THE GENIUS OF POLYSYNTHESIS

Marianne Mithun

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We have all heard the maxim that all languages are equal. What can be said in one language can be said in any other. Another fact, pointed out by Sapir over sixty years ago, makes the study of individual languages much more interesting, however. Although all languages could be used to express the same things, in fact, they are not.

Despite the tremendous linguistic diversity in North America, with over sixty distinct language families, certain traits are particularly pervasive. Perhaps the most salient of these is polysynthesis. Compare the Cree and Takelma words below with their English translations.

Plains Cree
Brown (personal communication)

1) niwi:no:hte:pe:pò:sin
I am going to want to ride (back) here

Takelma
Sapir (1922)

2) gwensayasgouthi
he cut their necks off with his knife

Words in polysynthetic languages are not only longer; they have an intricate internal structure. Identifiable parts of the words correspond to specific parts of their meanings.

Plains Cree

1') ni-wi:-no:hte-pe:-po:si-n
I-gonna-want-here-ride-sg

Takelma

2') gwen-waya-sgout-hi
neck-knife-cut-them/he

One might wonder why such long strings are considered single words at all, rather than phrases or sentences. Numerous criteria exist for determining word boundaries. The most important is that speakers generally know where a word begins and ends, whether they write their language or not.

Second, speakers may pause between words, but not in the middle of them. An English speaker might say, "Speakers . . . pause between words," or "Speakers pause . . . between words," but not "Speak . . . ers pause between words," nor "Speakers pause be . . . tween words". In many languages, each word, no matter how long, has only one primary stress. In some, the location of the stress is even quite predictable, always falling on the first syllable, or on the second from the last, etc. In these languages, of course, it is especially easy to determine where words begin and end.

There are other criteria for determining word boundaries in individual languages as well. All together, they provide ample evidence that words in polysynthetic languages really are single words.

Such words are built up in several ways. Linguists generally distinguish two types of meaningful pieces of words, or morphemes: roots and affixes. Roots carry the main meaning of a word, like -po:si- 'ride' in the Cree word above. Affixes are added onto roots to modify their meanings in some
way, like the pe:- 'this way' in the Cree word. A second method of word formation is compounding, in which two or more roots are combined, as in the Takelma verb *gwen-waya-sgout*, 'neck-knife-cut' above.

Does it make any difference whether a language is polysynthetic or not? Is polysynthesis simply a formal alternative to strings of simple words, as most linguists have assumed, or does it have a function? An interesting fact about polysynthetic languages is that they offer alternatives. Languages with pronominal affixes in the verb, like the ni- 'I' in the Cree example, or the -hi 'he/them' in the Takelma, always have a set of separate pronouns as well, which can stand alone. Languages with causatives, like the -en of 'moisten', also allow speakers to say things such as 'make moist'. Languages with compounds like 'berrypicking' have syntactic equivalents such as 'picking berries'. It would be strange for languages to preserve, systematically, exactly equivalent ways of expressing things. Morphologization must have a special function of its own. A comparison of some of the alternatives shows exactly what kind of a function this is.

1. Affixation

All languages do not morphologize the same distinctions, which is what makes them interesting. Some distinctions, such as plural number or future tense, are morphologized quite often, while others, such as the shape of the objects under discussion, are grammaticalized more rarely. A few especially common grammatical markers will be examined below.

1.1. Pronominal Affixes

Most polysynthetic languages contain obligatory pronominal affixes within their verbs that refer to their subjects and objects, or agents and patients. The verbs below are from Tuscarora, a Northern Iroquoian language of New York State and Ontario. As the beginning of the word changes, so do the chaser and the chasee.

<table>
<thead>
<tr>
<th>Tuscarora</th>
<th>3) kvtkáhne'</th>
<th>'I am chasing you'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iroquoian</td>
<td>sketkáhne'</td>
<td>'you are chasing me'</td>
</tr>
<tr>
<td>Green (personal communication)</td>
<td>kayetkáhne'</td>
<td>'they are chasing it'</td>
</tr>
<tr>
<td></td>
<td>kakutkáhne'</td>
<td>'it is chasing them'</td>
</tr>
<tr>
<td></td>
<td>etc.</td>
<td></td>
</tr>
</tbody>
</table>

This language has about fifty different pronominal prefixes. The pronominal affixes must appear with every verb, whether separate nouns are present or not. Even though the subject, the dinosaur, is mentioned in the sentence below, the verb still contains a pronominal prefix which refers to it: kaku- 'it/then'.

