide ti-mū-ban.*
man-SUF 1sS/AO-see-PAST
'I saw the/a man.'
(5) *Ti-**seuan**-mū-ban.*
1sS/AO-**man**-see-PAST
'I saw the/a man.'

Again, (4) has a standard verb and direct object NP structure; (5) is a thematic paraphrase of (4), but with the root noun of the direct object appearing inside the verb form rather than as an independent phrase. Constructions like those in (1) and (5) are traditionally known as NOUN INCORPORATION; I will follow this usage, developing it into a particular analysis of these structures in terms of the theory of X^0 movement (Incorporation in the technical sense) sketched in chapter 2. Noun Incorporation (NI) also exists in the other Iroquoian languages (Mohawk, Postal (1962);[1] Tuscarora, Williams (1976); Oneida; Seneca), Wichita (Caddoan, Rood (1976)), Nahuatl (Merlan (1976)), Eskimo (Sadock (1980; 1985; 1986)), Niuean (Austronesian, Seiter (1980)), and many others. A wide-ranging survey of languages in which NI occurs and its various superficial forms can be found in Mithun (1984).[2] Indeed, this type of Noun Incorporation is

a central element of many languages which have traditionally been called "polysynthetic."

Noun Incorporation in languages like Onondaga and Southern Tiwa must be distinguished from noun-verb compounding in English. The two are similar in one way: both allow a noun and a verb to combine productively into a larger word, in which (many claim that) the noun is associated with one of the verb's thematic roles (Roeper and Siegel (1978), Lieber (1983), Fabb (1984), Selkirk (1982), Sproat (1985b), etc.). Thus, the following are acceptable in English, partly paralliel to those in (1) and (5):

(6) a. Pat is a hopeless **money-loser.**
b. **Tobacco-buying** is illegal in civilized cultures.
c. **Basket-givers** should get breaks on their income taxes.
d. Martha went **man-watching.**

Nevertheless, these are very different from true cases of NI. For example, the N-V combinations in (6) are necessarily deverbal; the resulting form is a noun (or an adjective) and never a verb. This contrasts with Onondaga, where the N-V combination is regularly the main verb of its clause. In English, there are a few cases of N-V compounds acting as main verbs:

(7) a. I **babysat** for the deOrios last week.
b. We need to **grocery-shop** tomorrow.
c. Kevin **bartends** on Friday night.

but these are unproductive and sporatic backformations from the productive deverbal compounds like *babysitter, grocery-shopping, bartender.* Indeed, in these cases there is no general relationship between a "noun incorporation" structure and an unincorporated counterpart, as there is in Onondaga and Southern Tiwa:

(8) a. *I sat the baby for the deOrios last week.
b. *We need to shop the groceries tomorrow.
c. Kevin tends the bar on Friday night.

Only the (c) example is conceivable, and even here *the bar* is not a referential NP of the usual type.

There is also a clear difference between the referential value of the noun root in the English compounds and that of the noun root in true cases of NI. In English compounds such as (6) or (7), the noun root is nonreferential: no basket or set of baskets is referred to in (6c); neither is a specific man or set of men referred to in (6d). The situation can be quite different with true noun incorporation. An incorporated noun often refers to a generic or unspecific class, giving a reading rather similar to that of the English compound. However, it can also refer to a very specific object which is not

focused in the discourse in languages like Mohawk and Nahuatl. The difference is clearly illustrated in the following segment of a Mohawk discourse from Mithun (1984):

(9) *No:nv akwe: yo-stathv no-:**nvhst**-e sok nu:wa*
when all 3N-dry PRE-**corn**-SUF then now
*v-tsaka-**nvhst**-aru:ko.*
FUT-1pS-**corn**-takeoff
'When the corn was completely dry, it was time to shell **it** (the corn).'

Here the incorporated N root 'corn' in the second clause seems to refer to the same ears of corn specified by the NP 'corn' in the preceding clause.[3] This situation is common in true incorporating languages. Another example comes from Nahautl (Merlan (1976)):

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

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

Again, the incorporated 'knife' in B's response refers to the same piece of steel as that mentioned by A. Other languages, such as Southern Tiwa and Greenlandic Eskimo, take this still farther, such that it is unmarked to incorporate the noun root even in the first use, with no implication of indefiniteness (see AGF and Sadock (1986); some examples are below). English compounds are very different in these ways:

(11) Person A:
Why did Pat ask me if I'd seen that **money?**

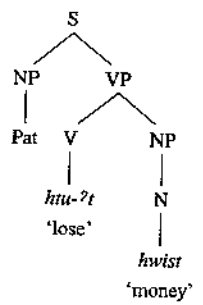
Person B:
Because he is a **money**-loser.

It is absolutely clear that, unlike in Nahuatl, B's response can only mean that Pat loses money in general, not that he lost the particular bundle of money referred to by A. Thus, incorporated nouns in these Indian languages are fully referential in a way that "compounded nouns" in English are not. Complex verbs in Mohawk and Nahuatl can truly do the work of two words in that they both predicate and refer, whereas English compounds cannot. The English facts are familiar, and are often related to the

fact that English compounds are words formed in the lexicon, together with some principle to the effect that words are "islands" with respect to referential properties (see Williams and DiSciullo (to appear)). Something different must be happening with noun incorporation, however.

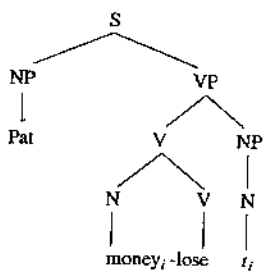
The productivity and the referential transparency of NI suggest that it is a syntactic process, rather than a lexical one. In fact, the guiding assumptions of chapter 2 point in exactly this direction. As a concrete example, focus on (1a). As already observed, the same thematic assignment relationships are present in (1a) as in (3a). The Uniformity of Theta Assignment Hypothesis therefore says that the two must have parallel D-structures, where these theta assignments are represented in the same way. This implies a D-structure such as (12) (details omitted):

(12)



In (3a), all that happens to this structure is that inflectional morphology is added. In (1a), however, the verb 'lose' and the noun root 'money' combine into a single word at some stage. This is accomplished by Move-Alpha, which moves the structurally lower lexical item (the noun) to adjoin it to the higher lexical item in the syntax. By the Projection Principle, this movement cannot destroy thematically relevant structure; thus, the moved noun root leaves a trace which heads a direct object phrase that receives a theta role from the verb and satisfies the verb's subcategorization requirements. Therefore, the S-structure of (1a) must be approximately:

(13)



This structure explains the difference in referential status between nouns in N-V combinations in Iroquoian and those in English: the noun root is associated with an external NP position only in Iroquoian. This NP position can then be the source of the referential behavior of the theme argument, and not the word-internal noun root in and of itself. Thus, we can leave the idea that words are "referential islands" (for whatever reason) intact as a consequence of morphology theory, thus explaining the English facts, still explaining why the Mohawk facts are different given the existence of an N-chain in the latter case but not the former. I will take (12) and (13) to be prototypical Noun Incorporation structures. The rest of this chapter develops, defends, and draws out the implications of this syntactic analysis of noun incorporation crosslinguistically.

3.2 The Distribution of Noun Incorporation

One of the most salient descriptive aspects of noun incorporation is that it has a limited distribution. This is noted in some way or another by almost all who have investigated the topic in a particular language. We may take as a starting point the following generalization from Mithun (1984, 875), based on her broad survey of NI in languages of the world:

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

This raises two interlocked questions: what is the nature of this restriction on the class of possible noun incorporations; and how can the distribution characterized be explained? I claim that the restriction is fundamentally a syntactic one and that the distribution thereby follows from the Empty Category Principle. Inasmuch as this proves justified, it confirms that NI is a syntactic movement process, as proposed in the last section.

The core fact about the distribution of NI is that in ordinary transitive clauses, the direct object may be incorporated, but the subject may not be. This is true, for example, in Mohawk (Postal (1962)):

(14) a. *Yao-wir-a?a ye-nuhwe?-s ne ka-nuhs-a?.*
PRE-baby-SUF 3FS/3N-like-ASP the PRE-house-SUF
'The baby likes the house.'

b. *Yao-wir-a?a ye-**nuhs**-nuhwe?-s.*
PRE-baby-SUF 3FS/3N-**house**-like-ASP
'The baby house-likes.'

c. **Ye-**wir**-nuhwe?-s ne ka-nuhs-a?.*
3FS/3N-**baby**-like PRE-house-SUF
'Baby-likes the house.'

A similar situation holds in Southern Tiwa (AGF):

(15) a. *Seuan-ide ti-mũ-ban.*
man-SUF 1sS:A-see-PAST
'I saw the man.'

b. *Ti-**seuan**-mũ-ban.*
1sS:A-**man**-see-PAST
'I saw the man.'

(16) a. *Hliawra-de Ø-k'ar-hi yede.*
lady-SUF A:A-eat-FUT that
'The lady will eat that.'

b. **Ø-hliawra-k'ar-hi yede.*
A:A-lady-eat-FUT that
'The lady will eat that.' (OK as 'She will eat that lady.')

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

(17) a. *Volu nakai he tau fānau e fua niu?*
grate Q ERG-PL-children ABS-fruit coconut
'Are the children grating (the fruit of the) coconut?'

b. *Volu niu nakai e tau fānau?*
grate-coconut Q ABS-PL-children
'Are the children grating coconut?'

(18) a. *Fā totou he tau faiaoga e tau tohi.*
HAB-read ERG-PL-teacher ABS-PL-book
'(The) teachers often read books.'

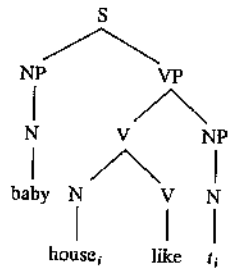
b. **Fā totou faiaoga e tau tohi.*
HAB-read-teacher ABS-PL-book
'Teachers often read books.'

This pattern can be repeated for language after language, including Tuscarora (Iroquoian, Williams (1976)); Onondaga (Iroquoian, H. Woodbury (1975)); Eskimo (Sadock (1980; 1985)); and so on. It is also implied by the generalization from Mithun (1984), quoted above, given that agents are canonically subjects and patients are canonically objects.

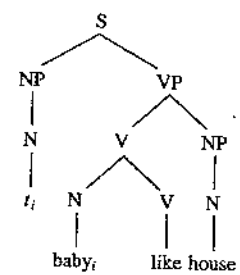
This subject-object asymmetry in noun incorporation is immediately understood if we assume that NI is derived syntactically by adjoining

the noun root to the verb in question by Move-Alpha. For object incorporation, this will yield a structure like (19a), while subject incorporation will yield (19b):[4]

(19) a.



b.



Movement of the noun root leaves a trace in both cases, by the Projection Principle. Furthermore, this trace, like all traces, is subject to the ECP and must be properly governed. As discussed at length in 2.2.3, traces of X^0s can never be lexically governed and hence must be governed by their antecedent. This condition is met in object incorporation structures like (19a); it is not met in subject incorporation structures like (19b), however, where the noun root has moved downward in the tree. To be precise, the VP is a maximal projection which contains the noun root but not the trace, so the N does not c-command its trace, and government does not hold. Therefore, Incorporation of a subject violates the ECP, while Incorporation of an object does not. In this way, the asymmetry is explained in terms of a known principle of grammar (for technical details, see 2.2.3).

It is worth observing at this point that the distinctions made by the ECP seem to be more accurate than the semantically based statement, commonly found in descriptive work, that only nouns which are patients can be incorporated (e.g., Chafe (1970), Williams (1976), Mithun (1984)). Of course, structural objects are often semantic patients and vice versa, and over this range of facts the two statements are equivalent. There are, however, some examples in which a nonpatient noun is incorporated. The following are from Hewitt's (1903) Mohawk text:

(20) a. *Hăkare' nĕñ' ia'-e-'**heñt**-ārа'ne' ka-'heñt-owanę'.*
after now TL-3F-**field**-reached PRE-field-large
'Then, after a while, she reached a grassy clearing that was large.' (Hewitt (1903, 270))

b. *O' na'karoñtotę' nene' karoñto' ne dji*
what PARTITIVE-PRE-tree-SUF PRE-tree-SUF where
*teieia-'**hia**-tha'?*
IMP-**stream**-CROSS-INSTR

'What kind of tree is used to cross the stream there?'

Here the incorporated N's 'field' and 'stream' are not affected by the action; rather, they are more like semantic locatives of some kind. 'Field' is more or less a goal, and 'stream' is a 'via'-type path in the terminology of Jackendoff (1983). Thus, these examples do not fit comfortably under the common descriptivist generalization. It is striking, however, that these are exactly the locatives that can appear as structural objects in English:

(21) a. She reached a large field at midday.
b. How did you cross the stream?

We may thus assume that they can be structural objects in Mohawk as well. This is all that is necessary; given it, the ECP will be satisfied when these nominals incorporate just as it is when patients do. Then, nothing in the account needs to be added or stretched for (20a) and (20b).

The paradigms in (14)–(18) are reminiscent of a construction closer to home which seems to be related to Noun Incorporation in these respects: cliticization of the partitive clitic *ne* in Italian (similarly *en* in French). Here I follow the data and much of the analysis of Belletti and Rizzi (1981). In the relevant structure, an argument of the verb is expressed as a bare quantifier, while the clitic *ne* appears attached phonologically to the verb. Belletti and Rizzi claim that the clitic is a nonmaximal nominal item which heads the NP containing the quantifier at D-structure. Then *ne* syntactically moves to attach to the verb, leaving a trace. Interestingly, exactly the same subject/object asymmetry found in Noun Incorporation appears in *Ne*-Cliticization as well:

(22) a. *Gianni trascorrerà tre settimane a Milano.*
'Gianni will spend three weeks in Milan.'
b. *Gianni* ***ne*** *trascorrerà tre t a Milano.*
Gianni of-them will-spend three in Milan
(23) a. *Alcuni persone trascorreranno tre settimane a Milano.*
'Some people will spend three weeks in Milan.'
b. **Alcuni* ***t ne*** *trascorreranno tre settimane a Milano.*
'Some of them will spend three weeks in Milan.'

There are some clear differences between *Ne*-Cliticization and Noun Incorporation. From the morphological point of view, *ne* is only superficially phonologically dependent on its host verb, while the noun root of NI characteristically forms a true compound with the verb. Furthermore, *ne* may categorically be an intermediate nominal projection (i.e. N′), rather than a pure N°. Nevertheless, if it is not an NP, it will not itself receive a theta role, so it will never be lexically governed for ECP. Thus, when it moves,

its trace must be governed by its antecedent, just as the trace of an Onondaga or Southern Tiwa noun root must be.[5] Thus, we explain the fact that the two processes have the same distribution in these respects.

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

(24) a. *Ne tutala a au* ***ke he*** *tau tagata.*
PAST-talk ABS-I **to** PL-person
'I was talking to (the) people.'
b. **Ne tutala tagata a au (ke he).*
PAST-talk-person ABS-I (to)
'I was people-talking (to).'
(25) a. *Fano a ia* ***ke he*** *tapu he aho tapu.*
go ABS-he **to** church on day Sunday
'He goes to church on Sundays.'
b. **Fano tapu a ia (ke he) he aho tapu.*
go-church ABS-he (to) on day Sunday
'He church-goes (to) on Sundays.'
(26) a. *Nofo a ia* ***he*** *tau ana.*
live ABS-he **in** PL-cave
'He lives in caves.'
b. **Nofo ana a ia (he).*
live-cave ABS-he (in)
'He cave-lives (in).'

What is explicit in Seiter (1980) seems to be just as true in the other noun incorporating languages, as implied by the generalizations made by researchers, although they do not give ungrammatical sentences. Moreover, in fifty pages of Mohawk text (Hewitt (1903)) there are no examples of incorporation from a PP into the verb. Such an example would look like the following:

(27) *John [3M-lake-ran [along *t*] (near home)]
= 'John ran along the lake near home.'
(compare (43) below)

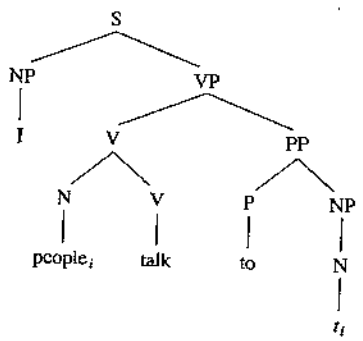
Partitive *Ne*-Cliticization in Italian follows Noun Incorporation in this respect as well (Belletti and Rizzi (1981)):

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

(29) **Gianni* ***ne*** *ha telefonato a tre t*.
Gianni **of-them** have telephoned to three
'Gianni telephoned three of them.'

