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THE EVOLUTION OF NOUN INCORPORATION

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Noun incorporation is perhaps the most nearly syntactic of all morphological processes. Examination of the phenomenon across a large number of geographically and genetically diverse languages indicates that, where syntax and morphology diverge, incorporation is a solidly morphological device that derives lexical items, not sentences. It is used for four different but related purposes; these fall into an implicational hierarchy which in turn suggests a path along which incorporation develops historically. Differences in its productivity from language to language show that this development may be arrested at any point—resulting either in the eventual disappearance of the process, or in its resurgence as a productive system of affixation.*

A large number of unrelated languages scattered throughout the world share an intriguing morphological construction. In this construction, generally referred to as noun incorporation (NI), a N stem is compounded with a V stem to yield a larger, derived V stem, as in Siberian Koryak *qoya-* 'reindeer' + *-nm-* 'to kill' → *qoyanm-* 'to reindeer-slaughter'.¹ Interestingly, all languages

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The first significant treatments of noun incorporation were Kroeber 1909 and especially Sapir 1911. For other works dealing specifically with the topic, see Axelrod ms, Booker 1981, Haas 1941, Mardirussian 1975, Merlan 1976, Miner 1982, 1983a,b, 1984, Sadock 1980, Sugita 1973, Wolfart 1971, and Woodbury 1975a,b.

¹ The few English constructions that most closely resemble NI (e.g. *to baby-sit*, *to mountain-climb*, or *to word-process*), do not actually result from a productive compounding process, but are rather V's backformed from compound N's. Several facts in addition to their scarcity show this to be true. First, such V's rarely if ever exist without a related gerund form (*baby-sitting*, *mountain-climbing*, or *word-processing*). Second, such V's generally do not occur freely with a full set of normal inflections. They tend to appear primarily with an *-ing* suffix, a functional extension of the existing gerund form. Thus a sentence like *I went mountain-climbing* seems more natural than *I mountain-climb every Saturday*. Finally, one of the few such V's which does appear with a variety of inflections, *to baby-sit*, shows none of the classic semantic case relations between the N and V constituents that are standard features of incorporation: one does not 'sit' a 'baby'. The baby is not a typical patient, location, nor instrument. The way in which the baby qualifies the sitting is much more typical of the looser semantic relationships generally found between the constituents of nominal compounds.

which exhibit such morphological structures also have syntactic paraphrases. If we know that, in Koryak, one can say *tıqoyanmátekin* 'I-reindeer-slaughter', then we can correctly predict the existence of a sentence like *Tınmékin qoyáwǵe* 'I-slaughter reindeer.'

It would certainly be inefficient for languages to preserve exactly equivalent expressions so systematically. The fact that productive morphological constructions of this type never exist in a language without syntactic analogs indicates that the morphologization itself must be functional. A comparison of the process across languages reveals that, in fact, speakers always incorporate for a purpose; however, the purpose is not always the same. The following sections will show that NI is used for four different but related functions. Furthermore, these four types of NI fall into an implicational hierarchy, which in turn suggests a path along which NI develops historically. Differences among languages in the productivity of the types indicate that the development may be arrested at any point along the path.

1. TYPE I NOUN INCORPORATION: LEXICAL COMPOUNDING. If a language exhibits any NI at all, it will contain basic lexical compounds. Structurally, compounding consists of the derivation of a complex lexical item from a combination of two or more stems. The constituent stems may be of almost any grammatical class (nouns, verbs, adjectives etc.), as may be the resulting compound. A particular compounding language will not necessarily exhibit all possible combinations. It may derive only nouns from nouns ($N + N > N$) like Mende of Sierra Leone; or only verbs from verbs ($V + V > V$), like Igbo of Nigeria; or only verbs from nouns plus verbs ($N + V > V$), like Tuscarora of New York State—or it may permit a variety of types of compounds, like English or Turkish, with $N + N > N$; $N + V > N$; $N + V > V$; $ADJ + N > N$; $N + ADJ > ADJ$, etc.

Compounding is done for a reason. Some entity, quality, or activity is recognized sufficiently often to be considered name-worthy in its own right; thus Eng. *bus money* or *lunch money* are more likely nominal compounds than *sock money* or *screwdriver money*. Again, *berry money* might be used by someone employed as a berry-picker, but probably not by someone unexpectedly spying boysenberries at the market. (For a discussion of name-worthiness as a motivation for nominal compounding, see Zimmer 1971, 1972, Downing 1977, Pawley 1982.) The same is true of verbal compounds, which are coined as names of recognizable activities. If you ask where my brother is, I might reply, *He is out berry-picking* or *He is off mountain-climbing*, but probably not *He is out ladder-climbing*, even if he is in fact climbing a ladder (but cf. fn. 5, below). Ladder-climbing is not an institutionalized activity. If I did say it, you might suspect that ladder-climbing must refer to an activity recognized in some context—perhaps a new sport, or a test for joining the fire department. Compounds have a lexical status which their syntactic counterparts lack.

The term 'incorporation' is generally used to refer to a particular type of compounding in which a V and N combine to form a new V. The N bears a specific semantic relationship to its host V—as patient, location, or instrument. (This is not necessarily true of other types of compounds, e.g. $N + N > N$,

in which the relationship may be quite vague. Thus *alligator shoes* could conceivably be shoes made for alligators, shoes shaped like alligators, shoes made of alligator, or shoes meant to go with an alligator costume.) The activity or quality designated by the NV compound is viewed as a recognizable, unitary concept, rather than the chance co-occurrence of some action or state and some entity.

Such compounding has a significant effect on the role of the N involved. In *He is off berry-picking*, the word *berry* does not refer to a specific berry, nor to a particular bushful of berries: it qualifies the V, describing the type of picking in progress. Because it does not refer, it is not marked for definiteness or number. Thus I would not say

(1) **Bob went the berries-picking.*

Neither does such a N co-occur with demonstratives or numerals. A person caring for three children would not say

(2) **I am {those, some, three} baby-sitting.*

The degree of cohesion between the constituents of a compound generally reflects the over-all morphological character of the language in question. In some cases, constituents retain their formal identity as separate words; in others, they become fused, and their individual identity becomes blurred or lost completely.

1.1. COMPOSITION BY JUXTAPOSITION. A number of languages contain a construction in which a V and its direct object are simply juxtaposed to form an especially tight bond. The V and N remain separate words phonologically; but as in all compounding, the N loses its syntactic status as an argument of the sentence, and the VN unit functions as an intransitive predicate. The semantic effect is the same as in other compounding: the phrase denotes a unitary activity, in which the components lose their individual salience.

1.11. OCEANIC. Compounding of this type is prevalent in Oceania. The languages are relatively analytic and have fairly fixed, case-based word orders, although the actual case systems and unmarked word orders vary from language to language.

Compare the pairs of sentences below. In the (a) sentences, the objects are independent. In the (b) sentences, they are bound to their V's in a construction termed 'incorporation' by most Oceanicists:

(3) Mokilese (Micronesian, Austronesian; Harrison 1976)

- a. *Ngoah kohkoa oaring-kai.*²
 I grind coconut-these
 'I am grinding these coconuts.'
- b. *Ngoah ko oaring.*
 I grind coconut
 'I am coconut-grinding.'

² All examples cited remain in the transcriptions or orthographies provided in the original sources. Where authors gave morphological analyses, these have been retained as well.

(4) Yapese (Micronesian, Austronesian; Jensen 1977)

a. *Gu bea chuwaay' ea mareaw.*

I PRES buy CONN copra

'I am buying copra.'

b. *Gu bea chuwaay' mareaw.*

I PRES buy copra

'I am copra-buying.'

The VN bond is both semantic and syntactic. The sentences with independent objects would be used if the objects were noteworthy in their own right; but those with incorporated objects indicate unitary, institutionalized activities of coconut-grinding and copra-buying. The objects do not refer to specific coconuts or copra, but simply modify the type of activity under discussion. As Harrison notes (162), 'The addition of the noun refines the meaning of the verb in question, limiting its application to the set of objects named by the noun.'

Since incorporated objects are non-referential, and thus non-individuated, these constructions are generally used to describe activities or events whose patients are neither specific nor countable—e.g. habitual, ongoing, or projected activities; those done by several people together; or those directed at a non-specific part of a mass. But the formal unity of the VO constituent is less obvious. In most of the relevant languages, the V and N are written as separate words, and retain their independent stress patterns. However, several facts indicate that the compound functions syntactically as a unit.

In Samoan, particles which normally cliticize to the right of the V cliticize to the right of the VN complex under NI (Chung 1978). The pronominal copy *ai* is such a clitic. In 5a below, without NI, *ai* appears immediately to the right of the V, before the subject and direct object. But in 5b, with NI, *ai* appears to the right of the VN unit:

(5) a. *Po 'o āfea e tausi ai e ia tama?*

Q PRED when TNS care PRO ERG he child

'When does he take care of children?'

b. *Po 'o āfea e tausi-tama ai 'oia?*

Q PRED when TNS care-child PRO ABS.he

'When does he baby-sit?'

Aspect suffixes which normally follow the V in Micronesian languages follow the VN complex. In the Ponapean transitive sentence 6a (Rehg 1981), the completive suffix *-la* immediately follows the V *kang* 'eat'; but in the incorporated object construction of 6b, the suffix follows the entire VN complex:

(6) a. *I kanga-la wini-o.*

I eat-COMP medicine-that

'I took all that medicine.'

b. *I keng-winih-la.*

I eat-medicine-COMP

'I completed my medicine-taking.'

With an external object and transitive V, the completive indicates exhaustion or completion of the medicine; but with an incorporated, non-referential object,

it simply indicates completion of the activity. More medicine may remain in the bottle.

The placement of manner adverbs also reveals the bond between V's and incorporated objects. Note the position of *upac* in the following Kusaian sentences (Lee 1975). It follows the V in transitive sentences like 7a; but under NI as in 7b, it follows the VN complex:

- (7) a. *Sah el twem upac mitmit sac.*
 Sah he sharpen diligently knife the
 'Sah is sharpening the knife diligently.'
 b. *Sah el twetwe mitmit upac.*
 Sah he sharpen knife diligently
 'Sah is diligently knife-sharpening.'

Another indication of the formal bond between V's and incorporated objects in Oceanic languages is the fact that the VN complex functions syntactically as an intransitive predicate. This is especially obvious in ergative languages, where subjects of transitive sentences are in the ergative case, while subjects of intransitive sentences are in the absolutive. Compare the subject markers in the Tongan sentences below (Churchward 1953):

- (8) a. *Na'e inu 'a e kavá 'é Sione.*
 PAST drink ABS CONN kava ERG John
 'John drank the kava.'
 b. *Na'e inu kava 'a Sione.*
 PAST drink kava ABS John
 'John kava-drunk.'

In 8a, which contains an independent direct object, the subject is in the ergative case. When the object is incorporated, the subject is absolutive.

In Tongan, the form of a relative clause depends upon its transitivity (cf. Chung). Subjects of transitive relative clauses surface as pronouns, and 3rd person subjects of intransitive relatives are deleted. If a relative clause contains an incorporated object, its subject is deleted, as with intransitives:

- (9) *Kuo ke sio ki he tangata na'a (*ne) fakatau-kahoá?*
 PERF you see to the man PAST he sell-necklace
 'Have you seen the man who was selling necklaces?'

Evidence of the intransitive status of VO compounds also exists in nominative/accusative languages. In Yapese and Kusaian, intransitive V's can be used as nominals, while transitives must be nominalized by means of a suffix. VO compounds, like intransitive V's, appear with no overt nominalizer, as shown by Kusaian examples (cf. Lee):

- (10) a. *Fak-ihsiyen pahko uh arulac sensen.*
 spear-hold shark is very dangerous
 'Spearing the shark is very dangerous.'
 b. *Fakfuhk pahko uh arulac sensen.*
 spear shark is very dangerous
 'Shark-spearing is very dangerous.'

Kusaian also has an instrumental suffix *-kihn* which derives transitive V's

from intransitives:

- (11) a. *usrusr* 'to shake' (intr.)
 usrusr-kihn 'to shake with'
 b. *taptap* 'to take out' (intr.)
 taptap-kihn 'to take out with'

The instrumental cannot be suffixed to inherently transitive V's (12a–b); however, it can follow VN compounds (12c–d):

- (12) a. *usruk* 'to shake' (tr.)
 **usruk-kihn*
 b. *tahpuhk* 'to take out' (tr.)
 **tahpuh-kihn*
 c. *usrusr tin kihn* 'to shake cans with'
 d. *taptap kaki kihn* 'to take out coconut meat with'

The NI process is highly productive in all these languages (Pawley, p.c.) In some cases, however, the derived lexical compounds have taken on meanings that are not completely equivalent to the sum of their parts, like Kusaien *srasre* 'raise' + *po* 'hand' > 'surrender', or Fijian *taro-gi* 'ask' + *sotia* 'soldier' > 'enlist' (Arms 1974). Such expressions simply illustrate the lexical status of the compounding process. As in all lexical derivation, forms are often created for specific purposes; their primary meanings are therefore not necessarily equal to the full range of meanings of their combined constituents.

1.12. MAYAN. Several Mayan languages exhibit an equivalent structure. A transitive V and unmodified N may be juxtaposed to indicate a unitary activity. The N does not refer to a specific, countable entity. Instead, it narrows the scope of the V to an activity directed at a certain type of patient. The following data are from Robertson 1980:

- (13) Mam
- a. *ma-Ø-č'i'-n-lo-'n-e* *t-lo'-ye*
 REM.PAST.ABS.3-go-ERG.1-eat-AFF-ERG.1 ERG.2-fruit-ERG.2
 q'o:q' ma:ky'.
 squash today
 'I ate your squash today.'
- b. *ma-č-in-lo:n-e* *q'o:q' ma:ky'.*
 REM.PAST-PART-ABS.1-eat-AFF-ABS.1 squash today
 'I ate squash today.'
- (14) Kanjobal
- a. *š-Ø-a-lo-t-oq* *in-pan.*
 PAST-ABS.3-ERG.2-eat-go-OPT [sic] ERG.1-bread
 'You ate my bread.'
- b. *š-at-lo-w-i* *pan.*
 PAST-ABS.2-eat-AFF-AFF bread
 'You ate bread.'

