A large number of geographically and genetically diverse languages share a powerful morphological process known as noun incorporation. The process compounds a verb stem with a noun stem to yield a complex verb stem, like Sor: *tem- 'sell'+-*jo- 'fish>* tem-jo: 'fish-sell'. It has often been assumed that lexical constructions were merely arbitrary formal alternatives to the syntactic rules of more analytic languages. All languages with noun incorporation, however, invariably contain syntactic analogues to such constructions as well. If we know, for example, that one can say in Sor: *tem-jo-te-n 'she fish-sells', then we can correctly predict the existence of a grammatical sentence something like *jo:n tem-te 'she sells fish'.

It is well known that languages do not tolerate perfectly equivalent alternatives for long. The morphologization involved in noun incorporation must be functional, or else it could not coexist so systematically beside its syntactic counterparts. In fact, an examination of the process across languages indicates that speakers always incorporate for a reason. The reason is not always the same, however. Incorporation is used for four different, but related functions. The functions fall into an implicational hierarchy, which in turn indicates the path along which the process evolves in language.

1. Type I: Backgrounding within the Predicate

If a language shows any incorporation at all, it will contain basic lexical compounds. Lexical compounding is always done for a reason. It is a means of creating a unitary lexical item to represent a nameworthy, unitary concept. In English, for example, *grocery-shopping and *ditch-
digging have an institutionalized, nameworthy status that compounds like penshopping and basement-digging lack.

The kind of compounding termed incorporation, in which a noun stem and verb combine to form a complex verb stem, has a significant effect on the noun involved. Incorporated nouns do not refer. Rather, they qualify the host verb. If I tell you that I am going grocery-shopping, I am not referring to particular groceries, but rather qualifying the type of shopping I plan to do. Because they do not refer, nouns in such compounds are not normally associated with markers of definiteness or number. I would not say, for example,

(1) *I am going [the groceries shopping.]

Incorporated nouns also have no syntactic status as clausal arguments, although they may qualify the semantic patient, instrument, or location of their host verb. For this reason, they bear no case markers.

The degree of cohesion between the constituents of the compounds is primarily a function of the overall morphological character of the language. In more analytic languages, the noun and verb may retain their formal identity as separate words, although they function syntactically and semantically as a single unit. In more synthetic languages, they fuse immediately into a single word so that in many cases, even speakers are unaware of the precise boundaries between the constituents.

1.1. Composition by Juxtaposition

Kusaian, a Micronesian language, contains a large number of verb-object or 'incorporated object' constructions. The verb and noun remain separate words, but behave as a single constituent syntactically and semantically. Compare the two sentences below.

Kusaian (2a). Nga twem mitmit sac.
Micronesian I sharpen (tr) knife the
Lee 1975 'I am sharpening the knife'.

(2b). Nga twetwe mitmit.
I sharpen (intr) knife 'I am knife-sharpening'.

The phrase mitmit sac 'the knife' in 2a functions as a direct object, so it appears with the transitive form of the verb twem 'sharpen'. In 2b,

however, the noun mitmit is not an argument of the sentence at all, but rather qualifies the verb. The verb thus appears in its intransitive form twetwe. Lee notes, "The derived intransitive verb twetwe can be used to refer to all sorts of sharpening. It can be used with regard to sharpening a knife, a pencil, an ax, or anthing that can be sharpened ... The included object restricts the range of potential reference of a verb". (1975:277)

Since the incorporated object is not referential, it cannot be accompanied by markers of definiteness or number.

(2c). Nga twetwe mitmit sac.
I sharpen tr knife the

The intransitive status of the verb-noun compounds is confirmed by the form of instrumental and nominalizing constructions. An instrumental suffix -kihn can occur with intransitive verbs but not transitives.

(3). taptat 'to take out' (intr)
taptapkikhn 'to take out with'
tahpuhk 'to take out' (tr)
*tahuukkikhn
The -kihn can be suffixed to incorporated object constructions, just like intransitives.

(4). taptap kaki kihn 'to take out coconut meat with'

Transitive verbs require a nominalizing suffix when functioning as nominals.

(5a). Sah el twem mitmit sac ke yot se.
I sharpen (tr) knife the  'Sah is sharpening the knife with a stone.'

(5b). Twemiyen mitmit sac ke yot se se sharpen-nom-cent knife the with stone a
sel Sah ah arlacpathlac.
by Sah the very longtime
'Sah’s sharpening of the knife took a long time'.

Intransitive verbs can serve as nominals with no change in form.

(5c). Twetwe lal Sah ah arulac wo.
I sharpen (intr) elsf Sah the very good.
'Sah’s sharpening is very good'.
Incorporated object constructions, like intransitive verbs, can serve as nominals just as they are.

(5d). Sah el twetwe tuhla.
-navbar-
Sah he sharpen (intr) ax
'Sah sharpens axes.'

(5e). Twetwe tuhla la Sah ah arulac wo.
-navbar-
sharpen (intr) ax clsf 'Sah the very good.'
'Sah's ax-sharpening is very good.'

Although the verb and noun remain separate words, a number of facts reflect their formal bond. Directional suffixes like -lah 'away', often used as aspectual markers, immediately follow transitive verbs.

(6a). El twemlah mitmit sac.
-navbar-
he sharpen-away knife the
'He has sharpened the knife'.

In incorporated object constructions, however, such markers follow the entire verb-noun complex.

(6b). El twetwe mitmiWithac.
-navbar-
he sharpen knife-away
'He has knife-sharpened.'

(The alternation in form between -lah and -lac represents the effect of vowel harmony. The sequence ah is used orthographically to represent [æ], while the sequence ac is used for [æ].)

Manner adverbs, including the interrogative fukkah 'how', can appear before the object of a transitive verb.