This also is explained in ECP terms. The structure of these examples would be:

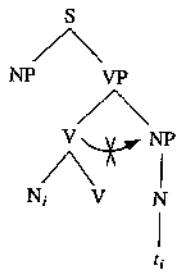
(30)



As usual, the trace of the noun root must be governed by its antecedent in order to satisfy ECP. However, in the structure in (28), the category PP will block government of the trace by the root 'people', since PP contains a closer selecting head, namely the preposition 'to'. In this way, we not only describe but also explain the fact that nouns can never be incorporated out of a prepositional phrase.

The ECP account of the distribution of noun incorporation also predicts that NI should never be able to take a noun root out of an NP adjunct that appears in the VP. Such an incorporation would give the following structure:

(31)



In terms of dominance relations, this structure is similar to the object incorporation illustrated in (19a). The crucial difference is that in (19a) the NP is theta-coindexed by the V and hence selected by it, whereas in (31) the NP has no direct relationship to the V. Therefore, the NP node is a barrier to government in (31), unlike in (19a). It follows that the antecedent

will not govern its trace in these structures, making the NI impossible. This prediction is confirmed for *Ne*-Cliticization in Italian (Belletti and Rizzi (1981)):[6]

(32) a. *Gianni è rimasto* [*tre settimane*] *a Milano.*
Gianni has remained three weeks in Milan
b. **Gianni* ***ne*** *è rimasto* [tre *t*] *a Milano.*
Gianni **of-them** has remained three in Milan
'Gianni remained three of them in Milan.'

The prediction seems to be true for cases of full noun incorporation as well, although my data are fragmentary. Seiter (1980) gives incorporations semantically similar to (32) as bad in Niuean:

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

However, the impossibility of incorporation in (33b) might not be a new fact, but rather reducible to the impossibility of incorporation out of a prepositional phrase. In fifty pages of Mohawk text (Hewitt (1903)), there are no examples of the relevant type:

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

Thus, I conclude tentatively that this prediction of the syntactic analysis of noun incorporation is true.

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

(35) a. *Ka-hi-hw-i ne?o-**hsahe?**t-a?*.
3N-spill-CAUS-ASP the PRE-**bean**-SUF
'The beans spilled.' (Onondaga; H. Woodbury (1975a))
b. *Ka-**hsahe?**t-ahi-hw-i*.
3N-**bean**-spill-CAUS-ASP
'The beans spilled.'

(36) *Ka-**hehn**-akwahat*.
3N-**field**-good
'The field is good.' (Tuscarora; Williams (1976))

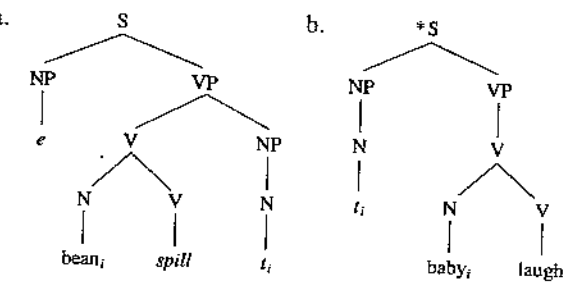
(37) a. *I-k'uru-k'euwe-m.*
B-**dipper**-old-PRES
'The dipper is old.' (Southern Tiwa; (AGF))

b. *We-fan-lur-mi.*
C/NEG-**snow**-fall-PRES/NEG
'Snow isn't falling.' (= 'It is not snowing.')

Recall that it is systematically impossible to incorporate the subject of a transitive verb in all these languages. This we explained in terms of the ECP, observing that a noun root will not govern its trace if it moves downward, into the VP. This account has nothing to do with the transitivity of the verb per se, and the same considerations should make the incorporation of intransitive subjects impossible as well—if they are actually subjects, that is.

Perlmutter (1978) argues for what he terms the "Unaccusative Hypothesis," which claims that there are two distinct classes of verbs which take only a single argument (see also Perlmutter and Postal (1984a), Burzio (1981), etc.). In GB terms, one class, called the "unergatives," takes a true subject (i.e. an external argument) at D-structure. The other class, called the "unaccusatives," does not theta-mark an external argument; rather, the sole argument is internal, generated in the object position at D-structure. This difference is usually neutralized on the surface, since the internal argument of an unaccusative verb moves to the subject position by S-structure. Nevertheless, there is strong evidence for the distinction in many languages. Furthermore, there is a strong tendency for unergative verbs to take an agentive (or experiencer) argument, while unaccusative verbs take a patient/theme argument.[7] Now note that all the predicates which incorporate their subject in (35)–(37) have nonagentive arguments. Suppose they are unaccusative. Then the NP in question appears inside the verb phrase at D-structure, and from this position it can legitimately incorporate into the verb, instead of moving to the subject position:

(38) a.



b.

The structure in (38a) satisfies the ECP and is grammatical, being identical in all relevant respects to (19a). This account explains why it is said that only intransitive verbs can incorporate their "subjects": only with intransitive verbs can the S-structure subject be analyzed as a D-structure object. The subject of a transitive verb cannot readily be analyzed as a D-structure object, since such verbs already have the object position filled with another argument, by definition.[8]

This analysis based on the Unaccusative Hypothesis also predicts that there should be in these languages a second class of intransitive verbs which cannot incorporate their argument. These are the unergative verbs, whose agentive sole arguments are subjects at all levels of representation. Incorporating the N into verbs of this type gives a structure like (38b), which violates the ECP, being identical in all relevant respects to (19b). Thus, the argument of AGENTIVE intransitive verbs should never be incorporated. This appears to be true in Southern Tiwa (AGF):[9]

(39) a. Khwien-ide *Ø-teurawe-we.*
dog-SUF A-run-PRES
'The dog is running.'

b. ***Ø-khwien**-teurawe-we.*
A-**dog**-run-PRES
'The dog is running.'

The prediction is also confirmed in the Iroquoian languages, where only THEME subjects can incorporate, and never agent subjects, even in intransitives. H. Woodbury (1975a) is explicit about this for Onondaga, offering the following pair as a minimal contrast with (35) above:

(40) a. *H-ate-ʔse:-ʔ* *neʔo-tsiʔkt-aʔ.*
3MS-REFL-drag-ASP the PRE-louse-SUF
'The louse crawls.'

b. ***H-ate-tsiʔkti**-ʔse:-ʔ.*
3MS-REFL-**louse**-drag-ASP
'The louse crawls.'

The same also holds true in Mohawk (Mithun (personal communication)) and Tuscarora (Williams (1976)). Finally, *Ne*-Cliticization in Italian illustrates the same pattern. In Italian, there is rich independent evidence for the Unaccusative Hypothesis (Burzio (1981, 1986), Rosen (1981)). Verbs known to be unaccusative by other tests, such as appearing with the *essere* auxiliary, allow *ne* to move and cliticize onto the verb (Belletti and Rizzi (1981)):

(41) a. *Sono passate tre settimane.*
have elapsed three weeks
b. ***Ne*** sono passate tre ***t***.
of-them have elapsed three

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

(42) a. *Hanno parlato tre persone.*
have spoken three people
b. ****Ne*** *hanno parlato tre* ***t***.
of-them have spoken three

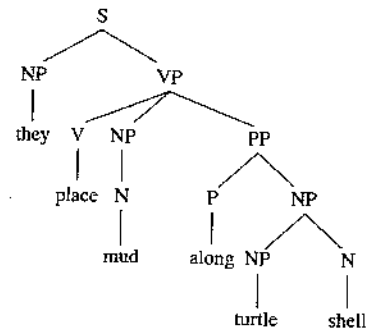
Thus, a syntactic account of noun incorporation interacts with the Unaccusative Hypothesis to explain NI's distribution with intransitive verbs.[10]

On this analysis, the principles that govern when NI can take place are general and are stated purely in structural and thematic terms. Thus, there is no reason to expect that Ns will only incorporate into Vs; rather, they may in principle incorporate into any category as long as they govern their traces. This elegantly explains the fact that nouns in the Iroquoian languages incorporate into governing prepositions as well as into governing verbs. The following Mohawk sentences illustrate this (from Hewitt (1903)):[11]

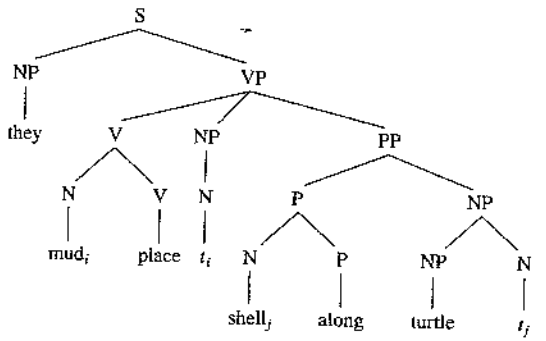
(43) a. . . . *ia'tioñte'sheñnia'te'* ***o-'hoñt-ako'***
she-used-her-whole-strength **PRE-bush-in**
ia'-hoñwā-ia't-oñti'.
TL-3F/3M-body-threw
'. . . and with all her might she cast him **into the bushes.**'
b. . . . *o'k'ɪcinōwę' e' t-oñ-tke'totę'* ***o-ner-a'tōkę'***.
just mouse there DU-3N-peeked **PRE-leaf-among**
'A mouse peeked up there **among the leaves.**'
c. *Wa'-hati-nawatst-a'rho' ka'-**nowa**-ktatie' ne*
AOR-3MPL-mud-placed PRE-**carapace-along**
Rania'tę'kowa.'
Great Turtle
'They placed mud **along** (the edge of) the Great Turtle's **carapace.**'

Each of these examples has a root with a prepositional meaning which has incorporated a noun root, in a way which has by now become familiar. This process is productive and works for a range of prepositional elements, including at least: *-ke'*, 'on'; *-ako*, 'in'; *-akta'*, 'beside'; *-akesho'*, 'along'; *-ktatie*, 'along the edge of'; *-toko*, 'among'.[12] Thus, the D- and S-structures of a sentence like (43c) are (44a) and (44b) respectively:

(44) a.



b.



Here the Iroquoian languages have D-structures, subcategorizations, and theta assignments parallel to those of English, in accordance with the UTAH. Then, in the syntactic derivation of S-structure, the head noun of the object of the preposition adjoins to the preposition by Move-Alpha. From this position, the N antecedent governs its trace, satisfying the ECP. Thus, this type of incorporation is governed by exactly the same principles as incorporation into a verb is, since the relationship between verb and object is the same as that between preposition and object in the relevant structural and thematic ways. The approach therefore explains why NI in Iroquoian generalizes in this way.

In conclusion, we have seen in detail what was assumed in 2.2.3: Noun Incorporation crosslinguistically respects the Head Movement Constraint. Given that the HMC is derivable from the ECP, it follows that the major aspects of the distribution of NI can be explained in terms of the Empty Category Principle, a principle that restricts syntactic movement. This prin-

ciple is used to explain the fact that, in moving *wh*-phrases, the movement of direct objects is freer than the movement of subjects, adjuncts (Huang (1982), Lasnik and Saito (1984)), and objects of prepositions.[13] Note that much the same distribution appears in Noun Incorporation: movement (to the V) is free from direct objects, but ungrammatical from subjects, adjuncts, and objects of prepositions. I assume that this similarity of distribution is not accidental; rather it shows that both processes are regulated by the same principle. Yet, in order for the ECP to be relevant in determining the distribution of NI, there must be a trace in NI structures whose distribution ECP can govern. This implies (i) that Noun Incorporation is syntactic movement of the noun root and (ii) that the Projection Principle requires that a trace be left in this movement. This confirms the analysis of NI sketched out in the previous section and accords with the guiding principles of chapter 2. Thus, this approach accounts for the distribution of noun incorporation[14] and reveals a significant parallelism between it and the movement of *wh*-phrases.

3.3 Stranding and Government

In the last section, I argued that Noun Incorporation is a type of syntactic movement by showing that it is restricted by known syntactic principles. In this section, we consider another type of argument for syntactic movement, based on the fact that Noun Incorporation can 'strand' certain kinds of NP material. Furthermore, the properties of some of this stranded material give insight into the nature of government, supporting empirically the Government Transparency Corollary of 2.2.4.

3.3.1 Determiner Stranding

One classical argument for movement transformations is that they can simply account for what can be called "discontinuous dependencies." For example, in the following English sentences:

(45) a. The time has come [for my departure].
b. The man doesn't exist [that can reconcile these feuding factions].
c. The claim was disproved [that pigs have wings].

the phrase in brackets modifies the subject noun phrase of the sentence, even though it is separated from that subject by the verb phrase. To express this discontinuous semantic relationship, these sentences are traditionally derived from structures like those in (46), in which the modifiers/arguments form a constituent with their heads in the usual way, by a movement transformation of "extraposition":

(46) a. [The time [for my departure]] has come.
b. [The man [that can reconcile these feuding factions]] doesn't exist.
c. [The claim [that pigs have wings]] was disproved.

This transformation takes the bracketed phrase and moves it to the end of the clause. Similar arguments based on discontinuous relationships between verbs and their idiomatic objects have been used to motivate passive, raising, and *wh*-movement transformations as well.

In this connection, it is significant that, in some languages, Noun Incorporation can create discontinuous dependencies similar to those in (45). In particular, the incorporated noun root can often be modified or specified by a nonadjacent word or phrase that remains morphologically outside the verb complex. This external specifier can be a demonstrative element:

(47) a. *Ka-**nuhs**-rakv **thikv**.*
3N-**house**-white **that**
'**That house** is white.' (Mohawk; Postal (1962, 395))
b. *Nękę o-**nǫhs**-akayǫh.*
this 3N-**house**-old
'**This house** is old.' (Onondaga; Chafe (1970, 32))
c. *Yede a-**seuan**-mū-ban.*
that 2sS:A-**man**-see-PAST
'You saw **that man.**' (Southern Tiwa (AFG, 295))

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

(48) a. *Ka-hu?syi [thikv ka-hyatuhsr-a?].*
3N-black that PRE-book-SUF
'That book is black.' (Mohawk)
b. *[Yede seuan-ide] a-mū-ban.*
that man-SUF 2sS-see-PAST
'You saw that man.' (Southern Tiwa)

Relative clauses and modifier phrases can also appear outside the verb but be interpreted as modifying a noun root inside the verb:

(49) a. *Ka-**nuhs**-rakv **[nehneh a-ak-ahninu?]**.*
3N-**house**-white **that** INDEF-3F-**buy**
'**The house that she would buy** is white.'
(Mohawk; Postal (1962, 395))

b. *wa?-k-**hwist**-achęni?* [***Harry ha-hwist-ahtǫ?tihna?***].
AOR-1sS-**money**-find **Harry** 3M-**money-lost**/PAST
'I found **the money that Harry lost.**'
(Onondaga; Chafe (1970))

c. *Te-**pan**-tuwi-ban* [***ku-kha-ba-'i***].
1sS:C-**bread**-buy-PAST **2sS:C-bake-PAST-SUBORD**
'I bought **the bread you baked.**'
(Southern Tiwa; AGF, 297)

d. ***Kusanartu-mik sapangar**-si-voq.*
beautiful-INSTR bead-get-INDIC/3sS
'He bought a beautiful bead.'
(Greenlandic Eskimo; Sadock (1980))

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

(50) a. *Ka-hu?syi* [*ne ka-hyatuhsr-a? nehneh k-nuhwe?s*].
3N-black PRE-book-SUF that 1sS-like
'The book that I like is black.' (Mohawk; Postal (1962))

b. [*Sapannga-mik kusanartu-mik*] *pi-si-voq.*
bead-INSTR beautiful-INSTR Ø-get-INDIC/3sS
'He bought a beautiful bead.'
(Greenlandic Eskimo; Sadock (1980))

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

(51) a. *Ka-**nuhs**-rakv* [*ne **wisk ni-ka-wa***].
3N-**house**-white **five PART-3N-PL**
'**Five houses** are white.' (Mohawk; Postal (1962))

b. ***Wisi** bi-**seuan**-mũ-ban.*
two 1sS:B-**man**-see-PAST
'I saw **two men.**'
(Southern Tiwa; AGF, 295)

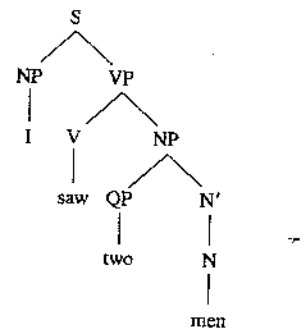
And, as usual, the noun root may optionally appear outside the verb root, forming a phrase with the quantifier:[16]

(52) a. *Ka-hu?syi* [*ne wisk ni-ka-wa ne ka-hyatuhsr-a?*].
3N-black five PART-3N-PL PRE-book-SUF
'Five books are black.' (Mohawk; Postal (1962))

b. [*Wisi seuan-in*] *bi-mũ-ban.*
two man-PL 1sS-see-PAST
'I saw two men.'
(Southern Tiwa; AGF)

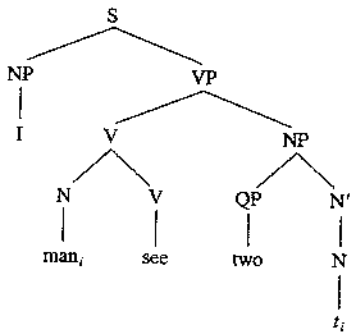
The possibility of this kind of discontinuous dependency is explained and even expected if Noun Incorporation is indeed the syntactic movement of a subphrasal category. On this account the incorporated noun root is separate from the governing verb at D-structure, where it heads the noun phrase that is assigned the verb's internal theta role. A specifier or modifier can then be a part of this NP in accordance with the usual provisions of X-bar theory. Thus the D-structure of (for example) (51b) would be:

(53)



This structure can surface essentially "as is," yielding (52b). However, it is also possible for Move-Alpha to apply, creating an NI structure. Now, morphological principles imply that only a lexical category can adjoin to a lexical category (see 2.2.5). Thus, only the N^0 *man* can be moved, and the rest of the NP, notably including the specifier, must be left behind. This gives an S-structure for (51b) like (54):

(54)



Here, the trace of the N^0 is in a local configuration with the specifier or modifier; thus, it provides the link between the incorporated N root and the external phrase which is needed so that the two will be interpreted together

by the conceptual processes which have access to the LF representation. Furthermore, these structures for the incorporation examples explain immediately why they are (thematically) equivalent to the unincorporated counterparts. In this way, the discontinuous dependencies laid out above are accounted for.