Although they remain separate words, the V and the incorporated noun (IN) form a syntactic unit equivalent to an intransitive V; this is evident from the pronominal affixes within the V. Agents of transitive V's appear in the ergative

case, as in (13–14)a. Agents of intransitives appear in the absolutive. Agents of V's with incorporated objects are also absolutive, as in (13–14)b.

1.13. LAHU, a Tibeto-Burman language of China, Burma, Thailand, and Laos, also exhibits such constructions. Compare the two predicates below (Matisoff 1981:307):

- (15) a. *jì thà' dḥ* 'to drink (the) liquor'
 liquor ACC drink
 b. *jì dḥ* 'to drink liquor'
 liquor drink

The first, in which the accusative particle follows the N, 'implies something like drink the liquor in question; drink some particular liquor; drink liquor as opposed to something else.' The second means 'simply to drink liquor in general.' The N is a separate word in both constructions; but in the second it is not marked as specific, nor is it especially salient. It qualifies the type of drinking discussed. Similar constructions are used for other activities recognized as unitary concepts. Patient subjects, instruments, and locatives also appear in such constructions:

- (16) *mû-yè là* 'it is raining'
 rain comes
 (17) *hāw jû'-pē* 'to kill with a speargun'
 speargun pierce-to.death
 (18) *mè'-gù khá* 'to get stuck in a swamp'
 swamp stuck

As in Oceanic and Mayan, the N's lose their syntactic status as arguments of the clause: 'Specifying nouns are neither subjects nor objects, but simply limiters of the unspecified generality of the naked verb' (Matisoff, 309). Many such compounds are somewhat idiomatic:

- (19) *nì-ma mâ* 'to be fickle'
 heart be.numerous
 (20) *ghê-ghḥ hḥ* 'to be sluggish'
 rump be.heavy

Compounds and their constituents may have different lifespans in the lexicon; e.g., the V's below never occur without the N *i-kâ'* classifying them:

- (21) *i-kâ' hé* 'to take a bath'
 water bathe
 (22) *i-kâ' ší* 'to be thirsty'
 water thirst

The first elements of the phrases below occur only in these compounds. Matisoff suspects that they are derived historically from independent N's:

- (23) *nâ'-ú te* 'to converse, chat'
 ? do
 (24) *tà'-í chê* 'to be silent'
 ? continue

Evidence of the bond between the constituents of compounds comes from

their interaction with other elements. A number of adverbial expressions which normally precede V's may precede either the V or the entire compound:

- (25) *nà'-ú a-cí te ve = a-cí nà'-ú te ve*
 ? a.bit do a.bit ? do
 'to chat a little'

Furthermore, children tend to treat compounds as unitary V's. Matisoff heard 26a from a ten-year-old; but an adult would place the negative particle *mâ* immediately before the V *hâ*, as in 26b:

- (26) a. *mâ ni-ma hâ* 'I'm not sad.'
 not heart wretched
 b. *ni-ma mâ hâ* 'I'm not sad.'
 heart not wretched

1.2. MORPHOLOGICAL COMPOUNDING. In many languages, the formal bond between a V and IN is much tighter than in languages like Mokilese, Mam, and Lahu. The compounds are considered single words by speakers, and are subject to all regular word-internal phonological processes.

1.21. NISGHA. Tarpent (1982:33) reports that Nisgha (= Niska), a Tsimshian language of British Columbia, 'has numerous object-incorporating compounds designating habitual activities'. The functions usually accomplished by Type I NI in other languages are divided between two slightly different constructions here. Some of the compounds consist of a simple transitive V and patient N, as below (surface forms are given to the right of the arrows, in a practical orthography):

- (27) *k'át hó:n* → *gahlhoon* 'to spear fish'
 to.spear fish
 (28) *q'út hó:n* → *k'ohlhoon* 'to fillet fish'
 to.cut fish

Tarpent notes that 'these are activities which require the actor's full attention to the object for a definite period of time; the actor carries out the activity without interruption from beginning to end of the process.'

In other compounds, the V carries a detransitive suffix, such as the anti-passive *-'sk''* and an adjectival suffix *-m*:

- (29) *saməyé:n-sk''-m-hó:n* → *simiyeehisgumhoon*
 to.smoke-ANTIPASS-ADJ-fish
 'To smoke fish'
 (30) *líc'l-'sk''-m-tá:la* → *lits'ilsgumdaala*
 to.count.up-ANTIPASS-ADJ-money
 'to keep track of money donated at a potlatch'

These constructions differ slightly in meaning from those without the suffixes. According to Tarpent (34), 'Here the process might go on indefinitely, or be done at intervals: for instance, *simiyeehisgumhoon* describes a more leisurely and less absorbing process than *gahlhoon* or *k'ohlhoon*; the actor may be one of several participants in a group process as in *lits'ilsgumdaala*. The meaning

of these expressions, then, is something like “to do some —ing, to do a bit of —ing, to take part in —ing”.’

In both varieties, the compound functions as an intransitive V denoting a unitary concept. The simpler constructions emphasize this conceptual unity. The antipassive constructions emphasize the non-referential aspect of the IN’s.

1.22. AUSTRALIAN ABORIGINAL LANGUAGES. A number of Australian languages make extensive use of morphological compounding. This results in part from taboos (found throughout Australia) against pronouncing the name of a deceased person—or, in many cases, even words resembling the name. The taboos create a constant demand for new lexical items, which is often filled by new compounds. Compounds formed for this purpose denote especially unified concepts, of course, since they are coined to replace single lexical items.

Often the proportion of compounds to monomorphemic V stems is amazingly high, especially among the western languages. Thus Dixon (1980:411) reports that Gurindji contains over 1000 compound V stems, but only about 30 monomorphemic ones. Of approximately 600 V stems recorded for Walmatjari, only about 60 are monomorphemic. The monomorphemic V’s appear both alone, and as the second element of compounds (Hudson 1978):

(31) *pina-karri* ‘to listen, hear’
ear-stand

(32) *pir-many* ‘to peep’
peep-say

Although the lexical process is still productive, in many cases lexical replacement has obscured the full transparency of existing compounds. The host V still occurs as an independent lexical item elsewhere, but the first constituent does not, as in the Pintupi compound below (Dixon 1980):

(33) *kaarl-pu*: ‘to break’
? -hit

1.23. COMANCHE, a Uto-Aztecan language of Oklahoma, makes extensive use of NV compounds to denote name-worthy activities (Canonge 1958):

(34) *narʌnoo’-rʌki-* ‘to saddle up’
saddle-put.away

(35) *pʌʌ-tʌh-kwe’ya-* ‘to skin an animal’
fuzz-by.hand-remove

Because constituent stems lose their identity under NI, the meanings of compounds are often not exactly equivalent to the meanings of their parts. In fact, compounds are often created to convey specialized meanings. Thus the compound in 36 would not be used for just any throwing of cloth. The IN *wana*, originally used to refer to ‘yard goods’, then extended to include ‘paper’, designates only playing cards in this context:

(36) *wana-roh-peti-* ‘to gamble’
cloth-by.force-throw

(37) *waa-hima-* ‘to celebrate Christmas’
cedar.tree-take

1.3. ESSENTIALS OF COMPOUNDING. All these constructions share a number of characteristics, despite differences in the degree of formal cohesion between the constituent stems. In all of them, a V stem and a N stem are combined to form an intransitive predicate denoting a unitary concept. The compound is more than a description; it is the name of an institutionalized activity or state. The IN loses its individual salience both semantically and syntactically. It no longer refers to a specific entity; instead, it simply narrows the scope of the V. It is thus unaccompanied by markers of definiteness or number, or by demonstratives. Although it may function semantically as a patient, location, or instrument, it has no independent syntactic role in the sentence as a whole, and so is unmarked for case. (For detailed discussion of reduction in nominal function, see Hopper & Thompson 1984.)

Since IN's do not refer to specific entities, these constructions tend to be used in contexts without specific, individuated patients. They may be generic statements; or descriptions of on-going activities, in which a patient has been incompletely affected; or habitual activities, in which the specific patient may change; or projected activities, in which the specific patient is not yet identifiable; or joint activities, where an individual agent incompletely affects a particular patient; or activities directed at an unspecified portion of a mass.

2. TYPE II: THE MANIPULATION OF CASE. A number of languages that combine N's and V's to form intransitive compounds exhibit a second type of NI, which affects the structure of the entire clause. This resembles Type I NI in several ways. In both, an IN—unaccompanied by markers of definiteness, number, or case—forms a unit with the V it qualifies. The N loses its syntactic status as a distinct argument of the clause. However, the two processes differ in their effect on the rest of the clause. Type I NI simply lowers the valence of the V when it derives intransitive predicates from transitive ones; but Type II NI advances an oblique argument into the case position vacated by the IN. When a transitive V incorporates its direct object, then an instrument, location, or possessor may assume the vacated object role. When an intransitive V incorporates its subject, another argument may be advanced to subject status.

2.1. TUPINAMBÁ, a Tupi-Guaraní language recorded during the 16th–17th centuries in Brazil, shows NI of both Types I and II. Lexical compounds designate unitary concepts (Rodrigues, MS):

(38) *a-pisá-eytík* 'I net-throw.'
I-fishnet-throw

(39) *a-urapá-pirár* 'I draw my bow.'
I-bow-open

The compounding yields a certain amount of classification. Thus *-'ú* 'ingest' can be used transitively, with or without a specified external object:

(40) *a-Ø-'ú* 'I eat it.'
I-it-ingest

It can also incorporate one of several qualifying nouns:

(41) *a-'í-'ú* 'I drink water.'
I-water-ingest

- (42) *a-ka-’ú* ‘I drink kawi.’
I-kawi-ingest
- (43) *a-ma’ é-’ú* ‘I eat non-human objects.’
I-NONHUMAN-ingest
- (44) *a-por-ú* ‘I eat human flesh.’
I-HUMAN-ingest

(The Tupinambá had a reputation as cannibals.)

Tupinambá also exhibits Type II NI. Objects may be incorporated into transitive V’s to yield new transitive V’s, resulting in the advancement of affected arguments to direct object status. Compare the object pronouns in the V’s below. Without NI, the direct object is the face, marked by the prefix *-yos-*, as in 45a; but with NI, the derived direct object is the owner of the face, marked in the V by the prefix *-s-*, as in 45b:

- (45) a. *s-oβá a-yos-éy* ‘I washed his face.’
his-face I-it-wash
- b. *a-s-oβá-éy* ‘I face-washed him.’
I-him-face-wash

In a number of compounding languages, the incorporation of patient subjects into adjectival V’s serves an additional purpose: NV compounds serve as modified nominals. This is the normal method of modification in Tupinambá (separate adjective–noun sequences do not occur):

- (46) *iβirá-pararáy* ‘wooden wheel’
wood-rolling

2.2. YUCATEC MAYAN exhibits extensive compounding of Type I. The effect of compounding is to denote a unitary activity, in which the N modifies the type of activity predicated, but does not refer to a specific entity. Compare these sentences (Bricker 1978):

- (47) a. *t-in-č’ak-∅-ah* *če’*.
COMP-I-chop-it-PERF tree
‘I chopped a tree.’
- b. *č’ak-če’-n-ah-en*.
chop-tree-ANTIPASS-PERF-I(ABS)
‘I wood-chopped’ = ‘I chopped wood.’

The compound V in 47b is intransitive, as shown by the absolutive subject marker *-en*.

All Yucatec V’s are marked as completive or non-completive. NI is sometimes less obvious in non-completive V’s because the imperfective suffix may surface as \emptyset , leaving the IN at the edge of the V:

- (48) a. *k-in-č’ak-∅-ik* *če’*.
INCOMP-I-chop-it-IMPF(TR) tree
‘I chop a tree.’
- b. *k-in-č’ak-če’-∅*.
INCOMP-I-chop-tree-IMPF(INTR)
‘I wood-chop.’

Again, the V with the IN is intransitive, as shown by the intransitive imperfective suffix \emptyset .

NI can have a second effect: the direct object role vacated by the IN can be assumed by an oblique argument of the clause. The V is accordingly marked as transitive by a suffix *-t*. NI thus provides a means for advancing an important argument into a primary case role:

- (49) a. *k-in-č'ak- \emptyset -k* *če' ičil in-kool.*
 INCOMP-I-chop-it-IMPF tree in my-cornfield
 'I chop the tree in my cornfield.'
 b. *k-in-č'ak-če'-t-ik* *in-kool.*
 INCOMP-I-chop-tree-TR-IMPF my-cornfield
 'I clear my cornfield.'
- (50) a. *k-in-wek- \emptyset -k* *ha'.*
 INCOMP-I-spill-it-IMPF water
 'I spill water.'
 b. *k-in-wek-ha'a-t-ik.*
 INCOMP-I-spill-water-TR-IMPF
 'I splash him.'

2.3. BLACKFOOT, an Algonquian language of Montana and Alberta, also shows both types of NI (Frantz 1971). In the Type I compound of 51a, ball-acquiring is seen as a unitary activity. However, NI can also be used to promote an affected argument into subject or direct object position; thus, in 51b, the speaker is more interested in the effect of the event on the child than on the ball:

- (51) a. *Iihpokón-sskaawa nóko'sa.*
 ball-acquire.he my.child
 'My child got a ball.'
 b. *Nít-ohpokón-sskoawa nóko'sa.*
 I-ball-acquire.him my.child
 'I provided my child with a ball.'