(7a). El twem upac mitmit sac.
-navbar-
he sharpen (tr) diligently knife the
'He is diligently sharpening the knife'.

(8a). Kom ac twem fukkah mitmit sac?
-navbar-
you will sharpen (tr) how knife the
'How will you sharpen the knife?'

In incorporated object constructions, however, the adverbs cannot separate the verb-noun unit; they must follow it.

(7b). El twetwe mitmit upac.
-navbar-
he sharpen (intr) knife diligently.
He is diligently knife-sharpening'.

(8b). Kom ac twetwe mitmit fukkah?
-you will sharpen (intr) knife how
'How will you knife-sharpen?'

A large number of languages follow this pattern. A verb stem and noun stem are juxtaposed to form an especially tightly bound constituent. Although the constituents retain their separate identity as phonological words, the construction functions as a unit syntactically and semantically.

1.2. Morphological Compounding

In Lakhota, a Siouan language of South Dakota, nouns may be compounded with verbs to denote institutionalized, nameworthy activities.

Lakhota (9).

\[ \text{caq-le} \]

Siouan

\[ \text{wood-gather} \]

Redbird p.e.

\[ \text{'to gather firewood'} \]

(10).

\[ \text{caq-pa-ile} \]

\[ \text{caq-pa-ile} \]

\[ \text{'to make fire with a fire drill'} \]

As in Kusaian, the nouns do not refer to specific entities, such as particular logs. They lose their individuals salience with their syntactic role, and simply qualify the type of action denoted by the compound.

Compounds are very likely to change in meaning over time because they do constitute complete lexical items. The compounds below were provided by Boas and Deloria in 1939 with the first glosses listed. Ella Deloria, a Lakhota speaker herself, was born late in the nineteenth century. The second glosses were provided by an excellent but much younger speaker, born in 1957.

Boas and Deloria (11).

\[ \text{pt-á-twá} \]


\[ \text{'to scout for buffalo'} \]

Redbird p.e.

(12).

\[ \text{pt-kté} \]

\[ \text{buffalo-look for} \]

\[ \text{buffalo-kill} \]

\[ \text{'to round up cows'} \]

\[ \text{'to kill buffalo'} \]

\[ \text{'to slaughter cattle'} \]

In Lakhota, incorporated nouns behave as part of the verb with respect to phonological processes. Stress regularly falls on the second syl-
lable of Lakhota words (with certain well defined exceptions). As can be seen above, the incorporated nouns enter into the determination of stress.

Word-internal phonological processes also operate across the noun-verb boundaries. Note the loss of final -e and subsequent shift of t to l in the incorporated noun below, for example.

Redbird (13). char-nilaka char-te ‘heart’
   heart-beat
   ‘he beats his wife’

(14). char-wašte
   heart-good
   ‘he is happy’

The examples above indicate the tendency toward semantic specialization of lexicalized compounds. Their meanings are not simply the sum of the meanings of their components. They are created as names of specific concepts, so they are lexicalized with only a portion of their possible meaning.

Although such compounding may be a productive process, speakers are aware of which combinations exist, that is, have been lexicalized, and which are merely potentially grammatical.

2. Type II: Backgrounding within the Clause

A large number of languages with Type I incorporation, in which a verb and noun stem combine to form an intransitive verb, have a second type of incorporation as well. In this type, a verb and noun combine, as in Type I, to yield a unitary lexical item. The incorporated noun does not refer, but rather qualifies the verb. It has no syntactic status as an argument of the clause, and is unmarked for definiteness, number, or case. Unlike Type I compounds, however, constructions of this second type are not necessarily intransitive. Instead of reducing the valence of the verb, this type of incorporation permits another argument of the clause to occupy the case role vacated by the incorporated noun. The result is a lexical device for manipulating case relations within clauses.

In the late nineteenth century, Edward Horace Man found a large number of Type I compounds in Nicobarese, a Khmer-Nicobar Austroasiatic language of India. They refer to institutionalized activities, and are often somewhat idiomatic.

Nicobarese (15). pem-omhôin
Khmer-Nicobar drink-tobacco
Man 1888 - 9 ‘to smoke’

(16). wi-lâyán-dûe
make-decorate-canoe
‘to have a canoe decorated with flags’.

A number of compounds, however, function to background one argument of a clause by incorporating it, while foregrounding another by advancing it to the case role vacated by the incorporated noun. Most of these compounds are transitive verbs whose surface direct objects would be oblique were it not for incorporation.

(17). taiha-onglônga
   cut-neck
   ‘to behead’

(18). kalôapa-mat
tickle-skin/surface
‘to smear with turmeric’

(19). wi-kentâng
make-fence
‘to enclose’

Some of the Type II compounds are intransitive. Without incorporation their subjects would be oblique.

(20). châ-kaletâk
shiver-tongue
‘to stammer’

(21). orêh-châkâ
shead-face (N)
‘to proceed in advance’

Type II compounding thus provides lexical alternatives which allow the speaker to assign primary case roles to the most significant arguments under discussion.

3. Type III: Backgrounding within Discourse

A number of languages which show incorporation of Types I and II show a third type of incorporation as well. Languages with this third type share a set of interrelated characteristics, however, They are typi-
ally polysynthetic, with obligatory pronominal affixes within the verb. Since the pronominal affixes are usually sufficient for keeping case relations clear within the clause, external nominals are necessary only for initially identifying arguments, not for grammaticality. Such languages typically show a very high proportion of verbs to nominals in discourse. Perhaps for this reason, verbs in these languages typically carry much of the semantic load, that is, they usually bear markers for such tense, aspect, directional, voice, transitivity, etc. distinctions as the language systematically encodes.

Since case relations in such languages are established by pronominal affixes, word order is available for a different function. In these languages, it is generally exploited to manipulate the presentation of information. Constituents are ordered according to their importance in the discourse. New, significant information tends to appear near the beginning of the sentence, whether it be represented by nouns, verbs, adverbials, or some other type of constituent. Elements which are clear from context and not in special focus are simply not mentioned.