Now, inasmuch as discontinuous interpretive dependencies such as those in (45) provide evidence for a syntactic movement of extraposition, these similar dependencies provide evidence for a syntactic movement analysis of Noun Incorporation. If, on the contrary, N+V combinations are analyzed as always being formed in the lexicon and NI structures like (51b) are analyzed as being base-generated, then some stipulation must be added to express the fact that the quantifier may and must be interpreted as specifying the incorporated N root.[17, 18]

3.3.2 Possessor Stranding and the Government Transparency Corollary

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

(55) a. *Hrao-**nuhs**-rakv ne **sawatis**.*
3M-**house**-white **John**
'John's house is white.' (Mohawk; Postal (1962, 319))

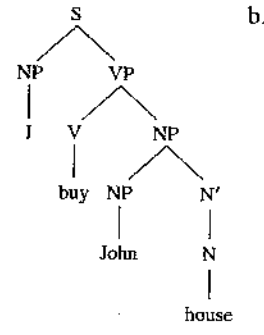
b. ***Kvtsyu** v-kuwa-**nya'**t-o:'ase.*
fish FUT-3PS/3F-**throat**-slit
'They will slit **the fish's throat.**' (Mithun (1984))

(56) *Wa-hi-**nuhs**-ahni:nu: John.*
AOR-1sS/3M-**house**-buy **John**
'I bought John's house.'
(Oneida; M. Doxtator, from Michelson (personal communication))

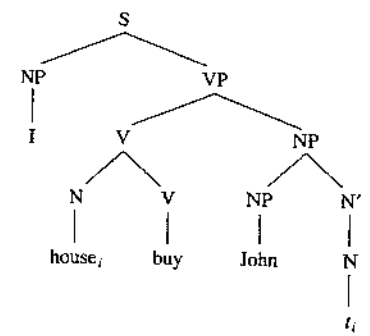
(57) ***Tuttu-p** **neqi**-tor-punga.*
reindeer-ERG **meat**-eat-INDIC/1sS
'I ate **reindeer's meat.**'
(Greenlandic Eskimo; Sadock (1980))

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

(58) a.



b.



Also as in the other cases of stranding, the noun root may fail to incorporate, yielding a synonymous sentence in which the noun forms a phrase with its possessor:[19]

(59) a. *Ka-rakv ne [sawatis hrao-nuhs-a?].*
3N-white John 3M-house-SUF
'John's house is white.' (Mohawk)

b. *Wa?-k-nuhs-ahni:nu: [John lao-nuhs-a?].*
AOR-1sS-house-buy John 3M-house-SUF
'I bought John's house.' (Oneida)

c. *[Tuttu-p neqa-a-nik] neri-vunga.*
reindeer-ERG meat-3S/POS-INSTR eat-INDIC/1sS
'I ate reindeer's meat.' (Greenlandic Eskimo)

In fact, given that Noun Incorporation consists simply of moving a N^0 out of a NP, we expect cases of "possessor stranding" to arise. Thus these structures fit naturally into the framework, giving another piece of evidence for the syntactic nature of NI.

There is an interesting complication with possessor stranding structures that is worth careful study. This can be seen most clearly by comparing the two Mohawk possessive examples carefully: note that there is a shift in agreement marking on the verb in (61) which does not occur in (60) (from Postal (1962)):

(60) a. ***Ka**-rakv thikv ka-nuhs-a?.*
3N-white that PRE-house-SUF
'That house is white.'

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

(61) a. ***Ka**-rakv ne sawatis **hrao**-nuhs-a?*. (=(59a))
3N-white John 3M-house-SUF
'John's house is white.'
b. ***Hrao**-nuhs-rakv ne sawatis*. (=(55a))
3M-house-white John
'John's house is white.'

When the noun head of the verb's internal argument is not incorporated, the verb shows object agreement with that head, as one would expect. Hence in (60a), (61a) the verb is third person neuter, matching the person and gender of the external noun 'house'. Normally, when the noun root is incorporated into the verb, the agreement on the verb is unchanged; it still references the features of its object, which is now expressed as an incorporated noun root (see (60b)) (Postal (1962, 285); also H. Woodbury (1975, 26) for Onondaga and AGF for Southern Tiwa). When a possessor is stranded, however, the verbal agreement changes, so that it matches the features of the possessor rather than those of the incorporated noun. Thus, in (61b) the verb is third person masculine, reflecting the features of 'John', rather than third person neuter, reflecting the features of 'house' (see also (56) and (59b) for Oneida). This verbal agreement with the possessor can (and usually does) license "pro-drop" of the possessor; i.e. it allows the possessor to be a phonologically null pronoun whose features it identifies. This is illustrated below in Mohawk and Southern Tiwa:

(62) *Wa-**hi**-'sereht-anvhsko*.
PAST-**3MS/1sO**-car-steal
'He stole **my** car.' (Mohawk; Mithun (1984))

(63) a. ***Im**-musa-'i-hī*.
1sS/B-cat-come-FUT
'**My** cats are coming.' (Southern Tiwa; AGF)
b. ***Kam**-kuchi-thā-ban*.
1sS/2s/B-pig-find-PAST
'I found **your** pigs.'

Now, determining verbal agreement and being able to "pro-drop" are characteristic properties of the direct object in these languages. For this reason, AGF call this process "possessor ascension" to direct object and state that incorporation of the possessed noun is necessary for possessor ascension to take place.

To understand this shift of agreement, two questions must be addressed: (i) why MAY the verb agree with the possessor when the possessed noun root is incorporated? and (ii) why MUST the verb agree with the possessor

in this situation? Let us take the second question first. There is an intrinsic difference between possessor stranding and quantifier/modifier stranding in the GB framework: the possessor alone is an argumental NP which receives a thematic role. Therefore, the possessor, unlike other specifiers and modifiers, needs to receive Case in order to pass the Case Filter. Now, in conventional possessive structures in Mohawk, a possessor NP has no special morphological case ending. Instead, it triggers agreement morphology on the possessed head noun. Thus, in (61a), 'house' appears not with its usual inflectional prefix (*ka-*), but rather with the prefix *hrao-*, indicating that its possessor is third person masculine. We may assume that it is this agreement process which causes the possessor 'John' to pass the Case Filter (see 3.4.2). However, when the head noun is incorporated into the verb form, it no longer is in a position to assign Case to the possessor via the agreement relation. Now, assume that traces of X^0s do not assign Case or transmit it from their antecedents (see 3.4.3), perhaps because they are phonologically null. It follows that stranded possessor NPs in NI structures must receive Case from some other source, or the structures will be ungrammatical. The main verb complex is the only likely candidate; therefore, it must assign Case to the possessor—a relation which is also expressed morphologically by agreement in Mohawk and Southern Tiwa. Hence, verbal agreement with the possessor is necessary.

Now, we return to the question of how it is possible for the verb to agree with the possessor in the first place. Still assuming that this kind of verb agreement is a morphological reflex of an abstract Case assignment relationship, the verb must govern the possessor NP in this configuration, since government is a condition on Case Assignment. This is confirmed by the fact that null pronouns can appear as possessors in this construction by virtue of the verbal agreement, since most theories of the licensing of null pronouns require those pronouns to be governed by the element that identifies their features (see Rizzi (1986) and references cited there).

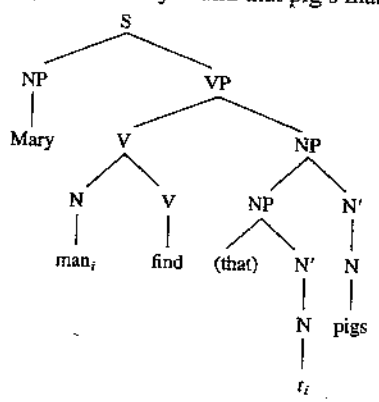
This notwithstanding, it does not seem that the verb governs the possessor of its object in general, at least in these languages. For example, the verb cannot agree with the possessor if the head noun of the possessor is not incorporated; nor can the verb sanction the possessor's "pro-drop":[20]

(64) a. ****Hrao**-rakv ne sawatis **hrao**-nuhs-a?*.
3M-white John 3M-house-SUF
'John's house is white.' (Mohawk; Postal (1962, 319))
b. **Kuchi-n **kam**-thā-ban*.
pig-SUF **1sS/2s/B**-find-PAST
'I found your pigs.' (Southern Tiwa; AGF, 307)

This conclusion is strongly supported by the distribution of noun incorporation. It is impossible to bypass the head noun of the object NP and incorporate the head noun of the possessor of the object instead; thus, structures such as (65) never occur in natural language, as far as I know:

(65) a. *Mary [AGR-man-found] (that) pigs.
'Mary found (that) man's pigs.'
(OK as 'Mary found that pig's man'!)

b.



If the verb governed the possessor in this structure, then the noun root 'man' would likewise govern its trace within the possessor NP, thereby satisfying the ECP. Then, the structure in (65) should be good. Since such structures are actually ungrammatical, it must be that the verb does not govern the possessor of its object in this structure.

Government relationships also play a small but important role in binding theory; therefore coreference possibilities can in principle provide independent evidence about when one category governs another. It is well known that in English a pronoun can be coreferent with the subject of the clause if it is the possessor of the direct object, but it cannot be coreferent with the subject if it is the direct object itself:

(66) a. **Mr. and Mrs. Cuyler** washed **[their** car] yesterday.
b. ***Mr. and Mrs. Cuyler** washed **them** yesterday.

Chomsky (1986a) explains this difference in terms which involve government. He claims that a pronoun may not be coreferent with an NP which is in its "governing category," where the governing category for pronouns is essentially the smallest phrase with a subject (i.e. the smallest "Complete Functional Complex") that contains the pronoun and a governor of the pronoun. By this definition, the governing category of *their* in (66a) is only the object NP itself and does not include the matrix subject. In (66b), on

the other hand, the pronoun is governed by the matrix verb, and hence the governing category does include the matrix subject. Therefore, the coreference interpretation is acceptable in the first example but not in the second.

In light of this, consider the following paradigm from Mohawk (cf. Postal (1962, 332)):[21]

(67) a. *I?i k-ohres ne i?i wak-nuhs-a?.*
I 1sS/3NO-wash DET I 1s-house-SUF
'I washed my house.'
b. ***I?i k-nuhs-ohres ne [i?i t].*
I 1sS-house-wash DET I
'I washed my house.'
c. *I?i k-atat-nuhs-ohres.*
I 1sS-REFL-house-wash
'I washed my own house.'

(67a) is parallel to (66a); in Mohawk, as in English, a pronoun in the possessor position of the direct object (usually "pro-dropped") can be coreferent with the matrix subject. If, however, the head of the direct object is incorporated into the verb, as in (67b), the facts change: the possessor can no longer be coreferent with the matrix subject, even though its phrase structure configuration is unchanged, given the Projection Principle. Thus, it behaves like an object (compare (66b)) in having the entire sentence as its governing category. What has changed between (67a) and (67b)? The object NP contains the pronoun and a subject (the pronoun itself) in both instances, so the only possible difference is in how the pronominal is governed. In particular, it must be governed from outside the object NP by the verb (complex) in (67b) but not in (67a) in order for the difference to be explicable. If this is in fact true, then the pattern in (67) can be explained with the small additional assumption that, at least in some cases, a governing category must not only contain SOME governor of the element in question (as in Chomsky (1981; 1986a)) but ALL the governors of the element in question. This assumption about governing categories has no effect in most cases, since most elements only have one governor, by the "Minimality Condition" (cf. Chomsky (1986b)). In (67b), however, it expands the pronoun's governing category, forcing it to be the entire sentence, so that both the empty N head and the verb complex are included. In (67a), where we assume that the verb does not govern the possessor, the governing category is not expanded to include the verb, and coreference with the matrix subject is acceptable. Thus, (67a) and (67b) are a kind of minimal pair, clearly showing that Incorporation changes government relations by allowing the verb to govern something which it otherwise would not have

governed.[22] The only grammatical way to express referential identity between the matrix subject and the thematic possessor of the incorporated object in Mohawk is to use an anaphoric construction, based on the reflexive form of the verb (see (67c)), rather than a pronominal construction.

Thus, there is converging evidence from case theory, movement theory, and binding theory that the verb governs the possessor of its object if and only if the verb has incorporated the head noun of that object. This statement is simply a special case of the Government Transparency Corollary (GTC) of 2.2.4: a category Y (=V) with an incorporated X (=N) governs a Z (=NP) which X governed before Incorporation. Thus, this evidence supports the theory of government, developed in 2.2.3, of which the GTC is a consequence. We have empirical support here for two aspects of this theory in particular, which are different from similar approaches to government found in the literature. First, since the verb does not govern the possessor of its complement apart from NI, the lexical head N must be a government-blocking "closer governor" with respect to its specifier as well as with respect to its complements. Thus, the Minimality Condition on government must single out as barriers maximal projections like NP, rather than (only) intermediate projections like N′; this result confirms the "broader" formulation of the Minimality Condition in Chomsky (1986b) rather than the "narrower" formulation which Chomsky tentatively adopts (Chomsky (1986b, 44–48); also Massam (1985)).[23] Second, since the verb does govern the possessor of its complement when the head N does incorporate, a head must not be a barrier-creating closer governor when it is not distinct from the potential governor, i.e. when it forms a chain with a part of that governor. This, the assumption on which the GTC hinges, is clearly justified by these NI structures.

The result of this line of inquiry is that, because of general properties of government theory, Incorporation makes the projection of the moved N "transparent" to government from the V. This accounts for why the verb can agree with its complement's possessor and allow it to "pro-drop" in (62) and (63) but not in (64), as well as the shift in referential possibilities in (67). Thus, the possessor comes to have certain object properties as an automatic side effect of Incorporation, and NOT because there is any independent and explicit GF changing rule of "Possessor Raising" in the grammar (cf. AGF).[24] These NI structures are similar in a way to Exceptional Case Marking structures, since in both a verb comes to govern a NP which it does not theta-mark or subcategorize for because of a special process. The only difference between the two is the nature of the special process that brings about this extension of the government domain: in ECM verbs it has been claimed to be S′ Deletion (or simply C Deletion, as in 2.2.3); in

NI structures it is a result of Incorporation. Thus, we have accounted for the peculiar properties of possessor stranding in NI languages and found new evidence about the nature of government.