One of the first aspects of NI to be noted by those studying the phenomenon was the high proportion of terms for body parts among IN's (cf. Kroeber 1909, Sapir 1911). This results in part from the frequent recurrence and natural cohesion of many activities affecting parts of the body, e.g. 'to hand-wash' or 'to tooth-brush'. In addition, NI of body parts allows affected persons to assume a primary case role, such as subject or direct object, rather than merely oblique possessor. Compare these two sentences, with and without NI:

- (52) a. *??Nít-ssiksii-hpa óma nínaawa o'kakini.*
 I-break-it that man his.back
 b. *Nít-ssik-o'kakín-aw óma nínaawa.*
 I-break-back-him that man
 'I broke the man's back.'

According to Frantz (72), speakers report that a sentence like 52a is marginally grammatical but odd, since it implies that the effect of my action on the back is more important than its effect on the man.

The same principle operates in intransitive clauses, as in the sentences below.

In 53a, the back is an external subject; but in 53b, the personal involvement of the possessor is expressed by NI of the body part, and promotion of its possessor to subject status:

- (53) a. *N-o'kakíni á-isttsi-wa* 'My back hurts.'
 my-back DUR-pain-it
 b. *Nít-á-istts-o'kakíni* 'I have a backache.'
 I-DUR-pain-back

2.4. ESSENTIALS OF TYPE II NOUN INCORPORATION. Type II NI is a natural extension of Type I. As in Type I, IN's lose their syntactic status as arguments of the clause; and they are unmarked for definiteness, number, or case. This does not necessarily mean that they are indefinite or non-specific, but only that they are unmarked. In 52b, above, both speaker and hearer can identify the back under discussion.

Type II NI goes further than Type I, however, in having an effect beyond the V itself. Instead of simply reducing the valence of the V by one, it permits another argument of the clause to occupy the case role vacated by the IN. The result is a lexical device for manipulating case relations within clauses.

3. TYPE III: THE MANIPULATION OF DISCOURSE STRUCTURE. A number of languages which exhibit incorporation of Types I and II exploit the process for an additional purpose. NI is also used to background known or incidental information within portions of discourse.

These languages share a number of interrelated characteristics. They are typically polysynthetic. Their V's contain obligatory pronominal affixes referring to subjects and objects, or agents and patients, so that they may stand alone as grammatical clauses in themselves. External nominal constituents establish and maintain reference, but they are not necessary for grammaticality. Not surprisingly, such languages typically display very high proportions of V's to other words in the discourse.

All these languages utilize the same primary devices to manipulate the presentation of information. Since the case roles of nominal constituents are usually interpretable from the pronominal affixes in the V, word order need not be case-based. Instead, constituents are ordered according to their importance to the discourse. New, significant information tends to appear at the beginning of the sentence. These focused or foregrounded elements may generally be of any type, e.g. nominal, verbal, or adverbial constituents. Elements which are clear from context, and not in special focus, are simply not mentioned.

In such languages, V's—which carry most of the information—may of course be qualified by N's indicating the type of patient, instrument, or location involved in the action or state. However, the qualifying N's often represent known or incidental information, rather than significant new entities. A separate nominal constituent would sidetrack the attention of the listener; the solution is NI. IN's are not salient constituents in themselves, whose presence might obstruct the flow of information. They simply ride along with their host V's.

3.1. HUAHTLA NAHUATL, a Uto-Aztecan language of this type, spoken in Hidalgo, Mexico, is described by Merlan 1976. She cites examples of

basic compounding, in which a single lexical item describes a unitary event (Type I):

- (54) a. *tesiwī-tl wecī-θ-θ*. 'Hail is falling.'
 hail-ABS fall-PRES-SG
 b. *tesiwī-wecī-θ-θ*. 'It is hailing.'
 hail-fall-PRES-SG

In many cases, Type I NI provides the pragmatically unmarked means of expressing a fact:

- (55) a. *ne' ki-ca'-ki* *kallak-tli*.
 he (he)it-close-PAST door-ABS
 'He closed the door.'
 b. *ne' kal-ca'-ki*.
 he (he)door-close-PAST
 'He closed the door.'

Since door-closing is a common action, 55b (with the compound V) is the normal way of referring to it. Use of the unincorporated form, as in 55a, would suggest that the actor 'closed the door in such a way that it cannot be opened, or that closing of the door was in some other way unusual'. The individual constituents would be under scrutiny.

Type II NI functions in Nahuatl to advance significant arguments to direct object or subject status. As in other languages, N's for body parts are incorporated especially often. Leaving the body part N as the direct object in the sentence below would be peculiar, since the affected possessor is more important than the part itself:

- (56) *ni-mo-nenepil-k^wa'-ki*
 I-self-tongue-eat-PAST
 'I tongue-bit myself' = 'I bit my tongue.'

NI of body parts is not obligatory, however; it is functional. Thus 57a, with an incorporated body part, would be an ordinary way of relating an event; but 57b would focus on the location of the injury:

- (57) a. *neč-ikšī-wite'-ki*.
 (it)me-foot-hit-PAST
 'It hit me on the foot.'
 b. *neč-wite'-ki* *no-ikšī*.
 (it)me-hit-PAST my-foot
 'It hit my foot' (as opposed to something else).

Huahtla Nahuatl also shows Type III NI. Old information is retained in the discourse to qualify the V, indicating the type of patient or instrument involved in the action; but it is backgrounded by NI. In the short conversations below, each new entity is first introduced by an external N—but once it is old information, it is incorporated:

- (58) A: *askeman ti'-kwa* *nakatl*.
 never you-it-eat meat
 'You never eat meat.'

- B: *na' ipanima ni-naka-kwa.*
 I always I-meat-eat
 'I eat it (meat) all the time.'

The IN is not necessarily non-specific and indefinite. It is simply unmarked for these features. In many cases, its identity has been clearly established by the preceding context:

- (59) A: *kanke eltok kočillo? Na' ni'-neki amanci.*
 where is knife I I-it-want now
 'Where is the knife? I want it now.'
 B: *ya' ki-kočillo-tete'ki panci.*
 he (he)it-knife-cut bread
 'He cut the bread with it (the knife).'

3.2. CHUKOTKO-KAMCHATKAN. The Paleo-Siberian languages Koryak and Chukchi, of the Luoravetlan or Chukotko-Kamchatkan family, exhibit NI of Types I–III. Lexical compounds (Type I) denote unitary, nameable concepts:

- (60) Koryak (Bogoras 1917)
Mi-mítq-antak 'Let me go for blubber.'
 let.me-blubber-go.after
 (61) Chukchi (Bogoras 1910)
ni-ré'w-qin 'He whale-hunted.'
 he-whale-hunted

The use of compounding can be seen in the Chukchi text below. Fuel-gathering, wood-cutting, and tent-breaking (breaking camp) are unitary, name-worthy activities, expressed by compounds. Brushwood-plucking, boat-loading, and tent-loading are not, so they are expressed by separate V's and N's:

- (62) *vai uñélyä't ġuq, nuurkíqinet úttuut*
 there fuel.gathered oh! wood.cut brushwood
népriä'n ... garančémaúlên, uwä''quč ä'ttwet
 plucked tent.broken.has husband boat
ġetineñeLin yaráñi nineiñéqin.
 loaded.has tent loaded.on
 'They gathered fuel, cut wood, and broke off branches of bushes
 ... (When she came home,) her husband had broken camp,
 loaded a boat, and loaded the tent on the boat.'

Patients of transitives and intransitives, locatives, and instruments are incorporated. The Koryak intransitive V in 63 has incorporated a patient; that in 64, a location:

- (63) *imtili-ñtátk-in.*
 strap-break.off-PRES
 'The strap breaks off.'
 (64) *g-as·hun-tilí-lin-au.*
 PAST-seashore-walk.around-3-PL
 'They walked around on the seashore.'

The Chukchi V in 65 contains an incorporated instrument:

- (65) *kopáhnin na-alát-koqênat.*
 walrus.blubber they-knife-mincing
 'They are mincing walrus blubber with a knife.'

Type II NI permits the manipulation of case roles within clauses. Affected persons are thus advanced to absolutive (direct object or intransitive subject) status, as in 66 (Koryak) and 67–68 (Chukchi):

- (66) *qina-mł-ł-átik!*
 you/me-louse-IMPER-stir
 'Louse me!'
 (67) *gǔmnín ékik qā-kalê'tol-lpınrı-gın.*
 my.son son you-money-give-him
 'Give my son some money.'
 (68) *tı-leúti-pigtırkı.*
 I-head-ache
 'I have a headache.'

NI is also used to background established entities in discourse (Type III). In the Koryak text below, a group of people walking along the seashore encounter a whale. When first mentioned, the N for 'whale' is independent. Thereafter, it is incorporated:

- (69) *wútcu ińńńın yúńı qulaıvun. mal-yúńı.*
 this.time.only such whale it.comes good-whale
ga-yuńy-upényılenau.
 they-whale-attacked
 'This is the first time that such a whale has come near us. It is a good one (whale). They attacked it (the whale).'

The Chukchi passage below is taken from a text describing the deeds of a whale hunter. After quarreling with his neighbor, a reindeer breeder, he drowns him and takes his wife and reindeer. He is good to the wife, but not to the reindeer. At this point, an independent N in initial position draws our attention to the reindeer. The reindeer are next mentioned as possessors of tongues; but no longer the focus of the predication, they appear at the end of the clause. At the third mention, the N for reindeer, now an established entity, is incorporated:

- (70) ... *náqam qoráńı nênaimtkoıvuqên, náqam tırğıtır*
 but reindeer he.slaughters.in.number but the.meat
éLe enú'ká emyılııl nínenuqın qórên.
 no not.eating only-tongue he.eats of.reindeer
ámkıńırganrê't nt-qaá-nmatqên.
 on.every.morrow he-reindeer-slaughters.

3.3. ESSENTIALS OF TYPE III NOUN INCORPORATION. This type of NI is similar in form to Types I and II, but subtly different in function. While all types result in a backgrounding of the IN, Type I serves to reduce its salience within the V, Type II within the clause, and Type III within a particular portion of the discourse.

Such NI can be highly productive, but it is not free in the same sense as

certain syntactic derivations. It is still a lexical process; if speakers use a new combination, they are creating a new word and are aware of that fact. The productivity of the process is governed both by lexical accident and by pragmatic considerations.

Within any language of this type, some combinations have been created because they were needed; some have not been, but could be at any time; and some never will be. Like derivational affixes, some N stems are highly productive or incorporable, while others simply are not. Some V stems are likewise highly productive with respect to NI; others are less so; and still others, not at all.

Certain types of N's are more likely to be incorporated than others. As a number of grammarians have pointed out, N's with very narrow scope do not tend to be incorporated in most languages. Merlan remarks, 'There are some sentences in which incorporated nouns are of more general lexical reference than preceding occurrences of the same noun' (1976:186). General expressions are sufficient for qualifying a V in terms of an established referent. In addition, animacy generally affects the incorporability of N's. Since the primary purpose of NI is to background an argument, and since speakers are usually more interested in human beings (and perhaps animals) than in inanimate objects, animate N's are often not incorporated at all. If they are, it is usually in Type I compounds, where they are highly generic, as in 'to be a good person'. N's reflecting individual patients of V's such as 'to be sick' or 'to die' are rarely if ever incorporated.

Certain types of V's are more likely to incorporate than others. Several factors enter into this likelihood. One is the animacy, agentivity, and individuality of their normal patients, as described above; thus a V like 'murder' is not so likely to incorporate its patient, because the victim is too important. A V like 'run' is unlikely to incorporate because its single argument is an agent. A second significant factor is the scope of the V. General V's, which take much of their meaning from their arguments, are more likely to incorporate than those with narrow scope; thus 'to be good' or 'to have' incorporate especially often. The IN narrows their scope to states or actions which involve a certain type of patient. Finally, the degree to which an action affects a patient is often a factor in incorporability. V's that predicate an event which significantly affects their patients, e.g. 'to make' or 'to eat', are more likely to incorporate than those with less effect, e.g. 'to look at' or 'to hear'.

4. TYPE IV: CLASSIFICATORY NOUN INCORPORATION. A number of languages exhibit NI not only of Types I–III, but of a fourth type as well. A relatively general N stem is incorporated to narrow the scope of the V, as in Type III; but the compound stem can be accompanied by a more specific external NP which identifies the argument implied by the IN. Once the argument has been identified, the general, incorporable N stem is sufficient to qualify V's involving this argument in subsequent discourse. Since only general N's are incorporated for this purpose, a classificatory system often results. Nominals are classified according to the particular general N stem that is incorporated to qualify V's directed at them.

Such a development is not surprising, considering the types of incorporating constructions already existing in such languages. Relatively generic N's are already being used to qualify V's, and to keep reference straight within discourse. Languages generally do not incorporate proper N's, since they are not sufficiently generic to narrow the scope of V's in a useful way; however, most incorporating languages do incorporate such terms as 'body' and 'mind', since they provide a device for qualifying V's which pertain to the physical or mental aspect of a person or animal. In Mohawk (Iroquoian), the V *-ya't-* 'body' + *-isak* 'seek' → *-ya'tisak* 'look for someone' is such a compound. But sentences containing compounds of this type can result in ambiguous interpretation of the structure:

- (71) *Shakoti-ya't-í:sak-s ne ronú:kwe.*
 they/them-body-see-ing the they(M.PL).person
 'They were looking for the men.'