Often in these languages, verbs appear which would normally be qualified by the presence of a nominal argument, yet the particular nominal might represent known information or entities which are only incidental to the discourse as a whole. A separate nominal constituent referring to this information would inappropriately sidetrack the attention of the listener. The solution is incorporation. Incorporated nouns are not salient constituents in themselves, that would distract the audience and obstruct the flow of information. Their presence is sufficient, however, to narrow the scope of a verb. This third type of incorporation permits, then, the backgrounding of known or incidental information within discourse.

Tewa, a Tanoan language of New Mexico, shows all three types of incorporation. Numerous compounds denote institutionalized activities.

Tewa (22). ‘i-a:gen-suwas
Tanoan he-gruel-drank
Dozier 1953 'he drank gruel'

Harrington (23). ‘a-kon-heŋ’implye
1947 we-buffalo-hunting went
'we went buffalo hunting'

Dozier (24). na-poh-ké:mù:
he-skull-thick
'he does not learn rapidly'

Harrington (25). ná-tsí:hè:
she-eye-sore
'her eyes were sore'

Tewa also makes use of incorporation to background known information in discourse. In the text below, the first time the hair is mentioned, it appears as a separate noun at the beginning of the sentence. The second time, it is still a separate noun, but no longer sentence-initial. The third time it appears, it is incorporated.

Harrington (26). 'Wèm foi:e; řišteŋ n̓iy'. n̓iq;
hair me-throw 1
'øpl'iri 'o:qäqndi 'øpl'iri',
there-to- that-I-may-where-you-are climbing
heři 'i-ʔŋw̱i:kè: wèm foi:e; ōntc. ŋiy ...
and the-girl 1a hair she/her-threw
Hērihò 'icuðe'iri 'i-ʔŋw̱i:kè:
and-so the-witch the-girl
'ø:q̱išuwi:ḏe'è 'iheři ...
she/her-hair-throwing when ...
(And then the witch said to the girl...)
"Throw me a hair, so that I might climb up to where you are." So the girl threw her hair... And so as the girl was throwing it (the hair) to the witch", (she stuck a little stick into the middle of her head.)

Since so many different nouns could represent known information, Type III incorporation is usually distinguished by its high productivity. The resulting compounds are still lexicalized, however, and speakers recognize whether a particular combination actually exists in the language or is merely a potential word.
4. Type IV: Classificatory Backgrounding

A number of languages with Types I, II, and III incorporation, have a fourth type as well. This fourth type is in some ways a combination of the other three. Like all of them, it combines a noun stem and verb stem to derive a complex verb stem. The incorporated noun is not an argument of the sentence, but rather qualifies the verb. Like Type II, it does not necessarily lower the valence of the verb, because it can be used to derive transitive verb stems. Like Type III, it plays a significant role in the presentation of information in discourse, by permitting the backgroundaing of established information. In this fourth type of incorporation, a salient entity can be first introduced with an independent noun phrase while a more general noun stem is simultaneously incorporated to narrow the scope of the verb. Once the argument has been thus identified, the generic, incorporated noun stem is sufficient to quality verbs in subsequent discourse.

Since relatively general nouns are incorporated for this purpose, a classificatory system often results. A well defined set of incorporable nouns becomes established, which imply sets of entities with certain properties, such as liquids versus flexible objects versus granular substances, of animals versus inanimate objects versus abstract entities.

Ngandi, an Australian aboriginal language of Eastern Arnhem Land, allows all four types of incorporation. Numerous Type I compounds denote unitary events, activities, or states. In these constructions, verbs usually incorporate their semantic patients, although on occasion they incorporate instruments or locations.

Ngandi (27)  \( \eta\)-yul-mak-burkayi-\( \eta\)  
Austrian  Msg-person-good-really-abs  
Heath 1978 'he is a well behaved person'

(28)  gu-ja-da\( \j\)i-ma\( \j\)i-d-i-ni  
BU-now-fire-make good-aug-refl-PCon  
'it was burning well'

(29)  \( \eta\)aru-ma\( \j\)i-\( \j\)il'-bo-m  
we/him-jail-confine-aux-past punc  
'we locked him up'

The language makes considerable use of Type II incorporation. Ngandi is basically ergative, so subjects of transitive sentences appear in one case, the ergative, while objects of transitives and subjects of intransitives appear in another, called the nominative. Type II incorporation permits otherwise oblique arguments to assume nominative status.

The verb may be intransitive, as below.

(30)  \( \eta\)ar-ga-\( \j\)o\( \j\)a-\( \j\)\( \j\)ut\( \j\)ut  
1pl.ex.-subord-head-thick  
'we have headaches'

(31)  \( \eta\)a-ganam-\( \j\)am  
1sg-ear-be closed up  
'I am deaf'

The verb may be transitive, as below.

(32)  Baru-ga-ma\( \j\)a-gul\( \j\)k-\( \j\)i  
3pl/3msg-subord-neck-cut-aug-past punc
\( \eta\)i-wolo  \( \eta\)i-yul-\( \j\)\( \j\)o-yun.  
Msg-that Msg-aboriginal-nom-abs  
'They hanged that aboriginal.'  
('They nec-cut that aboriginal.')

(33)  Bu-wolo-\( \eta\)u, \( \eta\)-\( \j\)a-\( \j\)a-gur\( \j\)u-\( \j\)u-\( \j\)u  
BU-that-abs  Fsg-his-mother in law-all-abs  
\( \eta\)a-gib\( \j\)a-yowk-\( \j\)a-ni ...  \( \eta\)a-mo\( \j\)a-yik ...  
3Msg/3Fsg-nose-apply-aug-pres A-red ochre-inst  
'(The boy) rubs red ochre onto the nose of his (prospective) mother-in-law.' (Then, if she bears a child, she will give it to her (prospective) son-in-law.)