4) Kakutkáhne' ruya'kwáhehr.
   it/them-chase-s dinosaur
   The dinosaur was chasing them.

Now, all languages which have pronominal affixes also have separate pronouns, which are whole words in themselves.
5) ʃ'  'I'
  ʃθ  'you'
  etc.

Why would languages have two ways of doing the same thing? They do not. The pronominal affixes serve to keep reference straight, specifying who did it to whom. The separate pronouns are used for a quite different purpose. They permit the speaker to emphasize the pronoun, to indicate such things as contrast with expectation or with the preceding context. They appear only when needed for this function. Note the use of the separate pronoun ʃ' below.

   there-you-go  that  you-self-tree-getbehind
   You go behind that tree.

   Kvé:ne'  heʃ':  yú:kye:t.
   here  the-ʃ  there-shall-I-go
   As for me, I'll go this way.

English can achieve nearly the same effect by stressing a pronoun, pronouncing it louder and more slowly, or by adding a phrase such as 'as for . . .'. Are the two systems essentially equivalent, then, one with pronominal affixes and separate emphatic pronouns, the other with separate pronouns and heavy stress? Not exactly. In languages such as English, nouns and pronouns identify the participants in an event. Their order in the sentence tells us the role of each. If we change the order, we change the meaning.

7) a. The dinosaur chased John.
    b. John chased the dinosaur.

In languages like Tuscarora, however, the subject and object are automatically identified within the verb. Word order can be used for another purpose, and it generally is. It shows the importance of each piece of information to the overall message, or discourse. The most important information typically appears near the beginning of the sentence, and known, or less important, information appears later. Both sentences below are grammatical.

8) a. Kakutháhe'n  ruya'kwáhehr
    it/them-chase-s  dinosaur
    The dinosaur was chasing them.

    b. Ruya'kwáhehr  kakutháhe'n.
       dinosaur  it/them-chase-s
       A dinosaur was chasing them.

In 8)a., the chasing is the important part of the message. The dinosaur had already been presented earlier. (This is why the English definite article was used in the translation.) In 8)b., it is the dinosaur which is in focus, and which constitutes the most important part of the message. Pronominal affixes thus provide speakers with a useful tool. They free word order for expressing the importance of each word to the discussion as a whole.
1.2. Causative Affixes

Most polysynthetic languages have a causative affix which adds the meaning 'cause' or 'make' to verbs, like the English -en of 'shorten'. Some use it pervasively, others only in a few isolated words. All languages with a causative morpheme also have a syntactic paraphrase, however, such as 'make short'. The two constructions should not coexist if they had exactly the same function.

Lakhota, a Siouan language of South Dakota, has a causative suffix -ye and a separate verb káye 'make', which can function causatively. Compare the two sentences below.

Siouan black-I-caus black I-make
Redbird (personal I blackened it. I made it black.
communication)

At first glance, the constructions appear equivalent. When asked which he would use if he were rubbing black polish onto a boot, a speaker immediately answered sabwáye. He noted that he would use the second if he had hung a kettle over the fire, but set it too close, so that it turned black. The difference in form is functional. The single-word construction suggests a single event with a single subject, the polisher. The causation and blackening take place at the same time and in the same place. The second construction, with two verbs, suggests a two-part event, a causation and a blackening. There are two subjects, the pothanger and the pot. The causation and the blackening are not necessarily simultaneous.

Another pair shows the same type of subtle difference.

warm-I-caus warm I-make
I heated it. I made it hot.

The first might be used by someone warming water for tea, after setting the kettle directly on the fire. The second would be used by someone who had built a fire to warm up a room in the wintertime. In the first, the cause and effect take place at about the same time in the same place. The second involves two events, the causing (building the fire), and the effect (the room becoming warm).

Data from Mixtec, a Mixtecan language of Mexico, illustrate the same principle. There are two ways of expressing causation, one a verb sá'á 'make, cause', and the other a prefix sá/-s-. The difference in meaning is subtle.