Such a construction could be interpreted as a standard Type II NI, in which a body (part) has been incorporated, and the more important possessors promoted to direct object position. Alternatively, the IN 'body' and the external NP 'the men' could be interpreted as coreferent. Such constructions set the stage for the simultaneous appearance of an incorporated classifier and an overt external NP.

4.1. CADDO. The Caddoan languages of Oklahoma and North Dakota—Caddo, Wichita, Pawnee, and Arikara—show all four types of NI (Chafe 1976, 1977; Rood 1976, 1977; Parks 1976, 1977; Weltfish 1937; Merlan 1975; Taylor 1977; Parks, p.c.)

The Caddo compounds below (from Chafe 1977) are of Type I:

- (72) *ci-bahnáîn-nidan'* 'I am root-digging.'
 I-root-dig
 (73) *nas-â-nk-'a'nih-âh* 'whenever she fire-made'
 when-she-fire-make-HAB

Caddo also contains NI of Type II:

- (74) a. *dahku-'č'á-nníw'áhah* 'Take my eyes out.'
 you/me-eye-remove

Such IN's are also used to background old information in discourse. In one story, Coyote comes upon some ducks playing in a pond by a river. They tell him that they are playing a game—dropping their eyes in the water, then diving in to find them. Coyote, wanting to join in, says 74a above, then continues:

- (74) b. '*dahku-'č'á-n-náywat'away-*,' *bah'nah kúsidí,*
 you/me-eye-PL-put.in.water-CAUS it.is.said after.while
di-'č'á-n-níwtak-âh,
 one-eye-PL-drop.in.water-PERF
di-'č'á-n-náywat'âw'-âh, hawatnukáyha.
 one-eye-PL-put.in.water-PERF he.dove.in
 ... *bah'nah kúha'ahat dâh-'ič'á-n-čâ:ni-'a'.*
 it.is.said fine LOC-eye-PL-turn.around-be

“‘Drop them (my eyes) in the water.’ After a while, it seems, they took them (the eyes) out, they dropped them (the eyes) into the water, and he dove in. [On the other side, he climbed out.] It seems they (the eyes) were right in place.’

In many cases, V’s with IN’s also occur with more specific external NP’s. In the tale cited below, Turkey comes to Wildcat’s wife and asks her to make him some parched corn. The first time the corn is introduced, it appears as an independent N. At the same time, a generic term for ‘granular substance’ qualifies the accompanying V. Thereafter, reference is maintained by the incorporated classifier:

- (75) ‘*kas-sah-kú-n-dân-na-’na’* *kišwah.*
 should-2.AG-1.BEN-DAT-granular.substance-PL-make parched.corn
nas-sah-kú-n-dân-na-’nih-áh
 when.FUT-2.AG-1.BEN-DAT- gran.subs.-PL-make-PERF
sínátti’ ci:yáhdí’ a’.”
 then I.will.go.on

“‘You should make me some parched corn. When you have made it (the granular substance) for me, then I will go on.’”

Later in the tale, the wife tells her husband what Turkey said:

- (76) “... *kišwah dah-kú-n-dân-na-’na’.*”
 parched.corn 2.AG-1.BEN-DAT-gran.subs.-PL-make
nát-cí-n-dân-na-’nih-áh
 after-1.AG-REAL-DAT-gran.subs.-PL-make-PERF
dám-bíhn-u-’náh *náhiyah.*
 gran.subs.-on.back.SEMIREFL-PERF he.left

“‘You should make me some parched corn.’ After I have made him some (granular substance), he put it (the granular substance) on his back and he left.’

Classificatory stems often originate as N’s with narrower scope. When incorporated as qualifiers, they assume a much wider scope. Such a classifier is the N root *-’ič’ah-* ‘eye’, which is also used to stand for small, round objects when incorporated, instead of just kinds of eyes:

- (77) *kassi’ háh-’ič’á-sswí’-sa’.*
 bead PROG-eye-string-PROG
 ‘She is stringing beads.’
 (78) *ka’ás háh-’ič’ah-’í’-sa’.*
 plum PROG-eye-grow-PROG
 ‘Plums are growing.’

The external NP can consist of a demonstrative, and/or adjective, and/or noun. A demonstrative alone makes the argument referential:

- (79) *ná: kan-núh-’a’.*
 that water-run.out-will
 ‘That water will run out.’

Note that the demonstrative can serve as an NP with any V, not only those

with incorporated N's:

- (80) *ná: 'íyúh'a'*.
 that run.out.will
 'That will run out.'

Adjectives can also serve as NP's, with or without an IN in the V:

- (81) *wayah hák-k'uht-'í'-sa'*.
 a.lot PROG-grass-be/grow-PROG
 'There is a lot of grass.'
 (82) *wayah háh-'í'-sa'*.
 a.lot PROG-be/grow-PROG
 'There is a lot.'

Although the identity of the referents of IN's in these Type III and IV constructions is often deducible from context, the IN's themselves are not, strictly speaking, referential. An extensive examination of texts shows that they are not used to establish discourse referents as independent N's are. This is to be expected, given their function. They usually background N's that have either already been introduced (old information), or N's reflecting incidental entities that will play no further role in the discourse. When the intention is to introduce a new topic, an independent nominal is appropriate.

In those relatively rare cases where entities first appear in discourse as IN's, any subsequent mention of them regularly includes a restatement of the N, either incorporated or independent. In the sentence below, fire is first introduced as part of a lexicalized Type I compound. If it functioned to establish a discourse referent, the repetition of it, two words later, would be unnecessary:

- (83) *nas-á-nk-'a'nih-áh* *ha'ahat há-hu-n'k-'í'-sa'*.
 when-3.IRR-fire-make-PERF good PROG-3.BEN-DAT.fire-be-PROG

The text cited above in 74 provides even more striking evidence that IN's do not serve to establish discourse referents. The N 'eye' is first introduced in a Type II construction. If this introduction established it as a discourse referent, all subsequent mention of the N would be unnecessary. Yet half the words which follow contain it. The IN's qualify; they do not refer.

4.2. GUNWINGGU, an Australian language of Western Arnhem Land, also exhibits extensive NI of all four types. Type I NI yields lexical compounds denoting unified concepts (Oates 1964):

- (84) *bo:-re* 'to flow'
 water-go
 (85) *bo:-nu* 'to drink'
 water-eat

The compounds are often somewhat idiomatic:

- (86) *bolg-wi:dna* 'to be unwilling'
 place-hate
 (87) *wog-benmigda* 'to disobey'
 word-forget

Gunwinggu makes extensive use of Type II NI to manipulate case relations:

- (88) *namegbe biru-dur-aynbom.*
 that(man) he/him-heart-speared
 'He speared that man in the heart.'
 (89) *giŋa benedan'-bog-naŋ.*
 crocodile they.two.near-footprints-saw
 'They saw the footprints of a crocodile.'

NI is also used to background known or incidental information in discourse. The excerpt below is taken from a tale about a chicken hawk who goes out porcupine-hunting. He spies some honey up in a tree. The honey, which is new and interesting information, appears near the beginning of the clause as an independent N:

- (90) ... *galug gumegbe mangun naŋ.*
 then there honeybag (he)saw
 '[He was killing them] when he saw a sugar bag.'

The next day, he persuades a wiriwiriya bird to return with him to the tree to get the honey. When they arrive, the chicken hawk climbs the tree and cuts the limb supporting the honey. The limb falls. Since the honey no longer constitutes new information at this point, it is incorporated:

- (91) *dja dabu-bagmeŋ wiriwiriya:g dolgaŋ*
 and honeycomb-broke bird.sp. (he)got.up
dabu-mey, galug dabu-ŋuneŋ.
 (he)honeycomb-took then (he)honeycomb-ate.
 'The honeycomb broke. The wiriwiriya bird got up and took the honeycomb and ate it.'

Note that the NI is pragmatically, not lexically, based. The external N *mangu* refers to a honeybag, while the IN *dabu-* stands for the honeycomb, identifiable from the linguistic context.

Gunwinggu also shows Type IV NI. A N stem may be incorporated to narrow the scope of a V, while a more specific external NP identifies the grammatical patient of the V:

- (92) ... *bene-dulg-naŋ mangaralajmayn.*
 they.two-tree-saw cashew.nut
 '... They saw a cashew tree.'
 (93) ... *bene-red-naŋ redgereŋeni.*
 they.two-camp-saw camp.new
 '... They saw a camp which was freshly made.' ('They saw a new camp.')

The IN stem narrows the scope of the V, just as in Caddo. It does not establish a discourse referent. If it did, the second occurrence of the stem *red-* 'camp' in 93 would be unnecessary.

4.3. MOHAWK. The Northern Iroquoian languages of Quebec, Ontario, New York, Wisconsin, and Oklahoma also exhibit all four types of NI. Lexical

compounds denoting unitary concepts (Type I) are very frequent, and the derivation of new ones is highly productive. Word-internally, IN's bear a patient relation to their host V's, which may be either transitive or intransitive. The Mohawk examples below were supplied by Josephine Horne (p.c.):

- (94) *t-v-hu-'kvhr-akwátho*
change-will-they-dirt-turn.over
'they will plow'
- (95) *r-ukwe't-í:yo*
he-person-nice
'he is a nice person'

Such compounding results to some extent in a systematic classification of predicates. Many events are designated as affecting the body, *-ya't-*, or the mind, *-'nikuhr-*, as noted earlier:

- (96) *t-v-hshakoti-ya'-t-ayest-áhsi'*
DU-will-they/them-body-mix-REVERS-PUNC
'they will pick them out'
- (97) *n-a-hoti-ya't-a'taríhv*
so-would-them-body-be.warm
'for them to keep warm'
- (98) *wa-hu-te-'nikuhr-ísa*
PAST-they-self-mind-conclude
'they decided'
- (99) *t-a-yoti-'nikù:r-v'ne*
change-PAST-it/them-mind-fall
'it shocked them'

NI may affect case roles within the clause, so that affected persons or objects are advanced to direct object or subject position (Type II), as in 100 (from Dorothy Lazore) and 101–103 (from Annette Jacobs):

- (100) *kvtsyu v-kuwa-nya't-ó:'ase.*
fish will-they/her-throat-slit
'They will throat-slit a fish.'
- (101) *Wa-hi-'sereht-anv́hsko.*
PAST-he/me-car-steal
'He car-stole me.' = 'He stole my car.'

Clearly, such NI is pragmatically conditioned. Ex. 102, while formally equivalent to 101, is unacceptable, since washing my car would affect the car more than me, while stealing my car would significantly affect me:

- (102) **Wa-hi-'sereht-óhare.*
PAST-he/me-car-wash
('He car-washed me.')

To express in one word the fact that someone washed my car, I must mark the possessor as beneficiary rather than direct object:

- (103) *Wa-hi-'sereht-óhare-'se.*
PAST-he/me-car-wash-for
'He car-washed for me.'

Mohawk is a typical polysynthetic language, with obligatory pronominal affixes within the V, and word order determined by discourse function. Focused elements appear near the beginning of clauses. Less salient constituents appear later. Type III NI functions to background constituents which represent old or less important information, but which serve to narrow the scope of V's.

The text below is part of a discussion by Josephine Horne (p.c.), on the importance of corn to the Iroquois. The corn is first mentioned as a separate N. As the text progresses, the corn is thematic, and/or part of institutionalized activities; so it is incorporated. Previously unmentioned objects, such as the ears and husks, are also incorporated, because they are both old information (as parts of the previously mentioned corn) and elements of unitary activities:

- (104) a. *Nya'té:ku ne ó:nvhste' tsi ni tsi*
 so.many the corn as so that
yakoya'takv́hv nukwehú:we.
 it.them.body.helps the.real.people
 'Corn had many missions for the Indians.'

A long description follows of how the corn was planted, and how it grew. Then, in the fall ...

- (104) b. *ó:nv yeyóhe n-a-ye-nvhst-ayvthó:-ko. Akwé:*
 then there.it.set there-would-one-corn-plant-REVERS all
tsi t-ka-nvhst-ayv́th-u yvyákwe' tanu
 to there-it-corn-plant-ed will.we.go and
y-v-yak-wa-hróht-v-ht-e. E-thó ne ó:nv
 there-will-we-all-ear-fall-CAUSE-PUNC then the then
v-yak-wa-nor-óht-hsi-'. will-we-all-husk-stand-REVERS-PUNC
 'Then it was time to harvest it (the corn). We would all go to the cornfield and take it (the corn) from the stalks. We would then husk it.'

The text continues, describing how they would take the husks off only part way down the ear, so as to braid them into long strings. When our attention is shifted back to the actual kernels of corn, the contrast is signaled by the use of an independent N. However, since it is not the focus of the clause, it appears at the end:

- (104) c. *Nó:nv akwé: yostáthv n-ó:-nvhst-e sok*
 the.when all it.is.dry the-it-corn-NOM then
nú:wa v-ts-ak-wa-nvhst-arú:-ko.
 now will-back-we-all-corn-take-REVERS
 'When the corn was completely dry, it was time to shell it (the corn).'

Mohawk also shows Type IV NI. Generic N's can be incorporated to qualify V's, while more specific external NP's overtly identify their patients. At the beginning of the text below, related by Dorothy Lazore (p.c.), the topic is introduced by the external N *rabahbót* 'bullhead' accompanied by the incor-

porated classifier *-itsy-* 'fish' in the V:

- (105) a. *Tohka niyohserá:ke tsi nahe' sha'té:ku*
 several so.it.year.numbers so it.goes eight
nikú:ti rabahbót wahu-tsy-ahní:nu ki rake'niha.
 of.them bullhead he-fish-bought this my.father
 'Several years ago, my father bought eight bullheads.'