Before ending this section, I mention two areas that are very relevant to Incorporation and the GTC, but in which the data available in the literature are unfortunately murky and unclear. The first involves the observation that possessor stranding and the concurrent assumption of object properties by the possessor seems to be more restricted than one might expect given the analysis I have presented, at least in the Iroquoian languages. For example, according to Mithun (1984), this construction is acceptable in (68a) and (68b), but not in (68c):

(68) a. *Kvtsyu v-kuwa-**nya't**-o:'ase.*
fish FUT-3PS/3F-**throat**-cut
'They will slit the fish's throat.' (Mohawk)

b. *Wa-hi-'**sereht**-anvhsko [(pro) t].*
PAST-3MS/1SO-**car**-stole
'He stole my car.'

c. **Wa-hi-'**sereht**-ohare [(pro) t].*
PAST-3MS/1SO-**car**-wash
'He washed my car.'

H. Woodbury (1975a) reports the same for Onondaga. The difficulty with (68c) is not that the root *'sereht* 'car' cannot incorporate (cf. the Onondaga cognate *wa?-he-?se:ht-ohae-?* 'PAST-3MS-car-wash-ASP' = 'He washed a car', H. Woodbury (1975a, 36)), but rather that it cannot strand a possessor. Mithun describes this sort of construction as "pragmatically conditioned." A survey of the cases suggests that it must be lexically governed in one of two ways: the verb must be a transfer of possession verb (e.g. 'steal', 'buy', 'find', . . .), or the noun must take an inalienable rather than an alienable possessor (Williams (1976)). (68b) is an example of the first type, (68a), of the second type; (68c) is neither. It is not clear to what degree possessor stranding is possible apart from these classes, so other facts may be involved beyond those I have analyzed. Mithun states that something much like (68c) is possible if an additional morpheme appears on the verb, which is generally used to signal the presence of benefactives:

(69) *Wa-hi-'sereht-ohare-**'se**.*
PAST-3MS/1SO-car-wash-**for**
'He washed my/a car for me.'

This may or may not be the same sort of possessor-stranding construction with a trivial morphological complication; see 5.3.4 for discussion.[25] AGF

do not mention the existence of any comparable lexical restrictions on possessor stranding in Southern Tiwa, although many of their actual examples fit broadly within the same two categories. Thus, further research is needed on this issue.

Finally, the analysis leads us to expect that one more type of NP material should be found stranded by Incorporation: namely, noun complements that are generated under the N′ node as sisters of the N^0. In fact, the resulting structures should be for the most part just like possessor-stranding structures. When the head noun is not incorporated into the verb, the verb will not govern the complement, since the N is a closer governor. This means, among other things, that the head of the N complement will not be able to incorporate directly into the verb:

(70) *[Mary [AGR-cat-saw] [$_{NP}$ a picture [(of) (that) *t*]]
'Mary saw a picture of (that) cat.'

As far as I know, this is correct. On the other hand, if the head of the object NP does incorporate, it will no longer be a "closer governor," and the verb should govern and assign Case to the stranded complement. This would yield grammatical structures such as:

(71) [Mary [AGR-picture-saw] [$_{NP}$*t* [John]]].
'Mary saw a picture of John.'

where the agreement morphology on the verb includes object agreement with the N complement 'John'. Again, the issue is not clear empirically. The literature does not mention a "complement raising" construction of this kind, parallel to the attested "possessor raising." However, there is an interfering factor: it is not clear which if any NPs in (say) the Iroquoian languages have a N-complement structure in the first place. Derived nominals corresponding to items like *destruction* in English, kinship terms, and "picture nouns" all have morphological characteristics of verbs and cannot incorporate even if there is no complement to strand (Mithun (personal communication)). Hence, many imaginable instances of structures like (71) will never arise. Possible examples of complement stranding are the following, from the Mohawk text of Hewitt (1903):

(72) a. *Ne Oteroñtoñni'a' ǫ-'hweñdji-a' ęs*
DET Sapling PRE-**earth**-SUF PRT
wa'-tha'-tcan-a'kwe'. . .
AOR-3M-**handful**-pick
'Sapling would customarily take up **a handful of dirt.**'
(Hewitt (1903, 302))

b. *E' io'hiano'kote' tä'hnǫ' e' kę-**tho'kw**-a'here' **tci'teñ'a'**.*
PRT it-bush-stood and PRT 3N-**flock**-rested **birds**
'There stood a clump of bushes, where **a flock of birds** rested.'
(Hewitt (1903, 298))

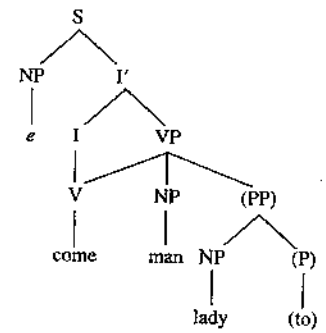
In these sentences, the incorporated noun root is semantically interpreted together with a full noun outside the verb; hence they are cases of stranding. The question is, what is the structure of NPs such as 'handful of dirt' and 'flock of birds' when the head noun does not incorporate? While I have no direct evidence on this, theory-internal reasons imply that 'handful' and 'flock' must have been the heads of their original NPs—otherwise it would not be possible to incorporate them. This in turn implies that 'dirt' and 'birds' are not the heads of the NPs. That they are indeed complements of the head therefore seems likely. I thus conclude tentatively that structures like (71) are possible in languages of the world, in accordance with the framework we have developed.

In this section, we have seen that Noun Incorporation can strand a variety of nonhead NP material. The existence of discontinuous semantic dependencies so formed gives evidence for a movement analysis of Noun Incorporation. Furthermore, assuming this approach, certain facts about Case Marking and agreement with stranded possessor NPs in Southern Tiwa and the Iroquoian languages reveal aspects of the nature of the government relation itself, supporting the theory developed in chapter 2. In particular, they establish the Government Transparency Corollary, which implies that Incorporation automatically creates "Exceptional Case Marking"–like structures. This will play a central role in accounting for the GF changing properties of many constructions involving X^0 movement throughout this work.

3.4 Noun Incorporation and Case Theory

In the last section, noun incorporation data were used to establish and confirm aspects of the theory of government. In this section, I use NI as a way of studying aspects of the theory of Case. In particular, I show that a noun phrase whose head noun is incorporated does not need to receive Case, even though it is phonologically overt. Trying to understand why these items should be exempt from the Case Filter in this way leads to a rethinking of why NPs must have Case. I argue that the Case Filter is only a special case of a more general requirement of "visibility" for interpretation at the levels of LF and PF. This approach yields certain results of importance

(77)



The verb is unaccusative, assigning no thematic role to the subject position; thus we expect it to be unable to assign accusative Case. Indeed, in neither sentence form does the verb have a standard direct object. Now, both arguments of the verb must receive Case. One possibility is that the goal is generated together with an appropriate postposition, which will assign it Case, while the theme moves into the subject position to get nominative Case from Infl. This yields (76a). The other possibility is that the goal NP moves to the subject position, thereby claiming the available structural Case, as in (76b). When this occurs, the head of the theme NP necessarily incorporates into the governing verb. This incorporation must enable the theme NP to pass or avoid the Case Filter in some way. This conclusion is unavoidable: the theme cannot be receiving accusative Case, because (as before) the verb has none to assign; neither can it be somehow inheriting nominative Case from the Infl, because (this time) this Case is already being assigned to the goal NP. Therefore, an NP whose head N has incorporated into the verb simply does not need Case to be grammatical. This would explain why the theme has to incorporate in the "goal advancement" structure when the goal NP has become the subject.[26]

This conclusion is reinforced by data from Niuean (Austronesian), described in Seiter (1980). We have seen that in Niuean, as in other languages, direct object NPs can be incorporated, but NPs which are arguments of prepositions cannot. Nevertheless, there seems to be a systematic exception to this usually reliable generalization. The language has a class of verbs, consisting of affective and perception predicates, which take an experiencer subject and an internal argument marked by the preposition *ke he* 'to':

(78) a. *Ne fanogonogo a lautolu* ***ke he tau lologo***
PAST listen ABS they **to** PL **song**
ke he tau tūlā ne ua.
to PL clock NONFUT two
'They were listening to songs for a couple of hours.'

b. *Manako nakai a koe* ***ke he tau manu?***
like Q ABS you **to** **PL** **animal**
'Do you like animals?'

c. *Vihiatia lahi a au he fakatali* ***ke he tau tagata.***
hate greatly ABS I COMP wait **to** **PL** **person**
'I really hate waiting for people.'

With this class of verbs only, the noun which appears in the PP may incorporate into the verb complex after all:

(79) a. *Ne fanogonogo* ***lologo*** *a lautolu ke he tau tūlā ne ua.*
PAST listen **song** ABS they to PL clock NONFUT two
'They were listening to songs for a couple of hours.'

b. *Na manako* ***manu*** *nākai a koe?*
PAST like **animal** Q ABS you
'Do you like animals?'

c. *Vihiatia lahi a au he fakatali* ***tagata.***
hate greatly ABS I COMP wait **person**
'I really hate waiting for people.'

Seiter calls these nominals MIDDLE OBJECTS. These structures contrast with others in which the verb selects the same preposition with a goal semantic role; in these the object of the preposition may never incorporate:

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

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

To preserve our explanation of the ungrammaticality of (80b) and similar examples in other languages, we must say that the "middle objects" in (78) are not real prepositional phrases, but rather true arguments of the verb, receiving their theta role from it directly. If this is the case, the preposition *ke he* need not appear at D-structure in these sentences. Middle objects are thus structurally similar to direct objects, which accounts for the fact that they can incorporate into the verb. Nevertheless, if they do not incorporate, they must be preceded by the preposition *ke he*. This can be explained if we assume that the verbs that take middle objects are not Case assigners;

then, in order for the NP to receive Case, a special rule must insert *ke he* as a Case assigner, similar to *Of* Insertion in English nominals.[27] This account covers the facts. Additionally, it implies that no verb will select both a direct object and a middle object, since the middle object is actually the (X-bar theory) direct object, albeit that of a slightly deficient verb. This generalization appears to be true. Then, returning to the incorporation structures in (79), we observe that they are grammatical even though there is no inserted Case marker and the verbs themselves are known not to assign Case. As in the Southern Tiwa example, the NP whose head has incorporated cannot be picking up Case from the Infl, because this Case is assigned to the subject of the sentence. Again, we conclude that such NPs simply do not need Case.

So far, I have argued that NPs with incorporated heads do not need Case by showing that they are allowed as objects of verbs which do not assign Case. The same point can be made another way: by showing that when the head of the object of a verb that does assign accusative Case is incorporated, the verb's Case-assigning potential is not exhausted by that object. In these situations, the verb will be free to assign its Case to some other NP. In fact, this occurs. Consider the following paradigm from Southern Tiwa (AGF):

(81) a. *Ti-'u'u-wia-ban i-'ay.*
1sS:A-baby-give-PAST 2s-to
'I gave the baby to you.'

b. **'U'u-de ka-wia-ban.*
baby-SUF 1sS:2sO/A-give-PAST
'I gave you the baby.'

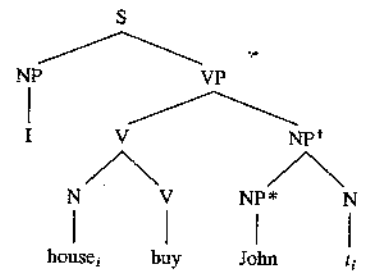
c. *Ka-'u'u-wia-ban.*
1sS:2sO/A-**baby**-give-PAST
'I gave you the baby.'

Here, *-wia* 'give' is a triadic verb, taking a theme and a goal as well as an agent. In (81a), the goal appears as the object of a postposition, from which it may receive Case. The goal cannot appear without the postposition as a direct object if the theme argument is not incorporated, as shown in (81b). (The goal argument here is "pro-dropped," its content identified by the verbal object agreement.) In this way, Southern Tiwa contrasts with English. An obvious account of this restriction involves case theory: Southern Tiwa verbs can assign only one accusative Case. Since both the theme and the goal need Case in this structure, there are not enough Case assigners to go around, and one of the NPs ends up violating the Case Filter. If, however, the theme noun root is incorporated into the verb, the goal may appear without its postposition, and may trigger agreement and be "pro-dropped" (81c). This is accounted for if an incorporated NP does not need to receive Case. Then there will be no competition, and the verb is free to assign the Case which would normally be needed for the theme NP to the goal NP instead, giving a grammatical structure.

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

(82) a. *Wa-**hi**-nuhs-ahni:nu: John.*
PAST-1sS/3M-house-buy John
'I bought John's house.' (Oneida; =(56))

b.



Here the verb assigns Case to the possessor 'John', as indicated by the verbal agreement (*hi-*, 1s subject and masculine object; not *k-*, 1s subject and neuter object). In the last section, we discussed the implications of this for the theory of government. Yet there is an implication for case theory as well: even given that the verb governs the possessor NP*, it is free to assign Case to NP* only if it does not need to assign its Case to the whole object NP†. Since it does in fact Case-mark NP*, we conclude that NP† does not need Case. Again, the NP whose head is incorporated can afford to let the Case which it would normally need pass on to another NP in need.

Thus, a variety of facts drawn from several typologically different languages all point to the conclusion that a noun phrase simply need not be Case-marked if its head noun is incorporated into the governing verb. We next shift to a theoretical focus by investigating the question which this rather surprising generalization raises: what in the structure of case theory makes this so?

3.4.2 The Case Filter and PF Identification

Why should Noun Incorporation let an NP past the Case Filter? Given the current understanding of case theory, there is no reason to expect this re-

sult. Nevertheless, it seems rather consistent across languages that have NI. This consistency holds in spite of the fact NI itself appears to be a somewhat marked grammatical process,[28] and the fact that the explicit evidence for this Case Filter exemption is subtle, coming from different and often unusual constructions in each language. This situation suggests that this property of NI is not a peripheral exception to case theory which children learn purely from direct exposure to data. Instead, it probably reflects some deep property of case theory itself. Let us therefore reconsider case theory, seeking a perspective from which this fact will be more obvious than odd.

In the case theory of Chomsky (1986a following a suggestion by Joseph Aoun), the Case Filter follows from the Visibility Condition, which says that the head position of an (A-)chain must be Case-marked in order for the chain to be "visible" (i.e. available) for theta role assignment at LF. Since overt NPs are canonically arguments, they must have theta roles; hence they must be visible by receiving Case. In this way, the core of the Case Filter from Rouveret and Vergnaud (1980), Chomsky (1980; 1981) follows from the newer formulation. Now, behind the theoretical statement of Visibility, an intuitive core idea can be recognized: the reason NPs must get Case is because Case helps identify how the NP is to be interpreted in the structure.

Morphological case (with a small *c*, meaning actual declensional forms) indeed plays just this role in languages with a rich case system and fairly free word order, such as Latin, Warlpiri, or Estonian. In these languages, an NP with the dative case ending is the goal argument of the nearest verb, an NP with the ablative case ending is the source argument, the NP with the accusative or absolutive case ending is (generally) the theme argument, and so on. Often these morphological markings are the only overt cue of the semantic (thematic) relations of the sentence. The Visibility Hypothesis is then a grammaticalization of this kind of system; it is a formal condition on representations at LF which ensures that inferences like these will be reliable ways of determining the semantic roles of a sentence.

This idea can be developed more formally in the following way. Consider the following abstract representation schematizing the VP of a sentence like 'John stole an apple from me' in a rich case language:

(83)

	VERB		NP-ablative	NP-accusative
$[[\Theta_1$	$\Theta_2]$	$\Theta_3]$	'$_{\text{ABLA}^j}$'	'$_{\text{ACC}^i}$'
theme	source	agent	$[\Theta_2]$	$[\Theta_1]$
(|)	(|)			
$_{\text{ACC}^i}$	$_{\text{ABLA}^j}$			

In this structure, we know that, as an inherent lexical property, a verb like 'steal' is associated with a "theta grid" (Stowell (1981)), which represents the thematic roles the verb can assign. This is (over-)simply represented in (83) by the indexed Θ-positions associated with rough semantic labels. The verb is also lexically specified for what morphological cases it appears with, here represented by ACC (=accusative) and ABLA (=ablative). Finally, the verb associates its case features with its theta roles in a biunique fashion, represented in (83) by the vertical lines linking the two.[29] Meanwhile, the two NPs each appear in a morphological form characteristic of a particular case declension; on this basis we say that one is ablative and the other accusative. Now, two types of associations between these NPs and the verb must be made: the case features of the NPs must be associated with those of the verb, and the theta roles of the verb must be associated with the NPs. The first of these is Case marking (or "Case licensing," or "Case checking"); I represent this by cosuperscripting the corresponding case features with small letters. The second association is theta role assignment, represented as before with arabic numeral subscripts. The Visibility Condition then says that the second coindexing is necessarily contingent on the first.