The primary case roles of the aboriginal and the mother-in-law can be seen from the pronominal prefixes on the main verbs, which show agreement with them.

The use of Type II incorporation in discourse can be seen below. The narrator is describing an emu hunt. The first mention of the emus is made with an independent noun. Thereafter, they retain nominative status because of appropriate choice of appropriate lexical compounds. The compounds introduce new entities without demoting the emus to a lesser case role.
(34). ųar-ǐč-ŋa-čini "A-wurpaŋ-gič
1pl.ex.-mind-hear-pres A-emu-allative
'We think, “I am going hunting for emus.”
ŋa-ruŋu-ŋi. ųara-ja-waŋa-rič ...
1sg-go-fut 1pl.ex./A-now-track-look for
We go looking for tracks ...
Ńar-ǐč-ŋa-čini a-ja-ńawk,
1pl.ex.-mind-hear-pres A-now-speak,
We think we hear them talking.
ńara-ja-yaŋ-γaru-ni.
1pl.ex./A-now-voice-chase-pres
We follow the sound of their voices.’

The nominative status of the emus can be seen in the pronominal prefixes at the beginnings of the verbs. The noun wurpaŋ ‘emu’ is of the A class. The final -a- of the pronominal prefix ųara- shows agreement with a noun of this class. Waŋa ‘track’ and ɣaŋ ‘voice’ are of the GU class. Agreement with these would be shown by the pronominal prefix nargu- (>ńaru-/ ɣu).

The lexical choice is indeed functional. An alternative exists.

GU-voice-nom-abs 1pl.ex./GU-sub-chase-pres
'We follow the sound of their voices.’

(Heath notes that the absolutive marker ‘indicates that the constituent to which it is attached occurs in a sentential context as an argument (not as a predicate) but retains its formal autonomy-in particular, it is not incorporated into the verb as a compounding initial.’ (1978: 49))

Ngandi also shows Type III incorporation, in which old information is backgrounded in discourse, in contrast to new information, which first appears in independent nominals The passage below is taken from the account of the emu hunt cited earlier. When mention is first made of the legs of the emu, an independent (GU) noun appears clause initially. At the second mention, the legs appear later in the clause, because they are no longer in focus. At the third mention, they are incorporated.

(36). Gu-ńarpč-γi-burkayi ųara-γa-yaw,
GU-upper leg-loc-really 1pl.ex/A-sub-spear
'We spear them right in the upper leg.'

(37). Gu-na-ji-ri gu-baŋa-jambaka-ŋi-ŋuŋ
GU-that-kind-imm GU-com-can-having-abs
‘He drinks (liquor-eats) that kind of liquid
Gu-γaŋk-o-γuŋ, gu-na-ja-ŋuŋ
GU-water-nom-abs GU-that-kind-of-abs
in the can (i.e. beer) and that kind (in) the
GU-bottle-big-abs 3msg-water-eat-pres
big bottle (i.e. hard liquor).

The generic stems are classificatory, in that each can be incorporated in place of a semantic class of nominals. Heath notes that one pair of such classificatory nouns is found in a number of languages in the area. In Ngandi, the pair is -bulku- ‘ripe or cooked object’ and dikku ‘raw, potentially edible but not yet ready to eat objects’. After catching and cleaning the emu, the hunters in the narrative cited above put the body into an oven to bake. When it is done, they remove it.

(38). O-wolw a-waŋγa-γuŋ
A-that A-body-abs
‘Then we remove the (cooked) body
ńara-ja-bulku-γiri.’
1pl.ex./A-now-cooked-dig out
from the oven.’

Ngandi also shows the fourth type of incorporation. An independent noun may be used initially to introduce an entity, while a generic noun stem is simultaneously incorporated to qualify the verb. Thereafter, the generic stem alone is sufficient to qualify subsequent verbs in the discourse.
When incorporated in this way, the stem *diku* 'raw etc.' is frequently extended to imply fallen, fainted, collapsed, unconscious, or dead persons. In the text cited below, a group has gone out looking for a certain man, who is first mentioned by name then referred to by pronominal prefixes during the search. When they find him, he is dead.

(39). baru-ja-ŋa-y ni-ja-diku-yo-y 3pl/3Msg-now-see-punc 3msg-now-raw-lie-Pen 'They saw him lying (dead).'

They made a coffin for him.

baru-diku-gort-i, 3pl/3Msg-raw-put in-past punc They put it (the dead body) in,

baru-ja-diku-ga-n-di, 3pl/3Msg-now-raw-carry-aug-peon then they carried it (the dead body),

baru-diku-gort-i, 3pl/3msg-raw-put in-past punc they put it (the dead body) in.

(They went along with horses. Then they thought, "Well, we will not do it this way, we will get a boat.")

mala'-ič-wolo ni-ni-ŋiŋ ŋi-yul-yun at that time Msg-that-o-abs Msg-man-abs Then we will get that (dead)

ŋaru-ga-mi-yaŋ ni-ni'-yoŋ 1pl.in/3msg-sub-get-fut Msg-this-o-abs "man and take him (back)."

ŋaru-ja-diku-ga-n, 1pl.in/3Msg-now-raw-carry-fut baru-ja-ga-ŋ, police station ŋa-ki-ŋ 3pl/3Msg-now-carry-past punc p.s. there They took him then, they took him (the dead baru-ga-diku-wal-kubu-ŋ, 3pl/3Msg-sub-raw-enter-caus-past punc man) into the police station.