(Her father left them in a shallow pool in the river, where her uncle discovered them and caught them. The tale continues, with the classifier *-itsy-* qualifying successive V's:)

- (105) b. *Saháhkete' kí:kv rakenuhá:'a*
 back.he.turned this my.uncle
s-a-h-vtsy-ahsheruny-ä:na-'. *Yusà:rawe*
 back-PAST-he-fish-fix-go.to-PUNC back-he-arrived
ki' óksa'k wa-h-vtsy-ahserú:ni tanu
 just quick PAST-he-fish-fix(PUNC) and
wa-h-vtsy-akeri:tahw-e. Tsi n-a-hó-tsy-ari-hs-e
 PAST-he-fish-fry-PUNC as as-PAST-him-fish-fry-finish-PUNC
ki' kí:kv wahv:ru, "Tho yukyatv:ro
 just this he.said there we.two.friends.are
rinu-tsy-anut-v:ra."
 I/him-fish-feed-for-go.to
 'My uncle then returned to fix them (the fish). At home, he
 cleaned and fried them (the fish), and when they (the fish)
 were ready, he decided to take them (the fish) over to his
 friend as a special treat.'

In Type IV NI, the accompanying independent NP need not contain a morphological N. A determiner, number, or adjectival V may stand alone. The examples below are from Annette Jacobs (p.c.):

- (106) *Kanekwarúnyu wa'-k-akya'tawi'tsher-ú:ni.*
 it.dotted.DIST PAST-I-dress-make
 'I dress-made a polka-dotted one.' ('I made a polka-dotted dress.')

Such constructions might suggest that NI must be a syntactic rather than lexical process. It might be argued that a separate constituent equivalent to 'polka-dotted dress' must be generated initially, and that the N is moved into the V by a later syntactic rule.

However, languages which exhibit structures like the above also exhibit structures like this:

- (107) *Kanekwarúnyu wa'katkáhtho.*
 it.dotted.DIST PAST.I.see
 'I saw a polka-dotted (one).'

Demonstratives and adjectival V's can serve as independent NP's, whether or not an IN is present. The V *-at-kahttho* 'see' does not happen to incorporate. Ex. 107 would be appropriate any time the type of object (here a dress) was clear from context, linguistic or pragmatic. The N itself need not have been explicitly mentioned in preceding discourse.

A second argument might be advanced to support assignment of NI to the syntax; this involves anaphora. In English, words are normally anaphoric islands. The utterances below are interpretable but mildly unsettling:

(108) *I went berry-picking yesterday, but they weren't ripe.*

(109) *I went baby-sitting last night. Boy, was she ugly!*

The constituents of English compounds do not serve as antecedents of anaphoric pronouns. Now if the IN's of polysynthetic languages do serve as antecedents, unlike the bound N's above, one might argue that NI is qualitatively different from the word formation rules of more familiar languages like English.

An extensive examination of texts confirms the fact that IN's are not normally used to establish discourse referents. Since the purpose of NI is to background less significant N's to qualifying status, this would result in a pragmatic contradiction. An independent N is normally used to introduce a topic, since it represents new, important information.

On relatively rare occasions, however, a Mohawk N appears incorporated to begin with because it is part of an institutionalized activity. In these cases, further reference to the entity regularly includes a restatement of the full N root, either incorporated or independent. Ex. 110 is from Frank Jacobs:

(110) *Wa-hshako-hkwvny-ahrá:-ko' ne akohsá:tvS tanu*
 PAST-he/him-harness-set-REVERS-PUNC the one.straddles and
atv'vhrá:ke wahrotárhoke ne aon-ahkwvnyá'.
 fence.on PAST.he.strap the their-harness
 'He harness-removed the horses and hung the harness on the
 fence.' ('He removed the harness from the horses and hung it
 on the fence.')

Exx. 111–112 are from Annette Jacobs (p.c.):

(111) *Wa'-k-ahy-ák-ha-'. Iah árok te-yo-hy-á:ri.*
 PAST-I-berry-pick-go.to-PUNC not yet DU-it-berry-ripe
 'I went berry-picking. They are not berry-ripe yet.' ('I went berry-
 picking, but they weren't ripe yet.')

Whether the second occurrence of the N is incorporated depends on the conceptual unity of the predication, and the incorporability of the N and V stems involved.

Even if the N's were not repeated, however, assignment of NI to the syntax on this basis would be over-hasty. Consider the sequence below:

(112) *K-atenún-hah-kwe. Áh tsi yehétkv.*
 I-watch-HAB-PAST ah how she.ugly
 'I was baby-sitting. Boy, is she ugly!'

Mohawk speakers agree immediately that the sequence is all right—not even slightly peculiar, as is the English counterpart. The pronoun *ye-* 'she' is perfectly appropriate, yet its antecedent is not merely incorporated; it is not present at all. The V *katenúnhahkwe* contains no IN, nor any pronominal reference to a patient. The referent of the pronominal prefix *ye-* is determined pragmatically, not lexically. It is the pronominal system of polysynthetic languages that differs from English, not the word formation processes.

To a casual observer of languages like Mohawk, NI may appear to be a syntactic process simply because of its tremendous productivity; the number of NV combinations that occur seems unlimited. However, speakers are keenly aware of the lexical status of all such combinations. They know not only which constructions are possible, but also which of these actually exist—i.e. which are lexicalized. They immediately recognize those that are not. Speakers remember who uses a word not used by others, even when it is a perfectly transparent combination of two highly productive stems. A Mohawk speaker's lexicon can be enormous, because of the high productivity of word formation processes like NI; but it is well-defined.

5. THE EVOLUTION OF NOUN INCORPORATION. A comparison of NI processes across genetically related languages shows that the process is not simply present or absent in a language for all time. Many families contain languages with NI as well as others without it, suggesting that it may arise or disappear during the natural course of language change.

5.1. ORIGINS. The spontaneous appearance of NI in a language has not as yet been documented, but circumstances that set the stage for it can be observed in many languages. As noted by Hopper & Thompson 1980, there is a general tendency among languages for V's to coalesce with indefinite direct objects. They cite the Hungarian sentences below from Bese et al. 1970, in which the referentiality and definiteness of the object affect the form of the predicate. Direct objects that are both referential and definite follow the V, and are indexed within it by a definite transitivity marker:

- (113) *Péter olvas-SA az újságot.*
 Peter reads-**OBJ** the newspaper
 'Peter is reading the newspaper.'

When the object is referential but indefinite, no marker appears in the V:

- (114) *Péter olvas egy újságot*
 Peter reads a newspaper.
 'Peter is reading a [specific] newspaper.'

When the object is non-referential, it precedes the V, which shows no object agreement:

- (115) *Péter újságot olvas.*
 Peter newspaper reads
 'Peter is reading a newspaper.'

Turkish shows somewhat similar constructions. All direct objects precede the V, and definite direct objects contain an accusative suffix. The examples below were supplied by Karl Zimmer (p.c.):

- (116) *Ahmet pipo-sun-u iç-iyor.*
 Ahmet pipe-his-**ACC** drink-**AOR**
 'Ahmet is smoking his pipe.'

Indefinite objects contain no case suffix, and may be preceded by an optional

article:

(117) *Ahmet (bir) pipo iç-iyor.*

Ahmet a/one pipe drink-AOR

'Ahmet is smoking a pipe; Ahmet pipe-smokes.'

The construction above, with no case-marking and no article, can be used just like the Type I lexical compounds of the relatively analytic Oceanic and Mayan languages, as well as Lahu. Like those, they can denote name-worthy, unitary activities; and no material may intervene between the object and V. In Turkish, focused constituents normally appear in this position:

(118) *Ahmet pipo-sun-u hergün iç-iyor.*

Ahmet pipe-his-ACC every.day drink-AOR

'Ahmet smokes his pipe EVERY DAY.'

In these special constructions, however, focused elements appear before the entire NV complex:

(119) *Ahmet hergün pipo iç-iyor.*

Ahmet every.day pipe drink-AOR

'Ahmet pipe-smokes every day.'

Turkish thus shows evidence of the general tendency for V's and their indefinite direct objects to coalesce, as well as the exploitation of the resulting form in order to background objects to qualifying status—i.e. Type I NI.

It appears that the degree of cohesion between the N and V in Type I NI is primarily a function of the over-all morphological character of the language in question. In very analytic languages, like Lahu, the constituents of compounds usually retain their identity as separate words. In more synthetic languages, like Nisgha, the constituents, often bound roots, are fused immediately into single words.

In some cases, a morphological bond may develop in a Type I compound between elements which originally retained their status as separate words. As noted above, in the majority of the Oceanic languages, most VN compounds are written as separate words because they behave as such phonologically. Harrison (326) reports that, in Mokilese, 'incorporated object constructions are written as separate words unless they involve sound changes'; e.g. *dok mwumw* 'to spear fish', *rik sakai* 'to gather stones', but *jileimw* 'to guard the house' (*jiloa* 'watch' + *umw* 'house'). Grammarians of related languages note the same tendency.

In Ponapean, most VN compounds are written as single units (cf. Rehg). An automatic phonological rule lengthens vowels in monosyllabic N's:

(120) **los* → *lohs* 'mats' (*h* = vowel length)

In compounds, the lengthening rule usually does not apply, indicating that the N does not constitute a monosyllabic word:

(121) *perek-los* 'to mat-unroll'
unroll-mat

In a few compounds, however, the lengthening does occur:

(122) **uk* 'net', *ukin* 'net of'; *uhk* 'net', *dow-uhk* 'to net-weave'

- (123) **ut* 'banana', *utun* 'banana of'; *uht* 'banana', *sap-uht* 'to banana-harvest'

Rehg (213) attributes the unexpected lengthening to 'a difference in the degree to which the native speaker thinks of these two words as single units'.

5.2. THE DEVELOPMENT OF NOUN INCORPORATION. In §§1–4, we have seen that NI types are not random: they follow an implicational hierarchy. (An examination of over 100 languages with NI has borne out this statement.) If a language contains productive Type IV NI, it also shows Type III. All languages with productive Type III also have Type II. Those with productive Type II also have Type I. Furthermore, a comparison of NI types across related languages indicates that this hierarchy is not simply a static structural universal. Many families contain languages with different repertoires of NI. Thus Mayan includes languages with no NI, e.g. Ixil and Aguacatec (cf. Robertson); with only Type I, e.g. Kanjobal, Mam, and Chuj (Dayley 1981); and at least one language with both Types I and II, Yucatec (cf. Bricker). The Australian languages include those with no NI, e.g. Dyirbal (Dixon 1972); with productive Type I, e.g. Walmatjari and Yir-Yoront (Dixon 1980); with Types I and II, e.g. Pitta-Pitta (Blake 1979) and Guugu-Yimidhirr (Dixon 1980); and with productive Types I–IV, e.g. Gunwinggu (cf. Oates). The Siouan family, which contains languages with Type I compounding, like Lakhota, is distantly related to the Northern Iroquoian languages (Mohawk, Oneida, Onondaga, Cayuga, Seneca, Huron, and Tuscarora), as well as to the Caddoan languages (Caddo, Wichita, Pawnee, and Arikara; Chafe 1976), all of which have productive NI of Types I–IV. In fact, all possible combinations of types can be found within language families.

The implicational hierarchy suggests that, once NI appears, it develops along a specific path. The beginning is a type of lexical compounding, in which a N stem and a V stem are combined to form an intransitive V denoting a name-worthy, unitary activity (Stage I). The IN loses its individual salience and syntactic role, becoming simply a component of the V. Next, the system may be extended to permit a significant oblique argument to assume the syntactic role vacated by an IN (Stage II). At this stage, NI affects case relationships within the clause—backgrounding one argument by NI while moving another into a more prominent case role. In polysynthetic languages, the system may be extended to the discourse level. N's reflecting known or less significant information may be incorporated to narrow the scope of the V without the distraction of a full additional NP (stage III). Finally, a classificatory system may arise, whereby a generic N is incorporated to qualify the V, while a more specific external NP identifies the implied referent (Stage IV).

Although NI significantly affects the distribution of cases within clauses in all languages, the particular case structure of a language has little bearing on the nature of the process itself. It operates equally in nominative/accusative, ergative/absolutive, and agent/patient systems. The compounding of the Micronesian languages (nom/acc) is very similar to that of the Polynesian languages (erg/abs). The lexical compounding of Comanche (nom/acc), of nu-

merous Australian languages (erg/abs), and of Lakhota (agt/pat) are essentially equivalent. The Type II NI of Tupinambá and Blackfoot (nom/acc) resembles that of Yucatec Mayan (split ergative). The Type III NI of Nahuatl (nom/acc) resembles that of Koryak and Chukchi (erg/abs). The Type IV NI of Mundurukú (Tupi-Guaraní, Brazil; erg/abs) matches that of Gunwinggu (nom/acc) and Caddo (agt/pat).

V-internally, IN's bear a limited number of possible semantic relationships to their host V's, as already noted. If a language incorporates N's of only one semantic case, they will be patients of transitive V's—whether the language is basically of the ergative, accusative, or agent/patient type. Turkish and the Oceanic languages illustrate this. If a language incorporates only two types of arguments, they will be patients of transitive and intransitive V's—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, such as Nahuatl (Andrews 1975); Takelma, a language isolate of Oregon (Sapir 1922); and Sora, a South Munda language of India (Ramamurti 1931). Ex. 124 below is from Takelma, and 125 from Sora:

- (124) *gwen-waya-sgô^ut-hi*.
neck-knife-cut-he/them
'He cut their necks off with his knife.'
- (125) *ji-lo:-'jeŋ-t-am*.
stick-mud-leg-will-you
'Mud will stick to your leg.'

However, the number of cases incorporated is independent of the evolutionary stages established above. Yucatec Mayan, a Stage II language, incorporates only patients of transitive V's; but Comanche, a Stage I language, incorporates patients of transitives and of intransitives, as well as locations. Chukchi, at Stage III, incorporates patients of transitives and of intransitives, as well as locations and instruments; but Mohawk, at Stage IV, incorporates only the first two.