Mixtec 11)a. s-káč'a b. sá'á hà' ná' káč'a
Mixtecan caus-dance make nom opt dance
Hinton (1982) dance him make him dance

Hinton notes that the first might be used to someone riding a horse, asking the rider to make the horse dance by manipulating the reins. The second might be used if asking someone to go over to a person sitting in the corner to suggest that he get up and dance. Again, the one word construction suggests a single event, a single location, at a single time, with a single agent. The two verb construction suggests two events, causing and dancing, with two agents and a possible separation of times and locations. The unity of the event in time and space often additionally implies direct contact
between the causer and the causee, as in heating the kettle, in 10a. above, and below.

12a. ni-s-kée-rí ró'ó
    past-caus-eat-I you (obj)
    I fed you.

b. nỳ-sa'a-rí ró'ó hà nì-yee-ró
    past-make-I you nom past-eat-you
    I made you eat.

11a. might be used to a baby if the speaker had actually put the food in its mouth. The second, 11b., would be used if the speaker had set out food for a guest.

1.3. Instrumental Affixes

Another distinction frequently morphologized in North America is the type of instrument used in an action. Compare the verbs below from Comanche, a Uto-Aztecan language of Oklahoma.

<table>
<thead>
<tr>
<th>Comanche</th>
<th>Uto-Aztecan</th>
<th>Canonge (1958)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13) tsah-koba</td>
<td>tah-koba</td>
<td>by foot-snap</td>
</tr>
<tr>
<td>by hand-snap</td>
<td>to break something</td>
<td></td>
</tr>
<tr>
<td>to break something</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with the hand</td>
<td>with the foot</td>
<td></td>
</tr>
<tr>
<td>tsi-waaí</td>
<td>puh-waaí</td>
<td>by sharp tool-search</td>
</tr>
<tr>
<td>by sharp tool-search</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to feel around with something sharp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tsi-yaa</td>
<td>ta-yaa</td>
<td>by foot-carry</td>
</tr>
<tr>
<td>by sharp tool-carry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to carry something on a stick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tshi-ka'a</td>
<td>kvh-ka'a</td>
<td>by biting-snap</td>
</tr>
<tr>
<td>by sharp tool-snap off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to cut off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tshi-ka'a</td>
<td>by sharp tool-snap off</td>
<td></td>
</tr>
<tr>
<td>to break something off with the hand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comanche can also express the use of an instrument by means of a separate noun. The excerpt below is taken from a description of the preparation of wild grapes for drying.

14) sitvykvs'e   wihnu   pvv   pibiärvsone
    these ones then their big dishpans

himahts'i maklyhu    ma    tsahpómi'ínu
    taking in it it (they) stripped
ma kotsenu . . . Pvv tvrayu'ne'a
it washed . . . Their pestle

yyahtsi, uma u rayu'nenu.
taking with it it (they) pounded

Why would a language have two ways of communicating the same information? The information is not in fact the same. In the text above, the dishpan and pestle are salient pieces of information in the description. Our attention is purposely directed toward them by separate nouns. When an instrument should be specified, but kept in the background, a prefix is used. Instruments are backgrounded when they represent old information, or have no special significance in the discourse. The attention of the listener is not sidetracked. The passage below illustrates the difference in use of the instrumental prefix and a separate noun. The noun is used when the instrument is first introduced. After that, the prefix is sufficient.

15) Survkovse' wiwhnu urii vnvkuvkika
came then they began to dance

surv piavhuupihta yaary,
that one a big club takes

svkwenaisv urii vwh-tökwykina.
from one end them with club-kill

Then, as they began to dance, that one took a big club from one end and came clubbing them.

Lakhota is also well known for its instrumental prefixes. The verbs below could all be used for popping something like a balloon.

Lakhota
Siouan
Radbird (personal communication)

16) napho'pe 'pop it with the foot, by stepping'
yapho'pe 'pop by biting'
kapho'pe 'pop by suddenly slamming hand down'
yuphöpe 'pop by pinching'
papho'pe 'pop by pushing down'
wofo'pe 'pop by shooting'
wapho'pe 'pop by sawing'

At first glance, the prefixes appear to refer to the instrument used, namely, the foot, the mouth, the hand, a gun, etc. Lakhota has syntactic paraphrases for these concepts. The instrument can be expressed by a separate noun.