It is probably correct to distinguish several kinds of case at this point. These types of case are each associated with closely related but slightly different "Visibility Conditions." Thus, in rich case-marking languages, some cases are SEMANTIC, in that an NP appearing in that morphological form will always have a set thematic role that is associated with that case. For example, Estonian has an ablative case which appears on sources, an allative case which appears on goals, an adessive case which appears on locations meaning 'on', and several others. This type of case allows the recovery of semantic relations from morphological shape in the purest way. The properties of this type of case are captured in the following condition:

(84) If A assigns semantic Case X, then B receives theta_X from A if and only if B receives semantic Case X from A.

where "theta_X" refers to the specific thematic role associated with semantic case X.

Other case and theta role associations are somewhat looser. An example is the genitive case in English, which is assigned to an NP specifier of N by the head N under government. Unlike allatives and adessives, this case can mark a variety of different thematic roles, as in (85a–c); however, the head noun cannot assign genitive case to an NP to which it does not assign SOME theta role, as in the "subject-to-subject" raising example in (85d) (Chomsky (1986a)):

(85) a. **The tyrant's** destruction of the city (agent)
b. **The city's** destruction (patient)
c. **John's** backpack (possessor)
d. ***John's** belief [*t* to be intelligent] (———)

(85d) shows that there is still a strong link between theta role assignment and case assignment here. Cases like this are called INHERENT; they are subject to the following VISIBILITY Condition:

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

This is the UNIFORMITY CONDITION on inherent Case of Chomsky (1986a); it is similar to (84), but slightly weakened in that the explicit link between a particular theta role and a particular morphological form is broken. Nevertheless, including this condition in universal grammar still helps make thematic relationships recoverable from surface form, because when one sees an argument with inherent case one knows it must be thematically dependent on its Case assigner.

Finally, there is a third type of Case which is looser still: the STRUCTURAL cases nominative and accusative.[30] These can be assigned by a lexical item to any NP, whether it is thematically related to that item or not, as long as the Case assigner governs the NP. Thus, a "raised" nominal can appear in nominative case or accusative case, but not in adessive or genitive (cf. (85d)). Nevertheless, even here a condition related to (84) and (86) holds:

(87) The Visibility Condition (preliminary)
B receives a theta role only if it receives Case.

This is similar to (86), but is further weakened in that the theta assigner and the Case assigner need not be the same. This is the most general Visibility Condition, satisfied by all types of Case, and the one from which the Case Filter is derived. By its relationship to (84) and (87), we can now see why language might include such a condition: it is a formal grammaticalization related to the a priori necessity of being able to deduce semantic relationships from surface forms.

Now, this system must be generalized beyond the domain of morphological case, for other systems of overtly representing argument relationships are certainly possible in languages of the world. For example, Tuscarora (Iroquoian, Williams (1976)) relies primarily on verbal agreement:

(88) a. *Wi:rv:n wa-hra-kv-ʔ tsi:r.*
William AOR-3MS/3NO-see-PUNC dog
'William saw a dog.'

b. *Wa-hra-kv-ʔ wi:rv:n tsi:r.*
AOR-3MS/3NO-see-PUNC William dog
'William saw a dog.'
c. *Tsi:r wi:rv:n wa-hra-kv-ʔ.*
dog William AOR-3MS/3NO-see-PUNC
'William saw a dog.'

In these sentences, the word order varies and there is no morphological case on the NPs, but information about which NP bears which theta role is encoded in the morphology on the verb. In particular, the prefix *hra-* occurs only when the subject is masculine third person and the object is nonhuman (neuter) third person. In this way, and in this way only, the hearer knows who saw whom.[31] Thus, verbal agreement morphology performs the same function for Tuscarora which nominal case morphology performs for Latin and Estonian. In fact, the two systems are converses: in Tuscarora, morphology determined by lexical features of the argument appears on the predicate; in Latin and Estonian, morphology determined by lexical features of the predicate appears on the argument.

English uses a third system to represent semantic relationships; there is (in general) no morphology on the theta role assigner or on the argument, but the two are necessarily adjacent. Thus, in (89a) and (89b) the verb shape and the NP shapes are identical, but the interpreted thematic relationships are different because the adjacency (and directionality) relationships are different. (89c) is ungrammatical, because a needed adjacency relation is missing (Stowell (1981)):

(89) a. William saw the dog.
b. The dog saw William.
c. *The dog saw unexpectedly William.

In English (internal) arguments must be to the right of their predicates. The converse of this system also exists, where predicates must be adjacent to and on the right of their arguments in SOV languages like Hindi-Urdu (see Stowell (1981), Koopman (1984), Travis (1984)).

Generalizing over these examples, we see that almost any way of representing predicate-argument relationships overtly in Phonological Form is a possible system of human languages. To capture the equivalence of these systems, theorists go beyond the notion of morphological case and introduce the notion of abstract Case (with the capital *C*), which can be manifested in any of these ways at the level of PF. Using the notations sketched in (83), we can say that only the indexing between the verb and the NP exists at the abstract level of S-structure; this constitutes the assignment of

abstract Case. This indexing relationship is then spelled out in the mapping between S-structure and PF in the manner specified by the particular language. For structural objective Case in Estonian, this involves putting a morpheme on the N; in Tuscarora, it involves adding a morpheme to the V; in English it means putting the NP immediately to the right of the V. Languages can also have systems which are "mixed" among these types in various ways. For example, in Turkish the subject has no case morpheme, but triggers verbal agreement; whereas the object has an accusative case ending, but does not govern agreement on the verb. Hence, the PF of Turkish maps the subject-Infl Case indexing relationship onto agreement morphology, and the object-V Case indexing relationship onto case morphology. We may assume, however, that every abstract Case relationship must be expressed at PF in some way allowed by the language. This is expressed in the following condition on the relationship between PF and S-structure:

(90) The Principle of PF Interpretation
Every Case indexing relationship at S-structure must be interpreted by the rules of PF.

where "PF interpretation" includes (at least) the assignment of morphology conditioned by one member of the relationship to the other member, and the enforcement of directed adjacency between the two. The idea that all these syntactic relationships must map into overt PF relationships consciously imitates Marantz (1984), who generalizes the Projection Principle so that it governs the derivation of PF to get essentially the same effect as (90).

Data from Chichewa (cf. Mchombo (1986)) give evidence for articulating case theory in this way. Verb-object relationships in this language may be represented by EITHER adjacency or object agreement. Both PF relations are optional in the language, but (90) implies that one of them must always appear. This accounts for the following pattern:

(91) a. *Mdyerekezi a-ku-namiz-a abusa tsopano.*
devil SP-PRES-deceive-ASP priests now
'The devil is deceiving the priests now.'
b. *Mdyerekezi a-ku-**wa**-namiz-a tsopano abusa.*
devil SP-PRES-**OP**-deceive-ASP now priests
'The devil is deceiving the priests now.'
c. **Mdyerekezi a-ku-namiz-a tsopano abusa.*
devil SP-PRES-deceive-ASP now priests
'The devil is deceiving the priests now.'

In (91a) the object 'priests' is adjacent to the verb but there is no object agreement; in (91b) there is agreement with 'priests' but it is not adjacent to the verb; in (91c) there is neither object agreement nor adjacency between the verb and the object, and the sentence is ungrammatical. Thus, Chichewa has two independent ways of representing structural Case assignment by a verb. It does not follow that a Chichewa verb can assign structural Case to two NPs, however. In fact, it cannot; structures like (92) are ungrammatical, where one object is adjacent to the V and another object agrees with it:[32]

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

Thus, we say that Chichewa verbs can only assign one structural Case index (i.e. one abstract Case), but this Case can be realized in two ways in the mapping to PF. This numerical mismatch further motivates the theoretical distinction between S-structure Case and the PF realization of Case.

Putting the pieces together, we now have a case theory which spans every level of the grammar. In the lexicon, particular items are specified as to how many and what types of Case indexings they can have. For example, English *arrive* cannot Case-index anything; *hit* can Case-index one NP with structural Case; *give* can Case-index one NP with structural Case and another with inherent Case. At D-structure, semantic and inherent Case indexing takes place under government. At S-structure, structural Case indexing takes place, again under the condition of government. Both types of Case indexings must be overtly represented at PF, according to the particular resources of the language, given (90). Finally, at LF every argumental NP must be Case-indexed in order to receive its theta role, by the Visibility Condition. This condition needs to be generalized from its original formulation in (87) to reflect the switch from morphological case to abstract Case:

(93) The Visibility Condition (revised)
B receives a theta role only if it is Case-indexed.

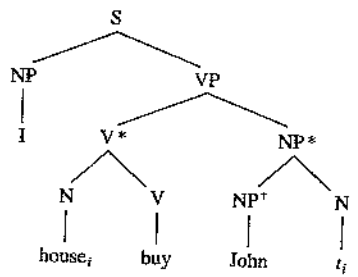
Now, the Visibility Condition requires that NPs be Case-indexed, and the Principle of PF Interpretation requires that these Case-indexing relationships be manifested at PF. Moreover, Case indexing only happens under government—a grammaticalized extension of the predicate-argument relationship. It follows that this set of conditions has the desired effect: they guarantee that argument relations will usually be recoverable from Phonological Form, while allowing for certain mismatches between the two that are known to occur in natural language. Since the term "case" is

strongly biased toward one of several equivalent PF representation systems, I will sometimes use the more neutral term PF IDENTIFICATION in its place. (87) and (90) then together imply that all argument NPs must be "PF identified."

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

(94) a. *Wa-hi-nuhs-ahni:nu: John.*
AOR-1sS/3M-house-buy John
'I bought John's house.' (Oneida)

b.



Now, let us compare the relationship between the complex verb V* and NP* in this structure with a Case-indexing relationship. In most ways, they are the same. The S-structure head[33] of NP* is clearly coindexed with V* because its antecedent is a part of V*, as a result of Incorporation. Furthermore, this coindexing relationship takes place only when V* governs NP* at S-structure, since otherwise the trace head of NP* will not satisfy the ECP. Finally, this relationship between NP* and the complex V is visible at PF: part of NP* actually appears inside the V. Thus, it is natural to say that the indexing relationship is "PF interpreted" in the sense relevant for (90). Therefore, if we stipulate that the chain coindexing relationships generated by head movement count as Case-indexing relationships for the Visibility Condition, NP* satisfies the demands of case theory. This extension preserves the functions of the Visibility Condition as well as the formalisms, since in the core case only thematic objects incorporate into the verb (3.2); one can therefore reliably infer the semantic relationship of an incorporated noun purely by virtue of the fact that it is incorporated.

This account hinges on the fact that a principle ((93)) does not distinguish between two structurally similar syntactic dependencies which have very different sources in the grammar: the chain coindexing sanctioned by Move-Alpha and arising between D-structure and S-structure; and the Case coindexing sanctioned by the lexical properties of the Case assigner and arising at S-structure. This sort of explanation has a parallel in the realm

of NP-movement, which creates coindexing relationships between two A-positions. One of the significant results of the Extended Standard Theory was that this coindexing relationship is governed by the same principles as structurally similar antecedent-anaphor pairs—in this instance, principles of binding theory (see 2.2.2 for illustration). This is true even though these two types of relationships also have different sources: the one is again a result of Move-Alpha; the other is a result of the lexically specified property of certain elements as being referentially dependent. In both contexts, the coindexing induced by Move-Alpha is like a chameleon blending in with its surroundings: when it relates NPs it is like other relations among NPs, namely Binding relationships; when it relates an NP with a lexical head it is like other relations between NPs and lexical heads, namely Case relationships.

The result of this discussion is that Incorporation automatically satisfies the case theory requirements of the NP whose head is incorporated. Conventional Case indexing, while possible, is thus superfluous. Thus, we account for the facts in the previous subsection that NPs whose heads have incorporated are grammatical as the objects of verbs even when those verbs are not "Case assigners"—i.e. when the verb cannot assign its own Case index as a lexical property. In the same way, we account for the fact that when the verb is a Case assigner, it can use this inherent property to Case-index some other NP, such as the possessor NP^i in (94). Both NPs will thus be identified in accordance with (90) and (93).

In conclusion, the study of Incorporation has led us to uncover some interesting things about case theory. The most important of these is the fact that PF plays an important role in this module,[34] given the Principle of PF Interpretation and the way it works together with the Visibility Condition. Virtually any overt relationship provided by the language can thus in principle satisfy the Visibility Condition, including verbal agreement and directional adjacency, as well as case in the narrow sense. All these are methods of "PF identifying" argument relationships. Incorporation also creates a kind of morphologically overt relationship between phrases at PF. Since the existence of such relationships is the motivating power behind case theory, we understand from this perspective why Incorporation constitutes a fourth type of PF identification, crucially independent of the other three and not lexically governed. This accounts for various aspects of NI structures. The possibility of satisfying the "Case Filter" requirements of an NP by Incorporation as an alternative to traditional Case marking plays a significant role in the chapters to come (see 5.3.4, 7.2.4.1).

3.4.3 Extensions of PF Identification

The result that case theory is satisfied if and only if PF relationships of a particular type exist has implications beyond those that we have discussed for NI. In particular, it can be used to motivate other minor case theory conditions that significantly affect the syntax of Incorporation structures. In this section, I discuss several of these in the light of the "PF identification" perspective on case theory.

One such condition has appeared already in 3.3.2: the condition that traces cannot assign Case to an NP which they govern. This assumption is necessary to account for paradigms like the following from Mohawk (Postal (1962)):

(95) a. *Ka-rakv ne [sawatis hrao-nuhs-a?].*
3N-white DET John 3M-house-SUF
'John's house is white.'

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

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

In (95a), the possessor 'John' is Case-marked by its governing head 'house', and this is morphologically represented by the agreement *hrao-* appearing on this noun. In (95b), 'John' is Case-marked by the complex verb 'house-white', and this is represented by the morpheme *hrao-* appearing on the verb. We may, however, ask why (95c) is not acceptable, with the possessor Case-marked by the trace of the moved N 'house', known to be present by the Projection Principle. (95c) is structurally identical to the acceptable (95a), so it must be that the trace, unlike the noun root, cannot identify an NP that it governs. Intuitively, there is a clear reason why the difference exists: the trace simply cannot bear the agreement morpheme that would represent a Case-indexing relationship between it and the possessor NP it governs. Hence, even if it did Case-index the NP, the indexing could not be "PF interpreted," and the structure would violate Principle (90). More generally, even if the morphology normally appears on the NP rather than on the head, the lexical features of the Case assigner are always needed to tell PF how to do its interpretation; particular prepositions may determine accusative, dative, or genitive Case on their complement as a lexical property, for example. Traces presumably do not have such lexical properties, since they have no lexical entry. Hence, PF interpretation will fail if a trace is taken as Case assigner. This is expressed in the following statement,

which follows from the Principle of PF Interpretation, if these assumptions are correct:[35]

(96) If A is a trace, A cannot assign a Case index to B.

Thus, obligatoriness of the agreement between the complex verb and the stranded possessor follows from (96) plus the fact that the possessor must be PF–identified somehow.

The PF–oriented notion of identification also makes more understandable the well-known descriptive generalization that Infls assign only one nominative Case, and verbs in the unmarked situation assign only one accusative Case. These structural Cases entail by far the least tight correspondence between thematic relationship and morphological relationship, since they are subject only to the loosest of the visibility conditions. Thus, in order for semantic relationships to be represented at PF—the functional purpose of the Principle of PF Interpretation—the use of structural Case must be limited. The natural way to do this is to allow only one structural Case assignment per Case assigner. Then, all the arguments of an item but one must have semantic (or inherent) Case, and these semantic Cases will directly reveal their thematic roles by (84). The last argument will then be able to have a structural Case index. This will not identify the argument's thematic role directly, but the theta role will be recoverable by process of elimination: it will be the only one associated with the verb in the lexicon which does not show up in a semantic Case. Thus, it is common for a given language to limit its verbs to assigning only one structural Case each. This, however, is a rather loose implication, following from functional considerations rather than from formal principles, so some language variation can be tolerated on this point. In fact, we will find evidence in later chapters that some languages differ from the norm precisely in that their verbs can assign two structural accusative Cases. The PF-identification perspective suggests why this is a "marked" grammar, however.