As in all word formation processes, the relationships between the constituents of derived forms and their independent counterparts can be straightforward, complex, or idiosyncratic. The phonological processes which arise and fade during the life of NI leave their mark on all items stored in the lexicon, including derivationally complex ones.

In languages where NI has evolved beyond simple composition by juxtaposition, IN's are subject to all regular word-internal phonological processes. Thus, in Koryak and Chukchi, vowels of IN's participate in vowel harmony. Exx. 126–127 show *i/e* and *e/a* alternations in Koryak (Bogoras 1917), while 128 shows a *u/o* alternation in Chukchi (Bogoras 1922):

- (126) *miłhın* 'fire': *mełh-át-ekın* 'fire-get-MODE'
(127) *ułqát* 'crossbeam': *ołqa-tłé-ykın* 'crossbeam-walk.along-MODE'
(128) *ge-leúttı-lvi-lin* 'he cut off her head': *ni-lautt-pát-qên* 'she boiled heads'

Like other morphological processes, NI may involve idiosyncratic phono-

logical alternations. In Mohawk, unstressed epenthetic *-a-* is inserted to break consonant clusters between IN's and their host V's:

- (129) *wa'-k-huw-hní:nu* → *wa'khuwahní:nu*
 PAST-I-boat-buy 'I bought a boat'

Elsewhere in the grammar, consonant clusters are broken by an unstressed epenthetic *-e-*.

Languages also differ in the similarity of form between IN stems and their independent counterparts. In some languages, e.g. Turkish, the match is perfect. In others, there are slight alternations—as in Tupinambá, where only a few stems show idiosyncratic change in form. The N *poro* 'human flesh' incorporates as *-por-*, and *kawi* (the name of a fermented drink) as *-ka-*.

In addition to the regular alternation between full independent N's and N stems, Mohawk shows unpredictable discrepancies of two types between independent and incorporable N's. A number of N's are historically derived from V's:

- (130) **ka-'sere-h* → *kà:sere*
 it-drags-s 'vehicle (car, bus, truck)'
 (131) **w-ate-khw-hrv* → *atekhwà:ra*
 it-self-food-set 'table'

When incorporated, the deverbal nominals appear with an overt nominalizer:

- (132) *Ka-'sere-ht-í:yo* 'The car is nice.'
 it-drag-NOM-nice
 (133) *W-atekhwahra-'tsher-í:yo* 'The table is nice.'
 it-table-NOM-nice

The particular nominalizer used in NI is lexically determined. Speakers must simply learn two forms of such N stems—one for NI, the other for deriving independent N's. Pairs of the second type are suppletive. Thus one N stem, *-nahskw-* 'domestic animal', appears only incorporated, while a semantically equivalent stem *-tshenv* appears only as an independent N.

In Sora, IN stems appear in a special 'combining form', which in most cases is a truncated version of the full form, e.g. *əndàráj* ~ *-daj-* 'eggplant' or *sansañ* ~ *-sañ-* 'turmeric'—although the truncation follows a variety of different patterns. Zide 1976 shows that it is not always possible to predict the combining form directly from the full form; but it can usually be done by uncovering old derivations that created the full forms in the first place, then juggling the residue to produce a canonical form of CVC, with certain requirements on the identities of the consonants. In other cases, the forms are suppletive, e.g. *əli:n* ~ *-sa:l-* 'liquor'. Often, the suppletion is the result of lexical replacement; the N's from which combining forms are derived appear only as cognates in related languages. Phonological, morphological, and lexical change have resulted in pairs that must be at least partially memorized by speakers.

In Ngandi, a Stage IV Australian language, NI is also productive; yet a number of N stems appear in a suppletive form when incorporated (Heath 1978). Thus, the independent stem for 'water' is (*gu-jark*, but in compounds it appears as *bun-*, as in *bun-ŋu-* 'to drink' (*ŋu-* 'to eat')). A number of stems appear only in compounds, because of lexical replacement of their independent forms.

Like N's, incorporating V's may match their independent counterparts; or they may have slightly different forms; or they may be suppletive. Even the analytic Oceanic languages show such alternations. In Ponapean, the form of the V used in incorporated object constructions, called the combining form, is usually not the same as that used with a separate object, the transitive form. In some cases, the combining form is the same as the intransitive (used with no object at all), as in the V 'to slash': *leke* (tr.), *lek* (intr.), *lek-* (combining). In others, it is partially similar, but unpredictably different, as in 'to cut': *par* (tr.) *pereper* (intr.), *per-* (combining). Some V's do not even have intransitive forms, e.g. *kang* (tr.), *keng-* (combining) 'to eat'; or *mwowe* (tr.), *mwoh-* (combining) 'to offer as a first fruit'.

In Cayuga, the shape of most V stems remains constant with NI, apart from automatic phonological processes which operate throughout the grammar. A few stems exhibit slight idiosyncratic alternations in form. Some, like *-ati* (indep.) ~ *-ōti* (inc.) 'throw', probably reflect older, frozen assimilations. In others, e.g. *-hsrōni* (indep.) ~ *-ōni* (inc.) 'make', the independent alternant probably contains the remnants of an IN that no longer contributes a discernible meaning. Finally, some pairs, e.g. *-yanre'* (indep.) ~ *-iyo*: 'good', are simply suppletive.

Suppletive forms are not necessarily restricted to a limited set of compounds. In fact, they are often among the oldest and most frequently used roots in the language, in all types of NI. The incorporating V *-iyo*: above is perhaps the most productive V root in Cayuga. Heath cites a similar case in Ngandi: the important V *bu-* 'to hit, to kill' is supplented by a synonymous stem *-bača-* under NI, as in *-mar-bača-* 'to hit on the hand'.

NI processes behave like other morphological processes, no matter how productive they may be. Their formal regularity roughly matches that of the rest of the language. Like other bound morphemes, productive incorporable N's and incorporating V's show the regular phonological alternation caused by automatic synchronic rules in the language—as well as the idiosyncratic alternation resulting from phonological change, and the suppletion brought about by lexical replacement. In fact, the languages in which NI is most highly developed are also generally those with the most complex phonological relationships between incorporated and free forms. The length of time involved in the evolution of the process provides an extended opportunity for the development of phonological complexity.

6. DECAY. Do languages necessarily run through the entire cycle once NI has begun to develop? If that were true, all languages with any NI at all should have all four types by now. In fact, differences in the productivity of the various types across languages indicate that the evolution may be arrested at any point.

6.1. DECAY AT STAGE I. Languages which stop at Stage I are left with diminishing numbers of increasingly opaque compounds. The set of stems which compound productively grows smaller, as does that of transparent compounds. These relic forms come to be used less and less often as models for neologisms. As time goes by, regular processes of lexical replacement remove independent N's from the lexicon, thus obscuring the identity of cognate incorporated stems.

Phonological developments also blur the identities of the constituents of relic compounds. The lexicalized compounds which remain may change semantically as units, without regard to the meanings of their constituents.

Gorum (Parengi), a South Munda language of India, provides an example of such decay. It no longer incorporates productively, but it does retain a few compounds pointing to an earlier productive Type I process (Zide, 1259):

- (134) *gal-ba'a* 'to tie a turban'
tie-head

6.2. DECAY AT STAGE II. The development of NI may similarly be arrested at Stage II. The result is much like that above. Compounding ceases to be a productive process; existing compounds become ever fewer in number, and increasingly opaque. The relic compounds generally provide lexical alternatives, with different case frames, to originally monomorphemic V's.

Such a situation has been detected in the Muskogean family of the southeastern United States by Haas 1941 and Booker 1981. Modern Choctaw, now spoken in Oklahoma and Mississippi, contains little internal evidence of NI; however, Booker notes slight traces of Type I compounding. A segment clearly cognate to the N *oka* 'water' appears at the beginning of several V stems, where the remainder of each stem is still an identifiable V root in the language:

- (135) *ok-bošli* 'to wring out water'
water-squeeze.out
ok-tapa 'to stop, dam up'
water-sever
ok-picī:li 'to grow or spring up; to rise to the brim, like
water-ooze water'

Similar constructions in the related languages Alabama, Koasati, Hitchiti, Mikasuki, Creek, and Seminole, indicate that such compounding was a productive process in Proto-Muskogean.

Haas notes that a number of V stems begin with the sequence *nok-*. In many cases, the remainders of the stems resemble identifiable Choctaw V roots:

- (136) *noktaka:li* 'to have something stuck in the throat' (*taka:li* 'to hang, stick')
nokšika:nli 'to smart, tingle in the throat' (*šika:nli* 'to smart in the nose')
nokbiki:li 'to be stifled, as from overeating' (*biki:li* 'to press up against with a point or the end of anything')
noksakki 'to be choked, strangled in water'
noklamalli 'to choke or suffocate'
nokpowalli 'to feel nauseated' (*powaliči* 'to cause waves to roll high')
noksiti:li 'to choke with a cord' (*siti:li* 'to tie, bind')
nokšila 'to be thirsty' (*šila* 'to be dry')

The V's generally have something to do with the neck or throat. The direct object of the transitive V's, and the subject of the intransitives, is the possessor

of the neck or throat. Yet modern Choctaw contains no N resembling the *nok*-sequence; the term for 'neck', *ikō-la*, is unrelated. However, a comparison of the terms for 'neck' and 'throat' in other Muskogean languages, provided by Booker, is revealing:

(137) Alabama	<i>nokbi</i> 'throat'
Koasati	<i>no:bi</i> 'neck'
Hitchiti	<i>nokp-i</i> 'neck'
Mikasuki	<i>nokb-i</i> 'throat'
Creek	<i>nók-wa</i> 'neck'
Seminole	<i>nók-wa</i> 'neck'

The Choctaw segment *nok-* in 136 is clearly cognate with a Proto-Muskogean N **nok-* 'neck, throat'.

The throat appears to have served as a metaphorical seat of fear, passion, and pain, as indicated by a set of V's cited by Haas:

(138) <i>nokha:nkli</i>	'to be sorry'
<i>nokwilo:ha</i>	'to be sad, sorrowful'
<i>nokwanniči</i>	'to tremble through fear' (<i>wanniči</i> 'to tremble, shake')
<i>noktaka:nčiči</i>	'to startle'
<i>nokšobli</i>	'to frighten, intimidate'
<i>noklibiša</i>	'to be in a passion' ('neck-heated', cf. <i>libiša</i> 'to become heated')
<i>nokpalli</i>	'to be interested, excited, tempted'
<i>noktala</i>	'to be jealous'
<i>noktala:li</i>	'to quiet, appease, soothe' (<i>tala:li</i> 'to set, place a thing')

Booker finds several other segments, recurring at the beginning of Choctaw V stems, which are cognate to N's in related languages; this suggests that Type II NI was also once a productive process in the language.

6.3. DECAY AT STAGE III. A fundamental characteristic of Stage III NI is its high textual frequency, and thus its productivity. It is not limited to a set of institutionalized activities and events, like Type I compounding—nor to those mainly involving body parts, as is often the case with Type II. Almost any N can represent old information, which is exactly what is incorporated in Type III. An interesting fact, noted by grammarians for a number of languages, is that innovative NI, as well as the use of a large variety of morphologically complex forms, involves special skill. Speakers of polysynthetic languages often comment on a characteristic that English speakers observe more rarely: consciousness of who speaks their languages especially well. This recognition is not for public presence, but rather for stylistic skill, which appears in conversation as well as in jokes, anecdotes, legends, and formal oratory. Admired speakers generally share a specific trait: they use a variety of morphologically complex words—particularly, incorporating constructions.

There is additional evidence that NI requires special skill: it is one of the last operations to be learned by children acquiring their native tongue. In Mo-

hawk, for example, children use a few basic compounds learned as lexical units as early as age two, presumably unaware of their internal structure. At this age, they also manipulate word order to reflect the relative importance of information to discourse. However, as late as age six, they still are not using NI to background information in discourse, nor do they incorporate creatively (Mithun 1982).³

The difficulty of NI is similarly mirrored in language loss. It can be seen in younger speakers of Stage III and IV languages who are completely fluent, but speak English more often. They generally use Type I and II compounds appropriately, and background old or less significant information by incorporation in discourse, if the NV combination is very familiar; but they do not use the same variety of forms as older speakers. They also cannot create new lexical items.⁴ Weltfish wrote (vi) of Pawnee,

'The rapid disintegration of the language presents a dismaying spectacle ... In the simplified dialect now so commonly spoken many of the modal distinctions are neglected and the process of noun incorporation almost wholly disregarded ... The dominant tendency of classic Pawnee to compound and integrate ideas into one complex is also falling into disuse. Conversations with older people indicate that this type of integration has a very real aesthetic value for speakers of the older language.'

As Parks remarks more recently (1976:250), 'Younger speakers incorporate nouns much less than older speakers; in fact, whenever it is optional, younger speakers usually do not incorporate.'

Comrie, writing about Chukchi (1981:250), describes the same tendency: 'With respect to incorporation ... it should be noted that while this syntactic device is very common in traditional tales, it is much less frequent in current writing, and virtually absent in translations from Russian, i.e. incorporation

³ One seven-year-old child speaks English as a first language but hears Mohawk at home and is enrolled in a Mohawk immersion program. She sat attentively through a lesson on NI and memorized a set of V's with IN's, including:

w-at-ya't-awi-tsher-ase'-stsi.
it-SEMIREFL-body-in.tube-NOM-new-INTENS
'The dress is brand new.'

The word for 'dress', *atyá:tawi*, is a morphologically complex V ('one's body is in a cylinder') with its own IN, *-ya't-* 'body'. Presumably it is learned by speakers as a unitary lexical item. Since it is a V, however, it cannot be incorporated directly into another V. It must first be overtly nominalized by the suffix *-tsher-*. Since this term for 'dress' is frequently incorporated, the sequence *atya'tawi'tsher-* is not unusual.