5. The Evolution of Incorporation

A comparison of noun incorporation across related languages indicates that incorporation is not simply present or absent from a language for all time. Many families contain some languages with incorporation and others without it, such as the South Munda family (Pinnow 1966), the Mayan family (Robertson 1980, Dayley 1981), and the Australian Aboriginal languages (Dixon 1980). The way in which such a process could arise is indicated by certain tendencies present in both incorporating and nonincorporating languages.

5.1. The Origin of Incorporation

Hopper and Thompson (1980) pointed out that there is a perceptible tendency in a number of languages for verbs and indefinite direct objects to coalesce. They cite examples from Hungarian, in which verbs with definite objects bear special transitive markers, while those with indefinite objects have none. A similar situation exists in Turkish. Definite direct objects precede their verbs and bear an accusative case marker.

Turkish

(40a). Ahmet öküz-ũ aldı.

Lewis 1967

Ahmet ox-acc buy-past

'Ahmet bought the ox.'

Indefinite direct objects normally bear no case marker at all. The *in* definite article *bir* 'one/a' is optional.

(40b). Ahmet (bir) öküz aldı.

Ahmet an ox buy-past

'Ahmet bought an ox.'

When the indefinite object marker is omitted, a generic reading is possible.

(40c). Ahmet öküz aldı.

Ahmet ox buy-past

'Ahmet bought oxen.'

or: 'Ahmet engaged in ox-buying.'

Such constructions are used exactly like the Type I compounds exemplified by Kusaiean. The noun, unmarked for definiteness or case, is not refential, but, instead, qualifies the verb, narrowing its scope to an activity directed at a certain type of object.
The nouns and verbs in these constructions retain their identity as phonological words, but syntactically, they behave as a unit. This fact is demonstrated by the position of focussed elements. The normal focus position in Turkish is immediately before the verb, as below.

p.c.  
a child wolf-acc stick-inst die-caus-past  
'A child killed the wolf with a stick.'

In these special constructions, however, focussed elements cannot separate the noun-verb unit. They precede the entire compound.

(41)b. Sopala ile kurd-ı ől-dür-üyor-dü.  
stick-inst wolf die-caus-hab-past  
'He used to kill wolves with a stick.'

Turkish thus shows both the general tendency for verbs and indefinite directives to coalesce, and the exploitation of this coalescence for a backgrounding of the object to qualifier status.

5.2. The Development of the Process

Once basic noun-verb compounding becomes established in a language, the path along which incorporation can develop is indicated by the implicational hierarchy shown in sections 1–4. The fact that all languages with Type IV compounding also have Types III, II, and I, all those with III also have II and I, and all those with II also have I, suggests that the process evolves in ordered stages. It probably begins as in Turkish, with the coalescence of frequently occurring noun-verb combinations. The combination of a noun and verb stem becomes a productive mechanism for creating new intransitive verbs to denote nameable activities or events. The incorporated noun loses its individual salience within the predicate and simply narrows the scope of the verb (Stage I). Once this process has become established, it may be extended to background nouns within a clause, while advancing an otherwise oblique argument into the primary case role vacated by the incorporated noun (Stage II). In polysynthetic languages of a specific type, the process may be exploited still further to background nouns representing old information in discourse (Stage III). Finally, the development of the process may advance one more step. As a larger set of nouns come to be backgrounded for the various purposes outlined above, a special set of generic nouns becomes established, which are incorporated in place of more specific nouns (Stage IV).

The fact that the hierarchy has diachronic reality is confirmed by a comparison of genetically related incorporating languages. Most families contain an assortment of languages with varying repertoires of incorporation types. Mayan, for example, contains languages with no incorporation, such as Ixil and Aguatec (Robertson 1980), languages with only Type I, such as Kanjobal, Mam, and Chuj (Dayley 1981), and at least one language with both Types I and II, Yucatec (Bricker 1978). The Australian languages include some with no incorporation, such as Dyirbal (Dixon 1972), some with productive Type I, such as Walmatjari and Yir-Yoront (Dixon 1980), some with Types I and II, such as Pitta-Pitta (Blake 1979) and Guugu-Yimidhirr (Dixon 1980), and still others with productive Types I, II, III, and IV, such as Ngandi and Gunwinggu (Dates 1964). The Siouan family, which contains numerous languages with Type I compounding, such as Lakota, is distantly related to the Caddoan family and to the Northern Iroquoian languages, all of which show Types I, II, III, and IV incorporation.

6. Decay

Once incorporation begins to develop in a language, is it destined to evolve along this path without interruption? If such were the case, all languages should have reached Stage IV by now, and exhibit all types of incorporation. A comparison of the productivity of the process across languages indicates that its development can be arrested at any point.

6.1. Decay at Stage I

When the development of incorporation ceases at Stage I, a language is simply left with an ever shrinking pool of lexical compounds. Speakers stop creating new ones, and, as time passes, the repertoire of existing compounds grows steadily smaller due to natural processes of lexical replacement. The compounds that remain become increasingly opaque. Phonological change obscures the forms of their constituent stems, semantic change, which operates on compounds as unitary lexical items, obscures the semantic relationship between free and constituent stems, and lexical change obscures the identity of the constituents, as their free cognates are replaced by new words.

Kharia, a Munda language of India, provides an example of such a state. Although verb-noun compounding is no longer productive in this
language, a few relics remain of an earlier productive period in which verb stems were compounded with noun stems implying certain patients or instruments.

Kharia (42). guj-te
Munda wash-hand
Pinnow 1966 'to wash hands'

(43). guj-da
wash-water
'to wash (using water)'

In all lexical items, a certain amount of phonological assimilation is likely to take place over time. The compound below shows this trend.