The remarks of the last paragraph were made with morphological case, agreement, and adjacency in mind. However, the same considerations should be valid for Noun Incorporation as well, since this too provides a type of PF identification. In fact, the incorporation of more than one Noun root into a single verb stem is generally impossible. Mithun (1984) observes this on the basis of a survey of NI constructions in languages of the world.[36] Seiter (1980) shows that this indeed must be an explicit condition of some kind in Niuean (Austronesian), based on paradigms like the following:

(97) a. *Kua fā fakahū tuai he magafaoa e tau* ***tohi*** *he* ***vakalele.***
PERF-HAB-send-PERF ERG-family ABS-PL-**letter** on **airplane**
'The family used to send the letters on an airplane.'

b. *Kua fā fakahū* ***vakalele*** *tuai he magafaoa e tau* ***tohi.***
PERF-HAB-send-**airplane**-PERF ERG-family ABS-PL-**letter**
'The family used to send the letters by airplane.'

c. **Kua fā fakahū* ***tohi vakalele*** *tuai e magafaoa.*
PERF-HAB-send-**letter-airplane**-PERF ABS-family
'The family used to send the letters by airplane.'

We know (section 3.2) that the incorporation of patient objects is possible and productive in Niuean. Sentence (97b) shows that under certain circumstances the incorporation of an instrument or "means" nominal is possible as well.[37] Sentence (97c), however, shows that the instrument and the patient cannot both incorporate into the verb at the same time. This is true in spite of the fact that either incorporation is acceptable in its own right. The restriction at work here seems similar to that which usually keeps a verb from assigning two accusative Cases: when two Ns are incorporated, the information as to which one is associated with which thematic role begins to be lost. The two superficially different observations can be unified by the following generalization:

(98) A single item cannot Case-index two NPs in the same way.

This covers the fact that two NPs having accusative Case in the same VP, two NPs triggering object agreement on the same verb, and two N roots incorporating into the same verb are all rare and marked constructions.[38]

One further principle of case theory which arises naturally in the light of PF identification involves how complex categories derived by Incorporation assign Case. X^0 categories listed in the lexicon have their Case assignment properties listed there, but this is not so for X^0s formed in the syntax. Rather, these X^0s can be Case assigners only by virtue of being formed out of X^0s which are lexically specified Case assigners. I assume, however, that this kind of inheritance of the ability to assign Case is strictly limited by the following principle:

(99) The Case Frame Preservation Principle: (CFPP)
A complex X^0 of category A in a given language can have at most the maximal Case assigning properties allowed to a morphologically simple item of category A in that language.

This is related to the idea of "PF interpretation" in a simple way: in the PF representation of an Incorporation structure, the available unit is the whole derived complex item, not the individual stems that make it up. Hence, PF relationships will only be possible with respect to this unit. This restriction then projects back to S-structure since (by the Principle of PF Interpretation) no Case-indexing relationship is allowed that cannot be interpreted at PF. Furthermore, as we have just discussed, there are strict limits—formal reflections of functional constraints—on how many arguments any single item can identify, regardless of its internal structure. In this way, (99) is similar to (98); it merely states that the (partly language-particular) limits tolerated for a complex category are the same as those tolerated for a simple one. (99) is called the CASE FRAME PRESERVATION PRINCIPLE because it guarantees that, in a range of instances, the patterns of Case assignment in derived structures will be identical to those in base-generated structures (cf. Grimshaw and Mester (1985)).

To see what this comes to, consider an abstract example of NI (cf. (95)):

(100) a. I AGR_j-buy $[_{\text{NP}_j}$ John^i AGR^i-house$]$
b. I AGR^i-house-buy $[_{\text{NP}}$ John^i $t]$

From (100a), we know that the noun root 'house' is a Case assigner; suppose that it, as in English, assigns genitive Case. Then, in (100b) the complex verb could conceivably assign genitive Case to the possessor, by virtue of the fact that it contains the genitive Case assigner 'house'. I assume that this is impossible, blocked because 'house-buy' is a verb and verbs do not (usually) assign genitive. Thus, by the Case Frame Preservation Principle, the complex verb will not be able to inherit genitive Case assignment properties from the noun root, and it will only be able to assign the accusative Case that it inherits from the V root it contains. Thus, (99) implies that the possessor in configurations such as (100b) must be accusative rather than genitive, consistent with the morphology of such constructions in Southern Tiwa and the Iroquoian languages.

Furthermore, suppose that, following (98), verbs in these languages can assign structural Case to only one NP. Then, the Case Frame Preservation Principle implies that the incorporation of a noun root will never increase the Case assigning ability of the verb above this limit, even if the N should be a structural Case assigner. Thus, I predict that sentences such as (101) will be impossible in these languages, even though the structure is known to be possible if either of the post-verbal NPs is omitted (see (81) and (82) above):

(101) *I [AGR-house-sell John [Peter t]]
'I sold Peter's house to John.'

Here, either 'house-sell' would have to assign Case to both 'John' and 'Peter', or 'sell' would have to incorporate a second N for everything to be PF–identified. Both these options are impossible, given (98) and (99). I have not been able to check this prediction, although it seems reason-

able.[39] The empirical evidence in favor of the Case Frame Preservation Principle is thus not overwhelming at this point, but it will be very strong by the end of the work.

Here we have seen how the PF–oriented notion of identification makes understandable certain secondary constraints of case theory which govern situations that arise in Incorporation structures. These in turn have clarified the syntax of NI sentences, explaining why certain a priori possible alternatives to grammatical NI sentences do not occur. Indeed, each of the constraints introduced in this section will have explanatory value in other constructions as well.

3.4.4 Case Variation in Noun Incorporation Constructions

The theme of this section has been that an incorporated noun and the NP that it headed need not be assigned Case; the Incorporation relation itself is adequate to allow them to bear a theta role at LF. However, this is certainly not to say that such a nominal CANNOT be assigned Case; indeed, there is no solid theoretical reason why this should be impossible. In fact, I will assume that it is possible, and even necessary in some circumstances. This will provide a low-level parameter of variation that accounts for certain crosslinguistic differences in the syntax of NI constructions.

Greenlandic Eskimo is a language with NI structures (Sadock (1980; 1985; 1986)). Some simple examples are:

(102) a. *Qimme-qar-poq.*
dog-have-3sS
'He has a dog.'
b. *Sapangar-si-voq.*
bead-get-3sS
'He bought beads.'
c. *Nerrivi-lior-poq.*
table-make-3sS
'He set the table.'

In each of these sentences, the thematic direct object has been incorporated into the verb, consistent with the Head Movement Constraint. In this way, Eskimo is like Mohawk and Southern Tiwa. Yet, there is a significant difference. In the Iroquoian languages and Southern Tiwa, unaccusative verbs often incorporate their "subject" (i.e. the sole argument):

(103) a. *[Nękę t] o-nǫhs-akayǫh.*
this 3N-house-old
'This house is old.' (Onondaga)

However, Sadock (1980; 1985) states that subjects NEVER incorporate in Greenlandic Eskimo, apparently even with these verbs. Why should this difference be?

There is a morphological difference that correlates with the difference identified above. The verb forms in (102) all have agreement suffixes which are drawn from the INtransitive agreement paradigms of Eskimo. This is true in spite of the fact that the verbs are dyadic, with a direct object overtly expressed as the incorporated N. In contrast, the sentences in (104) have unincorporated objects and show the transitive agreement paradigms:

(104) a. *Arnap meeraq taku-**vaa**.* (**taku-voq*)
woman-ERG child(ABS) see-**3sS/3sO**
'The woman saw the child.'
b. *Neqi neri-**vara**.* (**neri-vunga*)
meat(ABS) eat-**1sS/3sO**
'I ate the meat.'

In this respect also, Eskimo differs from Southern Tiwa and Mohawk. Verbs in these latter languages show transitive agreement both when their direct object is incorporated and when it is not. This agreement will reference the features of the incorporated object if it is not needed to PF–identify some other NP, such as the possessor. Postal (1962, 285) shows this for Mohawk:[40]

(105) a. *ʔi **khe**-nuhweʔ-s ne yao-wir-aʔa.*
I **1sS/3FO**-like-ASP PRE-baby-SUF
'I like the baby.'
b. *ʔi **khe**-wir-nuhweʔ-s*
I **1sS/3FO**-baby-like-ASP
'I like the baby.'
c. **ʔi **k**-wir-nuhweʔ-s*
I **1sS**-baby-like-ASP
'I like the baby.'

(106) a. *ʔi **hrai**-nuhweʔ-s ne yao-ʔnihhsra-ʔ*
I **1sS/3MO**-like-ASP PRE-father-SUF
'I like the father.'
b. *ʔi **hrai**-ʔnihhsra-nuhweʔ-s*
I **1sS/3MO**-father-like-ASP
'I like the father.'
c. **ʔi **k**-ʔnihhsra-nuhweʔ-s*
I **1sS**-father-like-ASP
'I like the father.'

Usually in Mohawk incorporated nouns are inanimate and neuter, and the object agreement which they show is null. If, however, the noun root is feminine or masculine as in (105), (106), the characteristic transitive agreement form which it triggers is preserved when it is incorporated, as the examples show. Similar facts hold in Southern Tiwa (Allen and Frantz (1983)):

(107) a. *'U'u-de ti-mũ-ban.*
child-SUF **1sS:A**-see-PAST
'I saw the child.'
b. *Ti-'u'u-mũ-ban.*
1sS:A-child-see-PAST
'I saw the child.'
c. *Te-pan-tuwi-ban.*
1sS:C-bread-buy-PAST
'I bought the bread.'

(107a) and (107b) show that agreement is the same whether or not the object is incorporated; in (107c) we see that the agreement changes if a noun root of a different class is incorporated. Hence, verbs with incorporated objects in Mohawk and Southern Tiwa continue to be morphologically transitive, whereas those of Eskimo are morphologically (although not semantically or syntactically) intransitive.

This morphological intransitivity of Eskimo incorporation structures is confirmed by Case marking facts as well: when the head noun of the object is incorporated, the subject NP is marked with absolutive case, rather than with the ergative case that it has when there is an unincorporated direct object (cf. (103a)):

(108) ***Suulut*** *timmisartu-lior-poq.*
***Søren*(abs)** airplane-make-3sS
'Søren made an airplane.'

These facts illustrate a second difference between Eskimo and the other NI languages which we have discussed.

I suggest that these two differences can be related to one another in the following way. Incorporated noun roots and the NPs which they move from never need to be assigned Case purely by virtue of the Visibility Condition and the Principle of PF Interpretation. Nevertheless, individual languages can stipulate that incorporated nouns need Case, as an idiosyncratic property of the incorporating roots themselves. Suppose then that incorporable Noun roots in Eskimo have this property, but the incorporable noun roots in Mohawk and Southern Tiwa do not. Then, the Eskimo noun roots must

be Case-indexed by the verb root, presumably under government and adjacency within the complex X^0. We may then posit the following natural principle:

(109) If an X^0 root assigns Case within a complex lexical category Y^0, Y^0 cannot inherit Case assigning features from X^0.

For example, the verb root 'make' in (108) assigns Case to 'airplane' within the complex verb 'airplane-make'; thus, the Case assigning properties of 'make' are used up, and the entire verb 'airplane-make' inherits no Case feature which it can assign. This then causes it to take intransitive agreement morphology and determine intransitive case morphology on the unincorporated NP arguments. In effect, noun roots in Eskimo "absorb" Case.

These same assumptions then explain why Eskimo never incorporates the N from the argument of unaccusative verbs. As explained in 3.4.1, unaccusatives crosslinguistically are not usually able to assign Case ("Burzio's Generalization"). Thus, there would be no Case for such a verb to assign to the incorporated noun root. This does not violate the core principles of PF identification per se, but it does mean that the lexical properties of the noun root will not be satisfied. Hence, the structure is ungrammatical. In Mohawk and Southern Tiwa, on the other hand, noun roots do not have this lexical property; hence the sole argument of unaccusatives can be incorporated in these languages, as long as PF identification is satisfied. If the verb is a Case assigner, it need not assign Case to the incorporated noun; thus the complex verb can inherit the property of being a Case assigner from the verb root. Therefore, it will take transitive agreement markers, and will be able to Case mark other NPs, such as the possessor stranded by the moved N.

This last observation predicts a further difference between the two languages: Greenlandic Eskimo verbs ought not be able to Case-mark stranded possessors in this way. This is confirmed; possessors may occasionally be stranded in Eskimo, but when they are, the morphology of the clause remains intransitive, and the possessor is marked genitive by some other process (see note 24). Thus, the following contrast:

(110) *Tuttu-p* ***reindeer*-ERG** *neqi-tor-pu-nga.*
meat-eat-INDIC-**1sS**
'I eat reindeer('s) meat.' (Greenlandic; Sadock (1980))

(111) *Wa-hi-nuhs-ahni:nu:* ***John.***
AOR-**1sS/3M**-house-buy **John**
'I bought John's house.' (Oneida)

Therefore, a cluster of differences between Eskimo and the other languages is accounted for in terms of a single low-level variation in the properties of lexical items.

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

(112) a. *Kua tā he tama e tau fakatino.*
PERF-draw **ERG**-child ABS-PL-picture
'The child has been drawing pictures.'
b. *Kua tā fakatino e tama.*
PERF-draw-picture **ABS**-child
'The child has been drawing pictures.'

Niuean has no verbal agreement, but (like Eskimo) when the direct object is incorporated the case on the subject switches from ergative to absolutive, as if the clause were intransitive. On the other hand, we saw strong evidence in 3.4.1 that Niuean verbs can incorporate nouns which they cannot assign case to: namely the "middle objects" of affective and perception verbs (see (78), (79)). Moreover, Niuean is like Mohawk and Southern Tiwa in that when it incorporates its object, the objective case which the verb would normally give to that NP can be assigned to another NP instead (Seiter (1980)):

(113) a. *Kua tā he tama e tau fakatino aki e malala.*
PERF-draw ERG-child ABS-PL-picture with ABS charcoal
'The child has been drawing pictures with a charcoal.'
b. *Kua tā fakatino e tama aki e malala.*
PERF-draw-picture ABS-child with ABS charcoal
'The child has been drawing pictures with a charcoal.'
c. *Kua tā fakatino he tama* ***e malala.***
PERF-draw-picture ERG-child **ABS charcoal**
'The child has been drawing pictures with a charcoal.'

In (113c) the instrument appears case-marked like a direct object, which is impossible unless the true object is incorporated. Finally, there is one intransitive verb in Niuean which, like those of Mohawk and Southern Tiwa, can incorporate its sole argument: the verb *fai* 'exist' (Seiter (1980)):

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

To account for this "middle ground" type of Noun Incorporation, we can simply say that Noun roots in Niuean prefer to receive Case from the verb root when possible, but they do not absolutely need it. Thus, the morphology becomes intransitive as in Eskimo in basic examples like (112), but when there is no Case to be had ((79), (114)), or another NP needs the Case (113), the structures are still grammatical, as in Mohawk and Southern Tiwa.

We are left with the following situation: universally Noun Incorporation NPs do not need to have Case. This shows up in its purest form in the Iroquoian languages and in Southern Tiwa. However, as a language-specific or a morpheme-specific property, incorporated nouns may receive Case after all within the complex verb, leading to a "Case absorption" effect. This can happen to (at least) two degrees: preferential absorption as in Niuean, or obligatory absorption as in Eskimo. In this way, both variations in the surface morphology of incorporation structures and minor differences in its distribution are accounted for. This completes the discussion of the syntax of noun incorporation proper.

3.5 The Antipassive Construction

In the final section of this chapter, I turn to what is known as the ANTIPASSIVE construction. Descriptively, this construction has been characterized as one in which a morpheme is added to a transitive verb, and the verb's thematic direct object appears as an oblique phrase instead of as a surface direct object (see 1.1.2). Examples of antipassive in a variety of languages are:

(115) a. *Ma Ø-tzaj t-tzyu-ʔn Cheep ch'it.*
REC 3sA-AUX 3sE-grab-DIR José bird
'José grabbed the bird.' (Mam Mayan; England (1983))
b. *Ma Ø-tzyuu-**n** Cheep t-iʔj ch'it.*
REC 3sA-grab-**APASS** José **3s-of bird**
'José grabbed a/the bird.'