Several days after the lesson, the seven-year-old proposed the word below:

w-at-ya't-awi-tsher-ase'-stsi-tsher-owá:ne.
it-SEMIREFL-body-in.tube-NOM-new-INTENS-NOM-large
'The brand new dress is big.'

The word is correctly formed. The child suffixed an additional nominalizer to the V she had learned, then incorporated the derived nominal into another V, *-owane* 'big'.

⁴ Speakers differ significantly in their ability to incorporate innovatively. When given invented N's and V's to combine, some speakers can incorporate instantly, while others make false starts, stumble, fail to isolate the N stem from the rest of the N correctly, do not insert it into the proper position in the V, and cannot apply appropriate morphophonemic rules.

seems to be on the wane in the modern language.' Such stylistic devices are generally among the first things to disappear in such tasks as translation—and in writing, as an essentially foreign medium. NI is fragile.

Comparison of a thriving dialect of Cayuga in Ontario with a fading dialect in Oklahoma shows the same trend. The best Oklahoma speaker, who had occasion to use Cayuga only a few times each year, used very frequently encountered NV combinations appropriately, but no others. During an interview conducted in Cayuga, she was asked how she would say 'Her house is big.' She replied using the V *-owane* 'big' and the correct IN *-nōhs-* 'house' (she used a simple neuter pronominal prefix instead of a feminine one—yielding a grammatical word, but failing to mention the possessor):

- | | |
|-------------------------|-------------------------|
| (139) Ontario | Oklahoma |
| <i>ko-nōhs-owá:neh.</i> | <i>ka-nōhs-owá:neh.</i> |
| her-house-big | it-house-big |
| 'Her house is big.' | 'The house is big.' |

When asked for 'Her onion is big', the Oklahoma speaker provided two separate words instead of incorporating:

- | | |
|-------------------------|---------------------------|
| (140) Ontario | Oklahoma |
| <i>k'onōhs-owá:neh.</i> | <i>k-owa:né 'nōhs-a'.</i> |
| her.onion-big | it-big onion-NOM |
| 'Her onion is big.' | 'It is big, the onion.' |

The combination 'big house' is one which would have been heard many times, while 'big onion' would be rarer.

The decay of Stage III NI appears to proceed as follows. At a certain point, speakers incorporate fewer new combinations. At first, they may still use NI frequently in order to background arguments in discourse; but they combine only those N's and V's they have already heard combined. As time goes by, and lexical items are replaced, the repertoire of incorporable N's and incorporating V's shrinks, until fewer and fewer NI's are used stylistically in discourse.

Tiwi, a language of the Melville and Bathurst Islands in northern Australia, provides an example of a language near the beginning of Stage III decay. It contains numerous Type I compounds denoting common, recognizable activities (Osborne 1974):

- (141) *ɲu-wuntili-ɲau.*
I-missile-throw
'I shoot.'
- (142) *ju-atə-ɬe-tiakeɬi-ɲa-mini.*
he-morning-LINK-fish-grab-REPET
'He used to catch fish in the morning.'

Type II NI serves to advance affected persons into object position, while still mentioning the immediate goal:

- (143) *ji-mən-alipi-aykina.*
he-me-meat-steal
'He stole my meat.'

(144) *ji-māni-kāi-ŋa.*

he-me-hand-grab

'He grabbed me by the hand.'

Type III NI is relatively rare in Tiwi texts; however, it does occur with a limited set of perhaps 100 N's. Many texts, not pertaining to the subject matter covered by the set, show no NI at all. Others, such as the one cited below, do contain incorporable N's, and show classic manipulation of old and new information by NI.

In the text below, a father is describing a hunting expedition which he undertook with his family. After the family has found some honey and bagged a possum, a wallaby comes hopping by. Note that the wallaby—new, interesting information—is introduced by an independent N at the beginning of the clause:

(145) *ki t̄araka a-wu-nu-maratiŋata.*

then wallaby he-NONPAST-LOC-hop

'Next, a wallaby comes hopping up.'

The father has a gun. As the wallaby stands up, he shoots it, then runs over to pick it up. By this time, the wallaby is not only dead, but is also old information; so it is incorporated, even though the exact lexical item is different (Tiwi has distinct incorporable N stems for live wallabies and dead wallabies):

(146) *ki ŋə-niliwanti-ŋa ...*

then I-dead.wallaby-grab

'I pick it (the dead wallaby) up ...'

(147) *ŋu-wu-nu-ŋiliwantə-rakultə-rua.*

I-NONPAST-LOC-dead.wallaby-shoulder-carry

'I throw it (the wallaby) over my shoulder.'

Later in the day, the family makes a meal of the prey. The wife packs up the food, and everyone gets up to go home. The children have the honey, which they carry back. At this point, the children are foregrounded to contrast with the wife, so they appear early in the sentence. The honey, which has not been discussed for quite a while, is first re-introduced with a separate N, then incorporated in subsequent discourse:

(148) *ki wuta-tu ka-ki.iitu-wi jiywati. wu-ɪə-kə-matatuməŋəlapu-ni*

then they-too PL-little-PL honey they-LINK-EVENING-honey-hold

ŋəm-p-kə-m-ami.

we-NONPAST.INC-EVENING-go-move

'The children have the honey. They carry it (the honey), and we set out.'

Tiwi thus shows some Type III NI; but it is rare, and involves a restricted set of N's. New N's are not incorporated. Furthermore, as Osborne notes (48), 'Incorporated forms and free forms are generally not cognate, as the free forms which were cognate with the existing incorporated forms have long since disappeared, owing to the rapid rate of lexical replacement in Australian languages.'

A language much further along in Stage III decay is Kamchadal, another Chukotko-Kamchatkan language of Siberia, recorded in 1910 by Jochelson (cf.

Worth 1961). It contains a few Type I compounds like those below, which are presumably relatively old and heavily used:

(149) *kónaŋt-noke* 'to cone-gather'
cone-gather

(150) *qtá-noke* 'to berry-gather'
berry-gather

It also contains a few Type II compounds that modify case relations within clauses:

(151) *tí-yílhi-čví-gi* 'I cut your finger.'
I-finger-cut-you

Type III NI is nearly non-existent in texts. In the tale cited below, the hero becomes very thirsty, but everyone hides water from him. Throughout most of the text, the water appears as an external N:

(152) *i'-in tšin mnit ktáŋan.*
water-the their all they.hid
'They all hid their water.'

(153) *áŋqa i:, qízxlknen i: qat.*
not.any water dried.up water already
'The water in the river has all dried up.'

(154) *mánke i: kmételin?*
where water they.put
'Where have they put the water?'

Finally, he runs off to a river and begins to drink. Here the water, an established topic, is incorporated:

(155) *q-í-kil-qazuknen.*
he-water-drink-began
'He began to drink (the water).'

NI is clearly used to background the water within the discourse here, since these roots, *gil-* 'drink' and *i:* 'water', appear as separate words in contexts where each constitutes salient information:

(156) *gilnin kigenk mnil i:.*
she.drunk river.in all water
'She drank all the water in the river.'

Presumably a combination like 'water-drink' would be used so frequently that it would remain in the language much longer than most.

6.4. DECAY AT STAGE IV. When the development of NI is arrested at Stage IV, new classifiers are no longer introduced into the system; but relics of it survive in diminishing numbers of sets of classificatory V's. Although lexical and phonological change may blur the original identity of the incorporated classifiers, different forms of V stems will continue to alternate according to certain features of their patients.

In Cherokee, a Southern Iroquoian language of North Carolina and Oklahoma, NI is no longer productive; however, traces remain of what were once complex V stems. Sets of V's like those below (from Pulte & Feeling 1975),

indicate earlier Type I compounding:

- (157) *gale'a* 'he takes it out of a container'
a-lsdul-e'a 'he takes off his cap' (*alsdulo* 'cap')
al-sul-e'a 'he takes off his pants' (*asulo* 'pants')
a-hnaw-e'a 'he takes off his shirt' (*ahnawo* 'shirt')
da-lasul-e'a 'he takes off his shoes' (*alasulo* 'shoe')
da-liyesul-e'a 'he takes off his gloves' (*aliyesulo* 'glove')

Several other sets of V's show the same internal structure.

Segments which are cognate with N roots designating body parts appear within a number of V stems. The patients of these V's are the possessors of the body parts. Such sets point to the earlier existence of Type II NI:

- (158) *gahniha* 'he hits'
a-sgwal-aniha 'he hits on the head' (*askoli* 'head')
a-hul-aniha 'he hits on the mouth' (*aholi* 'mouth')
a-sgwohal-aniha 'he hits on the abdomen' (*usgwohli'i* 'abdomen')

Remnants of a classificatory Type IV system also remain. Several V stems vary in form according to certain qualities of their patients. Patients of transitive and intransitive V's are classified as living, liquid, long and rigid, flexible, or neutral, by the form of the V with which they occur. Compare the V's below (*ga-/a-* 3sg. subject, *-a* present tense):

- (159) *ganhga* 'a living thing is lying'
ganeha 'a container of liquid is lying'
jiya 'a long, rigid object is lying'
gana'a 'a flexible object is lying'
aha 'it [none of the above] is lying'
- (160) *gakahiya'a* 'he leaves behind a living thing'
ganehiya'a 'he leaves a liquid'
adisiya'a 'he leaves a long, rigid thing'
ga'niya'a 'he leaves a flexible thing'
ahiya'a 'he leaves it [none of the above] behind'

In many cases, the stem alternants are simply suppletive; but several segments recur in V's implying particular categories. One that frequently indicates liquids is *-ne-*, visible in the second V of each set above. This is cognate with the Northern Iroquoian N stem **-hnek-* 'liquid', which appears both in independent N's and as an incorporated liquid classifier. The neutral category is most often expressed by the shortest form, which probably evolved from a V root with no IN.

As before, a comparison of related incorporating languages confirms the fact that decay is part of the evolutionary path. Of the South Munda family, Gorum shows only relics of decay at Stage I (cf. Zide), while Kharia shows relics of decay at Stage II (Pinnow 1966); but some related languages show no NI at all (cf. Pinnow)—and one, Sora, shows productive stage III NI (cf. Ramamurti). Within the Tupi-Guaraní stock, the Guaraní language of Paraguay shows relics of decay at Stage II (Gregores & Suárez 1967); but Tupinambá shows produc-

tive Stage II, and the more distantly related Mundurukú shows productive Stage IV (Comodo 1981, Sheffler 1978). The Australian languages Kunjen and Yidin^y contain traces of decay at Stage II (Sommer 1972, Dixon 1977), while Tiwi shows the beginning of decay at Stage III; but, as noted earlier, some related languages lack NI entirely, while others show productive Stages I–IV. In the Uto-Aztecan family, Comanche (cf. Canonge; John McLaughlin, p.c.) and Shoshone (Wick Miller, p.c.) show only productive Type I NI, while Huastla Nahuatl shows productive Stage III (Merlan 1976) but Tlaxcala Nahuatl is beginning to show decay at Stage III (Jane Hill, p.c.) In Siberia, Kamchadal retains relatively few relics of decay at Stage III; but the related Koryak and Chukchi still showed productive Stage III NI at the turn of the century. Cherokee contains only traces of decay at Stage IV, but all other Iroquoian languages are still productive at Stage IV. Again, all possible combinations of productive and decayed systems co-occur within single language families.

7. THE RESURGENCE OF A SYSTEM. Once decay has begun, is the system necessarily destined to disappear entirely? Several types of constructions found in both incorporating and non-incorporating languages suggest that this may not necessarily be the case. Some languages contain affixes which function much like IN's, often highly productively. Others contain affixes which function much like incorporating V's, again often very productively.

Jacobsen 1980 describes a pattern of V stem formation in Washo, a language of Nevada, which he suggests may have originated in an earlier pattern of compounding. The language contains about 125 prefixes which co-occur with a special set of around 200 dependent V stems. These dependent stems have the same canonical shapes as independent V stems, but they rarely occur without a prefix. The prefixes indicate such things as the type of patient or instrument involved:

(161) *wag-átatat* 'to rattle'
sound-to.rattle

(162) *dul-é:k'il* 'to swing one's arms around' = 'to cook'
arm-to.swing

The prefixes may affect case relations, advancing arguments to direct object or subject status:

(163) *k'-ipeš* 'to have a black face'
face-black

(164) *dul-éšil* 'to offer someone a hand'
hand-give

For the most part, the prefixes have no connection with modern independent N stems. In four cases, however, Jacobsen has detected a relationship. Thus the prefix *dul-* 'with the hand, descriptive of the hand' resembles the N stem *á:du* 'hand'. At least six of the dependent stems also occur as independent V stems. The V *í:bi* 'to have come' occurs alone or with a prefix, as in *h'' + í:bi* = *hú:bi* 'wind to have come'. The similarities suggest an early pattern of NI. Jacobsen remarks (97), 'One can hardly doubt that these lexical prefixes

go back to former independent stems compounded with following verb stems, but the beginning of this process must be very old, dating back perhaps to the time of Proto-Hokan.'

Interestingly, the relic system has been resuscitated in a productive derivational pattern. In modern Washo, according to Jacobsen (95), 'lexical prefixes may be derived fairly freely from independent noun and verb stems by the suffixation of one of two formative suffixes.' Thus, from the N *mó:k'o* 'knee', the prefix *mó:k'o^e-* is derived, as in *mó:k'o^e + íwe* = *mó:k'oyéwe* 'to kneel'. The only restriction is that a new prefix is not derived if an older, synonymous prefix already exists.