(44). gujun (< guj-jun)
wash-feet
'to wash feet'

6.2. Decay at Stage II

When the development of incorporation in a language is arrested at Stage II, the results are similar to those left by decay at Stage I. Speakers no longer create new combinations, so the pool of compound lexical items slowly shrinks over time, and the remaining compounds become increasingly opaque due to normal processes of phonological, lexical, and semantic change. The compounds are of two types, however: those which simply combine a verb and patient, instrument, or location to form a unitary intransitive verb denoting a unitary concept, and those which affect case relations within the clause.

Kunjen, an Australian language, shows only very slight traces of incorporation. None at all was apparent in the texts collected by Sommer (1972), but he cites a few compounds in his grammar. Note how idiomatic the Type I compounds are below.

Kunjen (45). or arje-
Australian cold/dew ~ cook/burn
Sommer 1972 'to singe the hair or fur off a dead animal,
or heat a spear rod to straighten it'

(46). adn-ambi-
interception-steal
'to hide'

The Type II compounds he cites are somewhat more transparent, although still specialized semantically. Many involve body parts.

(47). eg-erņa-
head-scrape
'to sharpen the end'

(48). eg-urńa
head-bump
'to batter to death'

(49). aļan-al-afa-
image-fetch
'to photograph'

6.3. Decay at Stage III

Decay at Stage III is much like that at Stages I and II. A large store of compound lexical items exists for grounding entities within a predicate, a sentence, or discourse. At a certain point, speakers cease creating new combinations, however, although they continue to use the existing ones. Normal processes of phonological, lexical, and semantic change reduce the transparency of the existing compounds, and over time, lexical replacement diminishes the stock of compounds of all types.

Kamchadal, a Chukotko-Kamchatkan language of Siberia, showed signs of such a state when W. Jochelson recorded texts in 1900. A few compounds of Types I and II remain to show that such compounding was once a productive process.

Kamchadal (50). tkajalqazalkecan
Chu-Kam I-arrow-make-shall
Worth 1961 'I shall arrow-make'

(50). qazwone
nettle-gather
'to gather nettles'

Type III incorporation is extremely rare in texts. Most texts show none at all. One rare example from Jochelson's texts involves the noun caxl- 'feast'. Ememquit manages to get married. When he brings his wife home, he fixes up the house, then decides to arrange a feast.
has reported that in Pawnee, 'Younger speakers incorporate nouns much less than older speakers; in fact, whenever it is optional, younger speakers usually do not incorporate.' (1976: 250)

Conversely, the creation and use of Type III compounds appears to be on of the most fragile aspects of polysynthetic languages. It appears to be one of the earliest processes to disappear in the course of language loss. Comparison of a dying dialect of Cayuga, in Oklahoma, with a thriving dialect in Ontario, showed that one of the most salient differences was the degree of synthesis used, and especially the amount of incorporation. The speaker of the moribund dialect used a very few common compounds of Types I and II, but did not tend to use incorporation to background established information in discourse. (Mithun and Henry ms.) Weltfish noted such a tendency in Pawnee as well. '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.' (1937: vi) Comrie noted a similar trend in modern Chukchi, another Chukotko-Kamchatka noted a similar trend in modern Chukchi, another Chukotko-Kamchatkan language. 'With respect to incorporation in Chukchi, 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 seems to be on the wane in the modern language.' (1981: 250) Incorporation is a fragile process.

6.4. Decay at Stage IV

When incorporation ceases its development at Stage IV, results are much like those left by earlier decay. Compounds remain which permit speakers to background entities within the predicate, the clause, and the discourse. A fourth type of compound remains as well, however. These are sets of classificatory verbs, whose form is determined by certain properties of their accompanying arguments. Over time, the pool of all of the compounds grows smaller, and their internal constituent structure more opaque, due to normal processes of phonological, lexical, and semantic change. Although no new classificatory segments are
added to roots, new nominals which come into the language are still assigned to the appropriate class.

Haida, a Na-Dene language of British Columbia and Alaska, shows a limited set of basic noun-verb compounds. Haida

(53). L te ḣanu-ga-da-gAn
Na-Dene they fire-be-cause-temp-
Swanton 1911 ‘they had fire’

More frequent than such incorporation, however, is the appearance of one of a set of classificatory elements in the position otherwise occupied by an incorporated noun, directly preceding the verb stem. Swanton notes, ‘On account of the extended use of these classifiers, incorporation of the noun itself is comparatively speaking rare. It is here represented by the use of the classifiers which express the subject of the intransitive verb, or the object of the transitive verb as a member of a certain class of things, the principle of classification being form.’ (1911:216) He lists 36 of these.

(54). tāia tečś- L! xid-ās
cranberries they box-pick up-participle
‘They picked up a whole box of cranberries.’

(55). tečśga IA i
ground squirrel he it
tla-lgāl-s
flexible coiled object-go around-participle
‘He put a ground squirrel about her as a blanket.’

The classificatory segments are sufficient in themselves to qualify the verb if their implication is clear from context.

(56). IA dAñ-klā-stA-sgoañ-añagani
he by pulling-short obj-stem-for good-temp
‘He pulled it (the spear) out for good.’

(57). IA dañ-qi-dji-L xa-gAnAsi
he by pulling-thin material-stem-toward-past
‘He pulled out the canoe.’

Sapir remarks (1915:541) that several and perhaps all of the classifiers are old noun stems. Krauss adds that ‘this is not obvious from the available data, though not improbable’ (1968:203) since they begin with consonant clusters similar to those beginning noun (and verb) stems.

7. Revitalization of a System

Once productive incorporation processes begin to decay, the system is not necessarily destined to disappear entirely. Remnants of incorporation processes frequently resurge as productive systems of affixes.

Koryak, a Chukotko-Kamchatkan language of Siberia, still has numerous examples of Types I, II, and III incorporation at the turn of the century, when Bogoras recorded a large corpus of texts. Type I compounds denote institutionalized, unitary concepts.