(116) a. *Angut-ip arnaq unatar-paa.*
man-ERG woman(ABS) beat-INDIC:3sS/3sO
'The man beat the woman.'
(Greenlandic Eskimo; Sadock (1980))
b. *Angut **arna-mik** unata-**a**-voq.*
man(ABS) **woman-INSTR** beat-**APASS**-INDIC:3sS
'The man beat a woman.'

(117) a. *In li'i' i gima'-miyu.*
1P.EX-see the house-your
'We saw your house.'
(Chamorro,[41] Austronesian; Gibson (1980))

b. ***Man-li'i'*** *häm* ***guma'.***
APASS-see we(ABS) **house**
'We saw a house.'

(118) *Man-**man**-bisita i famagu'un **gi as Juan.***
PL-**APASS**-visit the children **OBL Juan**
'The children visited Juan.'

Note that throughout the case marking and agreement patterns of the antipassive sentences are those of an intransitive sentence, in contrast with the corresponding "actives."

In the literature, antipassive has usually been taken to be a GF changing process par excellence. This is particularly true of relational grammarians, who state it as an explicit rule that maps the underlying direct object into an inactive oblique phrase (specifically, a CHOMEUR) either directly or as a side effect of another change (cf. Postal (1977)). Marantz (1984) captures the same correspondence between direct object and oblique phrase in a framework with assumptions closer to mine. He analyzes the antipassive morpheme[42] as an affix which attaches to verbs in the lexicon, eliminating their (accusative) Case assigning features. In this respect, the antipassive is similar to the passive under Chomsky's (1981) analysis. The antipassive is dissimilar, however, in that it does not also take away the verb's ability to have a thematic subject, as the passive morpheme does. Thus, the D-structure object of an antipassive verb will not be able to receive Case as it is, nor will it be able to get Case by moving to the subject position, that place being already occupied. Therefore, it receives Case by the insertion of a preposition or an oblique Case marker, a special provision allowed by this construction.

In contrast to these approaches, I will endeavor to show that "antipassive" phenomena are really instances of a special type of Noun Incorporation, with properties similar to those we have seen throughout this chapter. In so doing, I will demonstrate that, at least in this case, explicit GF changing rules are unnecessary, and GF changing processes can be subsumed to X^0 movement.

3.5.1 Antipassive as Noun Incorporation

There is a simple fact that suggests that the approaches of RG and Marantz are on the wrong track: the obliquely marked thematic object of an antipassive sentence is optional and may be omitted. When it does not appear, there is still assumed to be a theme/patient of the action, but it is interpreted as being indefinite, unknown, or simply not specified. This is possible in all the languages illustrated above:

(119) a. *Ma ∅-kub' w-aq'na-7n-a (t-uk' asdoon).*
REC 3sA-DIR 3sE-work-DS 3s-with hoe
'I worked it (with a hoe).' (Mam; England (1983))

b. *Ma chin aq'naa-**n**-a.*
REC 1sA work-**APASS**-1s
'I worked [something].'

(120) *Angut unata-**a**-voq.*
man(ABS) beat-**APASS**-INDIC:3sS
'The man beat someone.' (Eskimo; cf. (116b))

(121) *Man-**man**-li'i' i lalahi.*
PL-**APASS**-see the males
'The boys saw something.'
(Chamorro; Gibson (1980); cf. (117b))

Now these verbs have dyadic argument structures, and are not "object-deletion verbs"; apart from the antipassive construction, the thematic object argument must appear by the Projection Principle.[43] (119)–(121) then are problematic for an account like Marantz's, in which the oblique patient NP is taken to be the true argument of the verb. If this were true, it should be as obligatory as the corresponding direct object of a nonantipassive sentence; both are required by the Projection Principle and the Theta Criterion. Yet, this is clearly not the case.

The problem is made worse by the fact that some languages have a morpheme that functions just like the antipassives in (119)–(121), but no overt theme can be expressed in the construction, even optionally. Tzotzil (Mayan), for example, has such a morpheme, according to the description of Aissen (1983). Aissen speaks of a suffix *-van*, which attaches regularly and productively to transitive verbs. She says (p. 291): "Verbs suffixed with *-van* have a reading like 'to do *x* to *y*, or with respect to *y*' where *y* must be human, either a nonspecific human or a discourse referent. In either case, verbs suffixed with *-van* never occur with an overt object." This description makes it very clear both that there is a patient argument "around" somewhere semantically, and that it cannot be expressed syntactically. Aissen gives the following examples (from Laughlin (1975)):

(122) a. *Muk' bu š-i-mil-**van.***
never ASP-1sA-kill-**APASS**
'I never killed **anyone.**'

b. . . . *š-k'ot sibtas-**van**-uk-∅.*
ASP-come frighten-**APASS**-uk-3sA
. . .he came to frighten [**people**].'

c. *ʔAk'-b-at-Ø s-veʔel, ʔi-Ø-veʔ lek. Ta ša la*
give-APPL-PASS-3sA his-meal ASP-3sA-eat well ASP now PRT
š-Ø-mey-van, ta ša la š-Ø-buć'-van
ASP-3A-embrace-**APASS** ASP now PT ASP-3A-kiss-**APASS**
ti kriarailetike.
the maids
'He was given his meal, he ate well. The maids embraced **[him]** and kissed **[him]**.

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

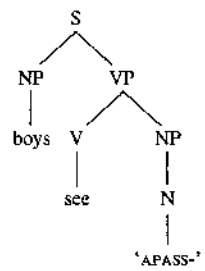
This puzzle can be avoided if one assumes that the oblique theme is never an argument even when it appears; rather it is an adjunct phrase of some kind, similar to the agent phrase of a passive sentence. If this is true, its optionality is expected, and examples such as (119)–(121) are immediately unified with (115)–(118). However, we must still face the question of what happens to the object theta role of the verb root. Based on the examples given above, it seems unlikely that this theta role is deleted or suppressed lexically; for example, (121) corresponds more closely to the English 'The boys see something' than to the English 'The boys (can) see.' Given the assumptions of this work, there is an obvious solution: the object theta role is assigned directly to the antipassive morpheme itself. Suppose we realign the paradigms as follows:

(123) a. *In li'i' i **gima'-miyu.***
IP.EX-see the **house-your**
'We saw your house.' (Chamorro, =(117a))
b. *Man-man-li'i' i lalahi.*
PL-**APASS**-see the males
'The boys saw something.' (Chamorro, =(121))
c. The boys saw **something.**

In (123b) a morphologically complex word corresponds to two morphologically simple words in languages such as English (123c), as well as in other constructions in the same language (123a). Just as in noun incorporation structures, the antipassive verb represents both the semantic

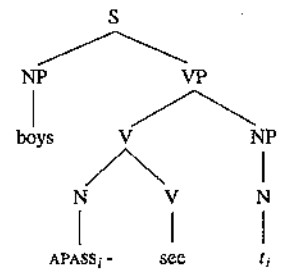
predicate and its direct object argument. The Uniformity of Theta Assignment Hypothesis then points toward parallel D-structures for all the sentences in (123). This can be accomplished by generating the antipassive morpheme in the direct object position at D-structure, where it is assigned the object theta role:

(124)



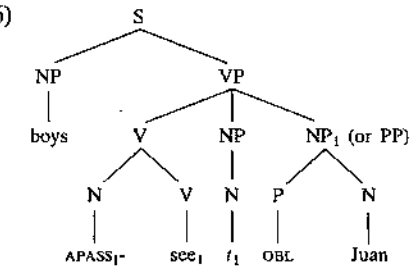
Then the antipassive morpheme undergoes X^0 movement, adjoining to the governing verb, yielding the S-structure:

(125)



Thus, on this analysis, antipassive is merely a special case of Noun Incorporation in which a single, designated lexical item incorporates. Sentences with an overt oblique patient phrase will have exactly the same structure, with the patient phrase as an adjunct "doubling" the theta role of the antipassive morpheme:[44]

(126)



I assume that the antipassive morpheme is coindexed with the oblique theme phrase, thereby transmitting to it the theta role received from the verb. This transmission will only be possible if the antipassive morpheme has a certain idiosyncratic lexical feature; the presence of this feature distinguishes Mam *-n* and Chamorro *man-* from Tzotzil *-van*. I will not, however, develop the mechanisms involved in this sharing of theta roles in any detail. A similar transmission of thematic roles occurs to allow adjunct "*by*-phrases" in passives in some languages; see 6.2.4.

This Incorporation analysis of the antipassive has one striking explanatory virtue: it accounts for the distribution of the antipassive process with no additional stipulation. Explicit rules of antipassive, whether conceived of as syntactic as in Relational Grammar (e.g. Gibson (1980)) or as lexical in a framework like Lexical-Functional Grammar (cf. Bresnan (1982b)), invariably must stipulate that antipassive is a process that affects direct objects and no other grammatical function. Nothing of the sort is necessary in the Incorporation theory, however; all that needs to be stated is that the antipassive morpheme is a noun and an affix. The first property will imply that it heads nominal projections which can receive a theta role; the second will require that it move and adjoin to a lexical verb root (see 1.4.5 and below). The fact that the antipassive is associated with the object position then follows from the ECP: if it were generated anywhere other than in direct object position it would in general be unable to adjoin to the verb (thereby fulfilling its role as an affix) and still properly govern its trace. Thus, such a morpheme can never express an indefinite object of a preposition or a time adverbial:

(127) a. John run [$_{PP}$around [$_{NP}$the lake]].
b. *John run-MORPH$_i$ [$_{PP}$around [$_{NP}$ t_i]]
'John ran around something.'
c. *John run-MORPH around of lake
'John ran around a lake.'

(128) a. The baby cry [$_{NP}$several times].
b. *The baby cry-MORPH$_i$ [$_{NP}$ t_i] of times
'The baby cries sometimes.'

In (127) the PP is a Minimality barrier and in (128) the NP is an adjunct barrier, so movement is blocked in both. In these ways, the antipassive is directly parallel to Noun Incorporation. Similarly, the antipassive morpheme cannot be generated in the subject position and subsequently be attached to the verb of the clause, because it would not c-command its trace:[45]

(129) a. The boys [$_{VP}$fed meat to the cat].

b. *[$_{NP}$ t_i] [$_{VP}$feed-APASS$_i$ meat to the cat] (of boys)
'Someone (some boys) fed meat to the cat.'

Thus, we derive the descriptive generalization that antipassives affect direct object arguments from general syntactic principles, without having to so stipulate explicitly in the grammar. Furthermore, we explain why languages never seem to have "anti-dative" or "anti-locative" processes, in which an affix appears on the verb and an expected goal or location NP is either suppressed or appears with atypical case morphology.

This account of antipassive makes a further prediction of interest. If the antipassive is categorially a normal Noun, then it can in principle be base-generated in any position. In particular, it could be generated in the subject position of a valid D-structure. Problems arise only afterward, when the antipassive is moved onto the verb of the clause in order to attach to a morphological host; this is a downward movement, violating the ECP. However, there is no reason why an antipassive morpheme in the subject position could not be moved UP, to attach to a verb in a higher clause. This would satisfy the morpheme's need to attach to a verb, while still allowing it to c-command its trace. Of course, this movement will only satisfy the ECP when the verb in the higher clause governs the antipassive in the subject position of the lower clause. In other words, it will be possible only in an Exceptional Case Marking (ECM) structure. The prediction, then, is that the antipassive can affect the thematic subject of a verb when (and only when) it appears attached to another verb which is independently known to be an Exceptional Case Marker.

This prediction seems to be confirmed in Chamorro (data from Gibson (1980)). The verb *ekspecta* 'expect' is an ECM verb, appearing in two syntactic frames:

(130) a. *Si Lucy ha ekspekta na si Miguel pära u konni'*
PN Lucy 3s-expect that PN Miguel IRREAL-3sS-take
i famagu'un pära eskuela.
the children to school
'Lucy expects that Miguel will take the children to school.'
b. *Hu ekspekta hao pära un na'-funhayan i che'cho'-mu.*
1sS-expect you-ABS IRREAL-2sS-CAUS-finish the work-your
'I expect you to finish your work.'

In (130a) an overt complementizer (*na*) intervenes between the matrix verb and the embedded subject NP, and there is no evidence that this NP has any relationship to the matrix clause. In (130b), however, there is no complementizer, and the embedded subject NP is governed and Case-marked by the matrix verb. Evidence for this is the fact that the pronoun *hao* 'you'

appears in its absolutive case form, rather than in its ergative case form, as would be expected if it were Case-marked as the subject of the lower verb. Gibson goes on to show that the lower subject can become the subject of the matrix clause if the matrix verb is passivized:

(131) *In-ekspekta si Miguel as Lucy pära u konni' i famagu'un*
PASS-expect PN Miguel OBL Lucy IRREAL-3sS-take the children
pära eskuela.
to school
'Miguel is expected by Lucy to pick up the children at school.'

Thus, *ekspekta* must be an ECM verb. Now consider the following structure (Gibson (1980, 102)):

(132) *Kao* ***man****-ekspekta hao pära un ma'-ayuda?*
Q **APASS**-expect you(ABS) IRREAL-2S-PASS-help
'Do you expect **someone** to help you?'

In this example, the antipassive morpheme *man-* appears on the matrix verb *ekspekta,* and semantically it expresses the thematic agent of the lower verb. This is exactly the predicted situation, in which the antipassive is generated in subject position and moves up to the higher verb rather than down to the verb that (indirectly) theta marks it.[46] This type of example shows that it is empirically wrong to stipulate directly that the antipassive affects structural direct objects.[47]

If antipassive is simply a special case of Noun Incorporation, as I have claimed, then it should be subject to all the same restrictions as NI is. This holds true for restrictions that have not yet been explained, as well as for those that have. Now, as mentioned in note 14, the dative argument can never be incorporated into a "dative" type triadic verb, in spite of the fact that it may act like the direct object of the verb for agreement and Passivization. The theme argument, on the other hand, may incorporate freely into these verbs. This can be illustrated from Southern Tiwa (AGF):

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

In (133a), the goal 'woman' helps determine the agreement morpheme on the verb; nevertheless it cannot incorporate, whether the theme does ((133c)) or not ((133b)). This curious pattern, also valid for Iroquoian, has not yet been explained.

Nevertheless, it is striking that antipassive shows exactly the same pattern. For example, Central Arctic Eskimo has "dative shift" verbs, in which either the theme or the goal argument may appear like a direct object in having absolutive case and triggering verbal agreement (Johnson (1980), Johns (1984)):

(134) a. *Anguti-up titiraut nutarar-mut tuni-vaa.*
man-ERG pencil(ABS) child-ALL give-3sS/3sO
'The man gave the pencil to the child.'
b. *Anguti-up titirauti-mik nutaraq tuni-vaa.*
man-ERG pencil-INSTR child(ABS) give-3sS/3sO
'The man gave the child the pencil.'

Based on the structure (134a) in which it is the direct object, the theme 'pencil' can be made oblique by antipassive with no difficulty:

(135) *Angut* ***titirauti-mik*** *nutarar-mut tuni-si-vuq.*
man(ABS) **pencil-INSTR** child-ALL give-**APASS**-3sS
'The man gave the pencil to the child.'

However, antipassive cannot cause the goal NP 'child' to become oblique, in spite of the fact that it is the object in (134b):

(136) **Angut titirauti-mik* ***nutarar-mik*** *tuni-****si****-vuq.*
man(ABS) pencil-INSTR **child-INSTR** give-**APASS**-3sS
'The man gave the child the pencil.'

A similar situation holds in Chamorro (Gibson (1980)). In that language, the goal argument can appear as the direct object of verbs like *na'i* 'give':

(137) *Ha na'i yu' si Antonio nu i floris.*
3sS-give me PN Antonio OBL the flower
'Antonio gave me the flowers.'

Yet, the antipassive cannot have the goal appear in the oblique case:

(138) **Man-man-na'i häm* ***ni i gima' yu'us*** *ni salappi'.*
PL-**APASS**-give we(EX) **OBL the church** OBL money
'We gave the church money.'

even though the antipassive may correspond to an oblique theme argument:[48]

(139) *Man-**man**-na'i hăm **salappi'** pära i gima' yu'us.*
PL-**APASS**-give we(EX) **money** to the church
'We gave money to the church.'