A number of languages contain productive instrumental affixes which specify the instrument or type of action involved in an event. The affixes, like IN's, are not arguments of the clause; they permit the mention of an instrument without special salience. Compare the Lakhota sentences below from Stanley Redbird, of Silver Creek (Rosebud), South Dakota (p.c.):

- (165) a. *Na-wa-ptaye.*
with.the.foot-I-turn.over
'I knocked it over with my foot.'
- b. *Sí ū na-wá-ptāye.*
foot use with.the.foot-I-turn.over
'I used my foot to turn it over.'

In general, no derivational relationship can be detected between such prefixes and independent N's in a language. However, in a very few cases, the sources of prefixes are revealed by a comparison of related languages. Chafe 1976 notes an instrumental prefix which can be reconstructed for Proto-Siouan with the general meaning 'with fire or heat'. He cites the Winnebago forms containing *ta-* below (from Lipkind 1945):

- (166) *ta-xú* 'to burn'
ta-xére 'to fry'
ta-wús 'to dry'

Caddo, a member of the distantly related Caddoan family, also has several V bases containing the preverb *ta-* (alternating with *na-* word-medially):

- (167) *ta-bahn* 'to catch fire'
ta-hak 'to dry'
ta-hasi 'to be cooked'

Chafe (46) notes, 'Internal evidence shows that the preverb in these bases developed out of an incorporated noun root *tak-* "fire".'

Comanche (cf. Canonge) provides a similar example. Instrumental prefixes can appear directly before the V root, as in Lakhota. In compounds, the prefix follows an IN:

- (168) *mo'o-tsa-ai-* 'to hold hands'
hand-by.hand-hold
- (169) *tah-koba-* 'to break or snap off with the foot'
by.foot-snap.off

The prefixes generally do not match equivalent N roots in the language. A few,

however, such as *tah-* 'with the foot',⁵ can be traced to Proto-Uto-Aztec N's (John McLaughlin, p.c.)

Not all instrumental affixes are derived from N stems, of course. Some prefixes that actually describe a type of action as much as a type of instrument are traceable to V roots, e.g. Sioux *ka-* 'with the palm, by slapping' or Eastern Pomo *du:-* 'with fingertips acting together to pull'. Whatever their source, however, speakers can use them productively long after their origin has been forgotten (Martha St. John, p.c.; Stanley Redbird, p.c.; McLendon 1975:41).

A number of languages have affixes which correspond to incorporating V's in other languages. The Chukotko-Kamchatkan languages, which show Stage III NI, also have small sets of derivational suffixes which, when added to N's, function much like incorporating V's (Bogoras 1922). They supply meanings such as 'to fetch', 'to take off (clothing)', 'to put on (clothing)', 'to search for', and 'to consume, eat'. Suffixed to N's, they derive V stems denoting unitary activities, as in Koryak (170) and Chukchi (171):

(170) *pčai-tivái.*

boot-take.off

'He took off his boots.'

(171) *kulté-ili-rkit.*

thong.seal.sole.hide-look.for-they

'they are looking for thong-seal sole-hide.'

Bogoras never justifies his distinction between these 'derivational suffixes' and incorporating V stems. It is likely that these suffixes are simply old V roots which, in the modern language, never occur without an IN. Heath (115), in describing the Stage IV Australian language Ngandi, states the problem clearly:

'It is sometimes difficult to formally distinguish compounding from other derivational processes. Some of the prefixes and suffixes ... could well be taken as specialized compounding elements.'

Roots within compounds often remain in the lexicon of a language even though their independent cognates are replaced. When a root appears only in compounds, joined to another root, it can become difficult to distinguish it from an affix.

The Wakashan and Chemakuan languages of British Columbia and Washington contain extensive sets of lexical suffixes. Swadesh (1948:107) isolates over 400 such suffixes for Nootka, noting that 'the types of meanings almost completely overlap the field of the stems'. Sapir & Swadesh (1939:236) distinguish two classes of derivational suffixes: (1) 'governing suffixes, which intro-

⁵ In a few languages, extensive sets of affixes function just like IN's, although a derivational relationship between the affixes and independent N's is not now discernible. The Salish languages of the Pacific Northwest provide excellent examples. Saunders & Davis (1975:106), describing Bella Coola, note that verbal suffixes 'reflect a portion of the semantic content of some lexical item that stands in construction with the verb. The semantic domains are usually shape or space/location, but where the lexical suffix involved is a body part, the lexical suffix substitutes for the entire content of the lexical item.' Kinkade (1963:353), who lists 90 such suffixes for Upper Chehalis, notes that all the constructions have analytic paraphrases, although in many cases these are used only for 'emphasis, enunciation, or hypercorrection'

duce a new central notion to which the underlying stem or theme becomes subsidiary', and (2) 'restrictive suffixes, which introduce a notion that is semantically subordinate to or coördinate with that of the underlying theme'. They give these examples:

- (172) *č'apac-o'at* 'see a canoe'
 canoe-perceive
 (173) *'ih-qo'a* 'large on a rocky point'
 large-on.a.rocky.point

Sometimes the suffixes resemble incorporating V's in function; at other times, they more closely parallel IN's:

- (174) *-i-y'ip-p-m* 'to capture, obtain'
-to:la 'giving a ceremony in honor of'
-p'i:l^w 'many long, bulky objects'
-ačn'ot 'from spout to dorsal fin'

Body parts may appear either as stems or as suffixes, as in Type II NI:

- (175) *qat-q-sa:p* *haw'ilok q^wayac'i:k.*
 cut-head-CAUS chief.of wolves
 'He beheaded the chief of the wolves.'

Quite often stems represent old information, much like N's in Type III or IV NI. They may refer to the shape or some other aspect of an entity:

- (176) *liq-wi:s*
 stick.in.vertical.crosswise.position-extend.there-on.the.beach
c'axy'ak'
 spear
la:t-maq-an'ot'i.
 sticklike.object.sticking.up-extending.downward-tree-CAUS
 'The spear, which was (long and) made of yew-wood, went clear through him on to the beach.'

In a few cases, etymological relationships can be perceived between stems and suffixes, e.g. *'ona:k* and *-nak* below (cf. Swadesh):

- (177) *'ona:k-we'in* *nism'a* 'He possessed land.'
 possessed-it.is.said land
 (178) *č'apac-nak* 'having a canoe'
 canoe-possessing

In a number of cases, Swadesh also shows that related and neighboring languages have stems and suffixes resembling the Nootka suffixes:

- (179) *-c'ātu* 'on the water', *c'a-* 'stream flowing: Quileute *-c'i* 'water', Chemakum *c'u-* 'water'.
 (180) *-k^wāl* 'absent', *k^wat-* 'get broken off': Quileute *-xat* 'gone, missing'.
 (181) *-ta-* 'go': Kwakiutl *lə* 'go', Quileute *-la* 'moving, in motion'.

Swadesh finds the Nootka system highly productive: even borrowed words 'are invested with native-like stem forms and freely used with all sorts of suffixes' (118). Haas (p.c.) points out that a number of stem and suffix combinations have developed idiosyncratic meanings, as would be expected of any

lexicalized items. Swadesh (117–18) suggests an origin for the constructions: ‘Some of the stem–suffix formations could have resulted from postposed words becoming suffixes ... It is not impossible that we have here in part the residue of an older structural stage when stems and suffixes were not so rigorously differentiated.’

8. CONCLUSION. In some ways, NI is the most nearly syntactic of all morphological processes. It combines constituents, namely N’s and V’s, that are usually associated syntactically. It can be vastly more productive than other derivational processes, like nominalization or causativization, since it combines two potentially open sets of morphemes, N and V stems, instead of one set of stems and a limited set of affixes. All morphological processes, however, exhibit a number of special features because of their function as word formation rules; and NI shares these.

NI may be highly productive, but it is not free in the sense that syntactic operations can be. A wide range of productivity associated with individual N and V stems is a standard feature of incorporating languages. Furthermore, the markedness of NI can vary from combination to combination and language to language. In some cases, e.g. Fijian *taro-gi + sotia* ‘ask + soldier’ → ‘enlist’, NI is the marked alternative. In others, e.g. the ‘door-close’ compound of Huastla Nahuatl, not to incorporate would be unusual, indicating something remarkable about an aspect of the event.

The structures created by morphological processes are automatic candidates for lexicalization, and incorporating constructions are no exception. This lexicalization is a very real phenomenon. Speakers know not only whether a derivationally complex word is possible, but also whether they have heard it before. The same is not true of unlexicalized syntactic constructions. Few speakers of English are aware that they have never heard a particular sentence before, if the construction, lexical items, and idea are familiar. But in Mohawk, where NI of all types is highly productive, speakers frequently report their pleasure at visiting someone from another Mohawk community and hearing new NI’s for the first time. They have no trouble understanding the new words, but they recognize that they are not part of their own (vast) lexicon. When they themselves form new combinations, they are conscious of creating ‘new words’, and much discussion often surrounds such events.

Lexicalization results in phonological and semantic idiosyncrasies not found in unlexicalized syntactic constructions. The phonological processes that arise during the life of NI in a language leave their mark on all items stored in the lexicon, including derivationally complex ones. In fact, the more developed NI is in a language, the more complex the formal relationships between incorporated and independent stems is likely to be. Semantically, lexical items represent conceptual units, unlike unlexicalized syntactic constructions. Speakers do not require them to have meanings exactly equal to the sum of their constituents. In fact, words are often intentionally coined with specialized meanings, e.g. *srasre + po* ‘raise + hand’ → ‘surrender’ in Kusaien. Furthermore, once a construction has been lexicalized, it is free to develop semantically

as a unit, independently of its components. The result is often an irregular semantic match between incorporated forms and their independent cognates.

In §§1–4, we have seen that this lexical process is not merely an arbitrary formal alternative to syntax. NI is used for four different but related functions. In each, its effect is to background an entity: a separate, salient syntactic argument becomes a qualifier.

All incorporating languages utilize the process to create basic unitary lexical items as needed to represent institutionalized, unitary concepts. In this first kind of NI, a N stem and V stem combine to form a derived intransitive predicate. The IN's have no syntactic status of their own, so they bear no case-markers—although, semantically, they may indicate the type of patient, location, or instrument involved in the event or state. They do not refer to specific entities, but rather qualify their host V's; so they are also unmarked for definiteness or number. Their generic character usually results in their use for habitual activities, for those directed at an unspecified portion of a mass, for those that incompletely affect an individual patient, or for those that are simply part of a greater group effort. The nature of the phonological bond between V's and their IN's generally reflects the degree of synthesis of a particular language as a whole.

Languages in which this first kind of NI is used productively may also exhibit another kind. It may be used to manipulate the assignment of case roles within clauses. In this second type, the case role vacated by the IN may not disappear, as in the first type—but instead, absorb some other argument of the clause. NI of this kind thus functions both to background an argument within a clause, and to foreground an otherwise oblique argument by promoting it into a primary case role.

Polysynthetic languages with the first two kinds of productive NI may additionally exhibit a third kind. NI may be used to manipulate the flow of information within discourse. When an entity is first introduced into a discussion, it is usually identified by a full, independent NP. Once it becomes old information, however, it can be represented by a less salient IN—one less likely to sidetrack the attention of the listener. Since most N's can, on occasion, represent old information, this third kind of NI is generally distinguished by its especially high productivity.

Languages which show productive NI of the first three kinds may additionally exhibit a fourth kind. Here an independent NP may co-occur with an IN stem. When an entity is first introduced into a discussion, it is identified by an independent NP, as above; but an IN may simultaneously narrow the scope of the accompanying V. In subsequent discourse, the IN alone is sufficient to qualify V's, and to retain the entity within the scope of the discussion. These four functions are not distributed randomly among languages, but rather appear according to an implicational hierarchy: IV > III > II > I.

An investigation of the arrays of NI types found among related languages shows that they are not static over time. All combinations of possible arrays can be found within single language families. This indicates that the process

must evolve over time. The implicational hierarchy suggests a path along which the evolution takes place.

NI apparently arises as part of a general tendency in language for V's to coalesce with their non-referential objects, as in Hungarian and Turkish. The drift may result in a regular, productive word formation process, in which the NI reflects a reduction of their individual salience within predicates (Stage I). Once such compounding has become well established, its function may be extended in scope to background arguments within clauses (Stage II). In certain types of languages, the scope of NI may be extended a third step, and be used as a device for backgrounding old or incidental information within discourse (Stage III). Finally, it may evolve one step further into a classificatory system, in which generic N's are systematically used to narrow the scope of V's with and without external NP's which identify the arguments so implied (Stage IV).

Variation in the productivity of the four types of NI in different languages indicates that the evolutionary process may be arrested at any point. Languages which stop at Stage I are left with fewer and fewer, increasingly opaque, relic intransitive compounds. Languages which stop at Stage II are left with a shrinking set of both transitive and intransitive compounds. Those that stop at Stage III continue to incorporate on occasion, to manipulate the presentation of information in discourse, but with a diminishing set of combinations. Languages which stop at Stage IV are left with relics of the first three types, as well as sets of classificatory V's whose shape is determined by properties of their associated arguments. With time, the pool of such sets diminishes.

Once NI has begun to decay, however, it is not necessarily destined to disappear completely. In a number of languages, relics of older NI processes have developed into productive systems of affixation. The affixes may be descended from earlier IN's, from incorporating V's, or both.

NI is thus not at all an arbitrary equivalent to the basic syntactic structures of languages like English. Formally, it is a morphological process, not a syntactic one; and it shares all the characteristics unique to such processes. It is always functional, and can be used to achieve a variety of intricate stylistic effects. But it can be a difficult process, often requiring special linguistic virtuosity, especially in languages with complex phonological alternations. Speakers who do it well may be especially admired, while marginal speakers may not be able to do it at all. Noun incorporation can be a powerful, but fragile, linguistic resource.

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