Koryak (58). atta’m-t vá-yk n
Chu-Kam bone-spit out-3abs pres
Bogoras 1917 ‘to spit out bones’

(59). ēlik-nm lULētik n
tongue-lick-past
‘he licked with the tongue’

Type II compounds permit the promotion of otherwise oblique arguments to a primary case role, absolutive.

(60). lowt nt ykin
head-do something
‘to wring the neck of’

(61). t -malā -lāw-t -p ktit n
I-much-head-suffer
‘I have a headache’

Incorporation is also used in Koryak texts to background established information. The first time fire is mentioned in the sequence below, it is new and in focus, so it appears as a separate noun at the beginning of the clause. The second time it is established, so it is backgrounded by incorporation.

fire bring out they-fire-carry-dupst
‘Bring out the fire.’ They carried it (the fire) out.

In the exchange below, the housetop and the cache are backgrounded at second mention.
(63). Éwañ, 'Yas. qalˈkaitiŋ gawiyis: qɪwa.'
 said, house-top-to (go and) eat something
 'She said, “Go to the upper storeroom and eat
 something.”'

Éwañ, 'Yáqk nau, ntyas: qalqáčáqaqenau.'
said, what for? they-house-top-taste of
He said, “What for? Those provisions taste of the
upper storeroom.”

Éwañ, 'Olh wɛt n gawiyis: qɪwa.'
said, cache-to (go and) eat something
She said, “Go to the cache and eat something.”

Éwañ, 'Yáqkinau, nolhočáqaqenau.'
said, what for? they-cache-taste of
He said, “What for? Those provisions taste of the
cache.”

In his grammar of Chukchee (and Koryak), Bogoras (1922) also
notes the existence of a set of derivational suffixes which, when added to
nouns, form verbs. The suffixes add meanings such as ‘to eat’, ‘to
fetch’, ‘to take off (clothing)’, ‘to put on (clothing)’, ‘to search for (as
inhunting)’.

(64). ith luuytın 'to eat whaleskin'
ithlih-m ‘whaleskin’
a’sóytkın 'to eat cooked fish'
a’s ‘cooked fish’

(65). qatap-ũt yktin 'to catch winter fish'
qatáp ‘winter fish’
ilvá-ũt ykin 'to hunt wild reindeer’
ilva ‘wild reindeer’

The suffixes are used in discourse much as incorporation, to back-
ground established information. When a new topic is introduced, a sepa-
rate noun used. Thereafter, it is bound. In the passage below, two magpies
are criticizing Amamqut, who feeds on inappropriate food.

(66). A’ttay pná, qoyay pná, qoyátvag lňón!
with dog’s with reindeer reindeer hoof
inner skin inner skin

Got, titaq múyu mnta’ttayıpmla?
off, when we we on dog’s inner
skin have fed?

Qunam nutak uiña anélh y pruka.
even in the not eating inner
country inner skin

Lígqái mnta’ttayıpmla.
much less we have fed on dog’s inner skin.

'He is feeding on dog’s inner skin, on reindeer
inner skin. (He is consuming) a reindeer-hoof!
Off! When have we fed on dog’s inner skin?
Even when wandering in the open we do not eat
(reindeer) inner skin. Much less do we eat dog’s
inner skin.'

The suffix u/o (subject to vowel harmony), functions exactly like an
incorporating verb. In fact, Bogoras provides no explanation of why he
has chosen to term the set mentioned above suffixes rather than verb
stems. Presumably, it is because they never appear without a preceding
noun stem.

In general, languages with well developed, productive incorporation
have some verbs which do not incorporate, usually for semantic and
pragmatic reasons, some which may or may not, depending on context,
and some which never appear without an incorporated noun. Verbs in
this last category are usually rather wide in scope, and take much of
their meaning from their associated arguments, such as ‘to be nice’,
‘to consume’, etc. Because they require qualification to narrow their
scope, they become constituents of a large set of lexicalized compounds.
At some point, either phonological changes obscure the relation between
their incorporating and their independent forms, or their independent
form disappears from the lexicon, through normal processes of lexical
replacement. The result is a set of verbs like those mentioned above,
which appear only in compounds. (Bogoras 1922 points out the similarity
between the suffix -u ‘eat’ and the verb yu/nú.) Speakers continue to
form new compounds by analogy to the existing ones, and a system of
affixation develops.

A number of languages have developed extensive systems of affixation
which function much like the incorporation of other languages. Some
especially good examples of such languages are several families in the
Pacific Northwest (Washington State and British Columbia), such as Wakashan (Nootka, Nitinat, Makah, Kwakiutl, Bella Bella), Chemakuan (Quileute, Chemakum), the numerous Salish languages, Kootenai, and Kathlamet.

Sweden (1948) noted over 400 suffixes in Nootka alone. In modern Nootka stems are clearly differentiated from suffixes both positionally and phonologically, although semantically, the difference is much more subtle. Pairs exist like the stem hawa and the suffix -i's, both meaning 'eat', or mak -i'-Ha 'buy'.

Of course numerous stem-suffix combinations denote conceptually unitary activities or events.

Nootka
(67) tas-i:1
Wakashan trail-make
Nootka 'making a trail'
Swadesh 1939

Numerous combinations similar to Type II incorporation also exist.

(68) ʔah-o: sk
   cut with an adze-(on) face
   'they become wrinkled faced'

(69) ʔa'yi wikqo: to: to: h-čap-i:k
   so that they might not head-sore-given to
   'so that they might not always be head sore'

The suffixes are used much like Type III incorporation to background established information in discourse. New topics are introduced by separate nouns. Thereafter, they appear bound.