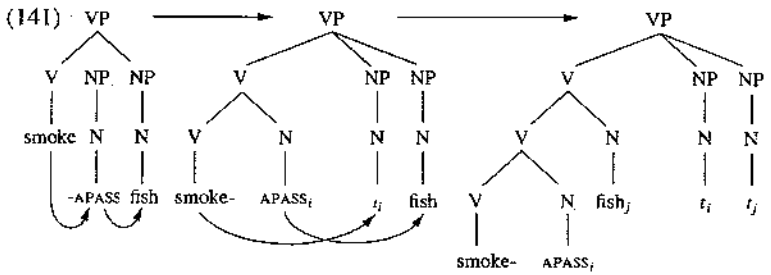
Thus, antipassive behaves exactly like NI. This is strong confirmation for the analysis in which Antipassive is merely a subtype of Noun Incorporation. The explanation for these patterns of facts is given in chapter 7. Further support for our hypothesis will be found in that chapter, where it is shown that NI and Antipassive interact with causative and applicative processes in the same ways.

Finally, there is one more kind of evidence that Antipassive and Noun Incorporation are closely related processes. In Mayan languages the antipassive morpheme is reported to have another systematic use: it acts as a kind of "linking morpheme" that appears when the object noun root is incorporated into the verb (England (1983) and references cited there). A similar thing happens (with definable semantic consequences) in Nisgha, a Tsimshian language of British Columbia (Mithun (1984)). Examples from this latter language are:

(140) a. *simiyeeni-**sgu**-m-**hoon***
smoke-**APASS**-ADJ-**fish**
'to smoke fish'
b. *lits'il-**sgu**-m-**daala***
count.up-**APASS**-ADJ-**money**
'to keep track of money (donations)'

If these relationships prove to be sufficiently productive,[49] we might think of these examples in the following way. The antipassive morpheme is generated as the object of the verb at D-structure, and the patient noun root is generated as an adjunct thematically related to this antipassive in the usual way. The antipassive morpheme then undergoes X^0 movement, affixing to the verb. Now, the patient NP in a sense gets its theta role from the verb complex, because it gets its theta role from the antipassive morpheme, and this morpheme is part of the verb. Thus, the theme root is both a structural sister of the complex verb and is theta-coindexed with it. Therefore, the theme root may incorporate into the verb without violating the ECP. Then (140a) will have the following set of structures, where the linkings represent thematic dependencies (theta role assignment or theta role transmission) and hence proper government relationships:

(141)



Thus, the antipassive acts like a linking morpheme between the verb and the noun in more than a descriptive morphological sense; it provides the theta role link necessary for Noun Incorporation to take place. In this way, the analysis of antipassive captures the close relationship between antipassive and Noun Incorporation that is implied by these examples.

3.5.2 Affixhood and Differences between Antipassive and Noun Incorporation

So far, I have emphasized the similarities between Antipassive and Noun Incorporation which are explained by my analysis. There is, nonetheless, an important difference between the two, which masks these similarities on a casual glance: one never sees alternations between incorporated and unincorporated antipassive morphemes like those that make a movement analysis more obvious for Noun Incorporation. Thus, forms like those in (142) and (143) are completely ungrammatical as parallels of (116) and (117) above:

(142) **Angut-ip (arna-mik) **aa** unatar-paa.*
man-ERG (woman-INSTR) **APASS** beat-INDIC:3sS/3sS
'The man beat someone (a woman).' (Greenlandic)

(143) **In li'i' **man** (guma').*
1P.EX-see **APASS** (house)
'We saw something (a house).' (Chamorro)

I claim that the factor that underlies this difference is morphological in nature: antipassive morphemes are AFFIXES, whereas "conventional" incorporated nouns are generally roots.

In her theory of morphology, Lieber ((1980); cf. Williams (1981a)) puts forth the hypothesis that affixes have the same features and properties as free morphemes (words), except for the obvious minimal difference that affixes must be morphologically bound. Lieber captures this difference by associating with bound morphemes a MORPHOLOGICAL SUBCATEGORIZA-

TION FRAME, which states what kind of element the morpheme in question must have as a sister in a morphological structure. Free morphemes need not have any sister in morphological structure, and thus they have no morphological subcategorization frame. Now, I am using the notion that (some) affixes have the same properties as free words in the fullest possible sense: not only do they have morphological properties such as category, number, gender, like those Lieber focused on; they also may have the full syntactic properties of free words, including thematic role assigning and receiving properties (cf. Lieber (1983), Marantz (1984), Williams and DiSciullo (to appear)). Then, following Lieber, the lexical entry for Chamorro *man-* will have, in addition to the normal features of a noun, a morphological subcategorization frame that shows it to be an affix (indeed, a prefix):

(144) *man-*, N: meaning='something'
+ argument
———[$_V$

Clearly morphological subcategorization frames are pointless unless they need to be satisfied at some level of the grammar. I claim that the following is thus a needed principle:

(145) Stray Affix Filter
*X if X is a lexical item whose morphological subcategorization frame is not satisfied at S-structure.

This, together with the morphological subcategorization frames, enforces the fact that affixes must attach to words. The only nontrivial feature of (145) is that it stipulates the crucial level of attachment to be S-structure, rather than D-structure, or PF, or all levels of syntactic analysis. Saying that (145) must hold at all levels would be a theoretical statement of (a major part of) the "Strong Lexicalist Hypothesis" (e.g. Williams and DiSciullo (to appear)), which is widely assumed. But, given that affixes may receive and assign theta roles, this requirement cannot hold at D-structure. If it did, affixes would not be able to occur in the canonical D-structure theta role–assigning and –receiving positions that are required by the Uniformity of Theta Assignment Hypothesis. Thus, the Stray Affix Filter should be an S-structure condition only. It is this principle which rules out (142) and (143), forcing X^0 movement to occur in antipassives.

Noun Incorporation in languages like Mohawk and Southern Tiwa is minimally different in this respect. Here we assume that the incorporated nouns are roots, rather than affixes. As such, they will not have morphological subcategorization frames, and the Stray Affix Filter will not force Incorporation to take place. If the N does incorporate, the result will be a combination of two roots and hence an instance of compounding—a truly optional process. Thus, the difference in obligatoriness between NI and antipassive depends simply on the presence or absence of an idiosyncratic morphological feature, the syntax of the two being otherwise the same, as we have seen.

The fact that Antipassive is morphologically affixation, while "full" Noun Incorporation is morphologically compounding, entails further differences between them. For example, there are often morphophonological differences between the two. This will be true whenever the "morphology theory" of a given language distinguishes affix-root combinations from root-root combinations for the purposes of phonological rules such as stress assignment, epenthesis, and the like. Indeed, observed morphophonological differences of this type seem to correlate rather closely with the difference in obligatoriness already discussed. Thus, the antipassive morphemes in Eskimo trigger the same kinds of phonological rules as standard derivational suffixes in the language (see Fortescue (1984)), such as causing the final /r/ of the stem to drop in (116b). Noun roots in Iroquoian, in contrast, have the morphophonology of compounding and not affixation (Mithun (1984); Baker (1984; 1986)); e.g. they trigger an epenthesis of /a/ rather than of /i/ as found in certain other contexts (cf. Williams (1976)). Similarly, the antipassive morpheme will often appear in a different place in the derived word structure than an incorporated noun would. For example, because of its particular morphological subcategorization frame it may be a suffix in a language where incorporated Noun roots appear immediately before the verb root. An example of this type from Eskimo can be seen in (146).

Finally, the affixes of a language typically constitute a "closed" class, in that its membership is tightly fixed and new elements are not easily added. Conversely, roots form an "open" class. Thus, if antipassive morphemes are truly affixes and incorporated nouns are truly roots, we expect to see this difference show up here. In fact it does. Languages often have more than one "antipassive" morpheme, but the set of such morphemes is always small and fixed. Thus, Chamorro has just one such element (*man-;* Gibson (1980)); Labrador Inuttut Eskimo has three (*-ji, -tsi,* and ∅; Woodbury and Sadock (1986)); some Mayan languages have four (England (1983)). The situation is quite different in the Iroquoian languages and Southern Tiwa, however. Here the majority of nouns can incorporate, and there are no clear boundaries on the class. In fact, researchers in these languages are more likely to list the kinds of nominals that cannot incorporate for some reason

(usually involving animacy features or morphological shape), rather than those that can (e.g. H. Woodbury (1975a) for Onondaga). This difference also correlates directly with whether Incorporation is obligatory or not.

I have argued that the syntax of Antipassives and NI is essentially identical, but they are distinguished by an independent and idiosyncratic lexical property, the presence or absence of a morphological subcategorization frame. If this property is really independent of the syntax, we can imagine that it could be associated not with the noun of an NI construction, but instead with the verb. This would lead to a third type of NI, with characteristics partly complementary to those of Antipassives. Exactly these characteristics are in fact found in Noun Incorporation in the Eskimo languages (see Sadock (1980; 1985); A. Woodbury (1981); Fortescue (1984)). Thus, in these languages, Noun Incorporating verbal elements—called 'N-V postbases' in the Eskimo literature—are, unlike their Iroquoian counterparts, limited to a well-defined, finite set; Fortescue (1980; 1984) lists approximately 45 for West Greenlandic, for example. These N-V postbases have the morphophonological properties of bound forms, and are always listed as derivational affixes. Finally, with verbs where Noun Incorporation is allowed, it is obligatory. Sadock (1980, 306–307) provides the following as illustrative examples, again from Greenlandic:

(146) a. *Qimme-qar-poq*. (cf. *qimmeq*, 'dog')
dog-have-INDIC-3sS
'He has a dog.'
b. *Sapangar-si-voq*. (cf. *sapangaq*, 'bead')
bead-get-INDIC-3sS
'He bought beads.'

The only way to avoid incorporating a contentful noun root with these verbal elements is to incorporate a semantically empty noun stem (*pi-*); the theme can then optionally be expressed as a "doubling" adjunct:

(147) a. (*Qimmimik*) *pe-qar-poq*.
dog-INSTR ∅-have-3sS
'He has something (a dog).'
b. (*Sapanngamik*) *pi-si-voq*.
bead-INSTR ∅-get-3sS
'He bought something (beads).'

All these facts can be accounted for by simply saying that these Eskimo elements have the lexical entries of standard transitive verbs, but also morphologically subcategorize for a noun root:

(148) *-si*, V: meaning='get'
+ [_____ NP]
theme
]$_N$_____

As with antipassives, Incorporation is forced by the Stray Affix Filter, although this time it is a property of the verb that needs to be satisfied, rather than a property of the noun.

In conclusion, NI can arise in any of three distinct morphological situations: the N can be an affix and the V a root, as in antipassives; the V can be an affix and the N a root, as in Eskimo apart from antipassives; or the N and the V can both be roots, as in Iroquoian and Southern Tiwa. Only in the last case will obvious alternations between incorporated and unincorporated structures be found.

3.5.3 Further Differences between Antipassive and Noun Incorporation

In this final section, I enumerate three further differences between antipassives and NI which partly hide the fact that they are fundamentally the same process. Each of these differences is likely related to the fundamental difference between affixes and roots that was discussed in the last subsection, but this time the relationships are loose and functionally motivated rather than formally determined.

First, antipassive morphemes always have a more general meaning than most incorporated noun roots; they have approximately the semantic force of 'something' or of pronouns, depending on the context, but not that of (say) 'dog' or 'house'. For this reason, antipassive morphemes resist modification and do not appear with restrictive relatives or possessors. This in turn means that antipassives will not generally strand anything when they incorporate, although stranding can occur when ordinary noun roots incorporate. Hence, there are no arguments that antipassive is generated by Move-Alpha that are parallel to those given in 3.3 for full noun incorporation. Nevertheless, there is some confirmation of the hypothesis that antipassive morphemes are nouns with lexically associated nounlike meanings in the fact that the antipassive morpheme does not have the same meaning in all languages: in Tzotzil it means 'human and animate thing' (Aissen (1983)), while in Chamorro it has a more general meaning.

Second, antipassive morphemes always make the verbs they attach to morphologically intransitive; i.e. the verbs take the agreement paradigms and case morphology of intransitive clauses. Full Noun Incorporation, on the other hand, shows variation on this point. Thus, it seems that antipassive morphemes need to receive a Case index, like the Noun roots of

Eskimo rather than like those of Mohawk or Southern Tiwa (3.4.4). This is consistent with the fact that (as far as I know) the antipassive can never represent the only argument of an unaccusative verb. Hypothetical examples of this form would be:

(149) a. (?There) fell a book off the table.
b. *(there) fall-APASS off the table
'Something fell off the table.'
c. *(there) fall-APASS of a book off the table
'A book fell off the table.'

Such sentences are impossible in general if the incorporation makes the verb morphologically intransitive, as in Eskimo, but are acceptable if it does not. Thus, the correlation between these two properties of antipassives is explained by the theory in section 3.3.4.

Finally, it is common for the antipassive morpheme to transmit its thematic role to an external adjunct which "doubles" it. This tends to mask the true nature of the antipassive, in that it makes it tempting to take the external phrase to be the verb's true grammatical argument, rather than the antipassive morpheme itself. This is probably related in a loose way to the fact the antipassive morpheme is more general in meaning than are most incorporated full noun roots; hence it is pragmatically favored to allow an adjunct as a way of saying more. However, this is no more than a tendency, because languages differ at this point. Thus, we have seen ((122)) that Tzotzil has an "antipassive" morpheme which is clearly an affix and which has the same distribution as other antipassive morphemes; yet it does not transmit its theta role to an external adjunct.

In fact, the property of transmitting a thematic role to an external adjunct is not a difference between Antipassive and NI at all. In the Iroquoian languages, even incorporated "full" noun roots can transmit their theta role to an external Noun Phrase "double." This is illustrated in the following examples:

(150) a. *Wa-k-**nvhs**-y:ti:* [*he:ni:kv:* ***o:-nvhs-eh***].
AOR-1sS/3N-**house**-make/PERF that **PRE-house-SUF**
'I have made that house.'
(Tuscarora; Williams (1976, 63))
b. *Wa?-k-**nuhs**-ahni:nu:* [*John* ***lao-nuhs-a?***].
AOR-1sS/3N-**house**-bought John **3M-house-SUF**
'I bought John's house.'
(Oneida; Michelson (personal communication))

c. . . . *Ca'toñta'hāiā'kę'ne'* [***s-ka-nor-a'*** *o-nęsta-keñra'*]
thence-3M-came-again **one-PRE-onora** PRE-corn-white
*s-ha-**nor**-ę'hāwi'*.
IND-3M/3N-**onora**-brought
'He then came out bearing an onora [string of ears] of (white) corn.' (Mohawk; Hewitt (1903, 271))

In each of these examples, there is an incorporated noun root in the verb which is doubled by an external phrase headed by the same noun root, and this external phrase has the function of supplying more information about the object discussed. Of course, in antipassives the incorporated noun and the head of the external phrase doubling it are not the same lexical item; instead the latter is more specific than the former. This type of relationship is also possible in full NI structures in the Iroquoian languages:

(151) a. *Ae-hra-**taskw**-ahk-hwa?* *ha? **tsi:r.***
DU-3M-**domestic.animal**-pickup-ASP PRT **dog**
'He regularly picks up dogs [he is a dog-catcher].'
(Tuscarora; Williams (1976))
b. *Hati-**hnek**-aets* ***o-v:ta:k-i?***.
3M.PL-**liquid**-gather **PRE-syrup-SUF**
'They gather maple syrup.'
(Onondaga; H. Woodbury (1975a))
c. *Tohka niyohsera:ke* *tsi nahe'* [*sha'te:ku niku:ti*
several so-it-year-numbers so it-goes eight of-them
rabahbot] *wa-hu-**tsy**-ahni:nu* *ki* *rake'niha.*
bullhead AOR-3M-**fish**-bought this my-father
'Several years ago, my father bought eight bullheads.'
(Mohawk; Mithun (1984))

'Dog' doubles 'domestic animal' in (151a); 'syrup' specifies 'liquid' in (151b); and 'bullhead' goes with 'fish' in (151c). Of course, not just any noun phrase can double an incorporated root: the two must share all specified semantic features in order to share a thematic role, and pragmatically the external NP must be more specific than the incorporated N root—otherwise it will be omitted. This gives the effect of "classifier incorporation," in which the grammatical classifier of a given noun appears inside the verb (cf. Chafe (1970), Mithun (1984)). Here I claim that the "classifier" receives the true object theta role from the verb at D-structure and then incorporates into the verb. From this position, it may transmit its theta role to an adjunct NP, as long as that NP has consistent semantic features. Thus, the same theta role transmission that is at work in Antipassive also

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.