(70) či'la latwe'ín čiya o'i-h a'la'atok,
   his now, it is intestines now they were
   said, began to cut after his
   'owi: we' in čisna: kšū pa: im.
   he was first get to have chiton
   it is said intestines
   'ah' a: 'aš hiiqtop hinin'ax či'-y: h i'ax.
   thereupon all kinds now came were after
   now of animals intestines

'Then they began to cut his intestines, which they were intent on getting; the Chiton (a mullusk) was the first to get intestines. All kinds of animals came to get intestines.'

Nootka also makes use of affixation reminiscent of Type IV incorporation. In the sentence below, the noun base classifies the predicate while an external noun identifies the actual patient.

(71). naq:nakši'ak me'tlaq'isok.
   child-have-now little boy of (her)
   'She gave birth to a little boy.'

Affixation in Nootka thus serves essentially the same types of functions as incorporation in other languages. It provides a means of backgrounding entities within a predicate, within a clause, or within discourse. Is there any evidence of a diachronic connection between the suffix system and incorporation? In fact, there is. Although in most cases, stems and semantically related suffixes are not cognate, Sapir and Swadesh uncovered a set of stem-suffix pairs which are related, some within Nootka itself, others across neighboring languages Nootka and Kwakiutl, and others across neighboring but genetically unrelated languages Nootka and Quileute or Chemakum. Some have verblike meanings, while others are more like substantives.

Wakashan
(72) N. -p'at 'smell'
Chemakuan K. -p'ala 'smell',
Swadesh 1948 -p'a 'taste'
peq 'to taste' (stem)

N. -mūt 'left over part'
mut- 'to bite off'
mutk 'to cut off'
K. -mut 'refuse'

Swadesh found the system quite productive. 'Although one finds a few obsolescent suffixes, most are in free and flexible use.' (1948: 118). He also suggested that the source of the suffixes were probably roots, as his data, cited above, indicate. '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.' (1948: 118).

An older, decaying incorporation system can thus give way to a pro-
ductive system of affixation. After a certain period of time, the relation between stems and affixes is no longer discernible, as in the Salish languages and Eskimo.

8. Conclusion

The foregoing sections have demonstrated that noun incorporation is not merely an arbitrary formal alternative to syntax. Rather, it is a type of functional morphologization. In all cases, speakers use incorporation for a reason. It permits the backgrounding of entities with respect to a predicate, a clause, or a portion of discourse.

The process originates, develops, and fades, according to a predictable pattern. It first arises from a general tendency in language for verbs and their indefinite direct objects to coalesce. At this first stage, incorporation consists essentially of the combination of a verb stem and noun stem to derive an intransitive verb stem denoting a conceptually unitary activity or event. The incorporated noun loses both its semantic salience and its status as an argument of the sentence. It is backgrounded to qualifying status within the verb. Once such a process has become established within a language, it may develop into a second stage. As one noun is incorporated into a verb, another may be promoted into the case position it has vacated. Such a process provides a mechanism for advancing an otherwise oblique argument into a primary case role. While it backgrounds one argument within the clause, it foregrounds another, more significant one by allowing it to assume subject or direct object status. Once this second stage has become established, the process may evolve still further. Incorporation may be used to background known or incidental information within discourse. Incorporation at this stage is generally characterized by its especially high productivity, since a large repertoire of nouns can represent established information. Finally, once the process has become a productive mechanism for the arrangement of information in discourse, a fourth type of incorporation may evolve. Relatively generic noun stems may be incorporated in place of sets of more specific nominals. When an entity is first introduced, a generic noun may be incorporated to qualify the verb, while a separate more specific external noun phrase identifies the argument. Thereafter, the incorporated generic noun is sufficient to qualify subsequent nouns and retain the entity within the sphere of discourse.

Differences in the productivity of incorporation in various languages indicate that the development of the process may be arrested at any point. Languages in which this occurs are simply left with an ever diminishing pool of compounds of the types that were once productive. These relic forms become increasingly opaque over time due to natural processes of phonological, lexical, and semantic change.

Once incorporation is no longer productive, the system is not necessarily destined to disappear entirely. Frequently noun or verb roots which were once especially productive in incorporation, and therefore appear as constituents of a large number of relic compounds, develop into productive affixes with functions much like those they assumed during incorporation. They serve to background established or incidental information within predicates, clauses, or portions of discourse.

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FOR A DIACHRONY-IN-SYNCHRONY ANALYSIS

RUTA NAGUCKA

What is by Lyons (1977: 621) referred to as diachrony-in-synchrony is somehow narrower a concept than I am going to use in this paper. For him the languages of two or three generations spoken within the same speech community during the same span of time can be noticeably different (and usually are): 'at any one time, certain forms, lexemes or expressions will strike the average member of the language-community as old-fashioned and ... other forms, lexemes or expressions may strike him as new and not fully established'. It is in this sense that diachrony enters into synchrony. But this is just a starting point of what I understand by this term; I shall argue that it is not only 'old-fashioned' structures used by the older generation that are synchronically relevant but also many other ones whose synchronic meaning and function can be better accounted for on the basis of their origins and history, although superficially they are not felt as clearly obsolete.

It is generally assumed that diachronic information should be irrelevant in the synchronic study of the language; the native speaker, taken to be a sufficient and often the only source of information, is usually unaware of historical aspects of a given structure or simply ignorant of them. What is of relevance to synchronic analysis is the native speaker’s intuition, feeling, and introspection. According to current attempts to formalize all necessary information of this nature in order to explain a usual synchronic meaning of some structure, linguists often postulate, propose, suggest, etc. most sophisticated speculative hypotheses. As long as such hypotheses are formally successful and psychologically convincing little criticism should be expected of them. In practice, very few solutions have fulfilled these requirements, and few have satisfied all linguists even of the same theoretical orientation. Some kind of compromise offered by Hankamer (1977) seems to be a way out here. He claims that 'we must give up the assumption that two or more conflicting analyses cannot be simultaneously correct for a given phenomenon' (583-4). His main arguments are based on the assumption that the
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