17) sfl y napho'pe
foot use foot-pop
he used his foot to pop it

fl y yapho'pe
mouth use mouth-pop
he used his mouth to pop it
nápe ʊ kaphópe
hand use  slap-pop
he used his hand to pop it

míla ʊ waphópe
knife use  saw-pop
he used a knife to pop it

The sentences are not perfectly equivalent to the verbs with instrumental prefixes. Speakers report that they would use a sentence like those in 16) if their intention was to emphasize or draw attention to the instrument. An instrumental prefix, like na-, simply indicates incidentally that the foot was involved.

There is another difference as well. The Lakhota instrumental prefixes do not necessarily refer to specific instruments. Rather, they indicate a type of instrument or motion. In the case of na- 'with the foot', and ya- 'with the mouth', the instrumental meaning predominates. The prefix ka-, often translated as 'by hand' or 'with an instrument', actually indicates a sudden, striking motion. Yu-, which is also often translated 'by hand', actually indicates a pulling motion. Most pulling is of course done by hand. Wo-, which seems to indicate a gun, actually indicates more action from a distance, or action with some pointed object. Wa-, which appears at first to indicate a sharp instrument, actually refers to a sawing motion. The fact that the prefixes do not refer specifically to instruments is borne out by the fact that they can occur with overt instrumental nouns.

18) s̥i ʊ paphópe
foot use  by pushing-pop
use the feet to pop something by pushing down

napé ʊ paphópe
hand use  by pushing-pop
use the hand to pop it by pushing down

míla ʊ paphópe
knife use  by pushing-pop
use a knife to pop it by pushing down

napé ʊ kaphópe
hand use  by slapping-pop
use the hand to pop it by slapping

míla ʊ kaphópe
knife use  by slapping-pop
use a knife to pop it by slapping

napé ʊ yuphópe
hand use  by pulling-pop
use the hand to pop it by pulling on it
1.4. Locative Affixes

Many polysynthetic languages indicate the direction or location of an event or state by means of affixes. In some languages, the system is relatively simple, distinguishing only motion toward the speaker versus motion away. In others, the system is more elaborate. Karok, for example, a language of northwestern California, has a large set of directional suffixes, including such distinctions as 'into fire', 'in through a tubular space', 'out through a solid', 'here and there within an enclosed space', 'here and there in an open area', 'around in a circle', and even 'into a sweathouse'. A large number of the suffixes refer to water.

<table>
<thead>
<tr>
<th>Karok</th>
<th>19)</th>
<th>Hakan</th>
</tr>
</thead>
<tbody>
<tr>
<td>-rupu</td>
<td>-ra:</td>
<td>'hence downriverward'</td>
</tr>
<tr>
<td>-rō:vu</td>
<td></td>
<td>'hence upriverward'</td>
</tr>
<tr>
<td>-varak</td>
<td>-kæθ</td>
<td>'hither from upriver'</td>
</tr>
<tr>
<td>-rīna</td>
<td></td>
<td>'hence across a body of water'</td>
</tr>
<tr>
<td>-kara</td>
<td></td>
<td>'horizontally away from the center of a body of water, continuous motion across'</td>
</tr>
<tr>
<td>-rīPa</td>
<td>-rūi</td>
<td>'horizontally toward the center of a body of water'</td>
</tr>
<tr>
<td>-kūiři</td>
<td></td>
<td>'into water'</td>
</tr>
</tbody>
</table>

Their effect is to change a verb like iškak 'jump' into iška:kara 'jump into a river or lake'.

Karok also has separate adverbs and nouns that appear to have the same kinds of meaning.

| 20) | käruk       | 'a considerable distance upriver' |
|     | kâ:kačam   | 'a short distance upriver'        |
|     | yû:ruk      | 'far downriver'                   |
|     | yû:kačam    | 'near downriver'                  |
|     | iškæ:š      | 'river'                            |
|     | asti:p       | 'on the river bank'                |
|     | etc.         |                                     |

Why would a language need two ways of expressing the same thing? A close examination of a text reveals that in fact they are not exactly equivalent. Motion to or at the river is expressed in three ways: first by a noun, next by an adverbial particle, then by a suffix. When the place is new information, it is a noun. When it is not new, but is still the main point of the sentence, it is a separate adverb. When it is incidental information, describing the type of falling or floating involved, it is a suffix, and the unity of the word reflects the conceptual unity of the action, as in falling into water, or floating upriver.

In this story, Coyote becomes thirsty and goes to the river to drink. Once there, he decides not to drink right by the bank. Instead, he hops onto a log and goes out to the middle. The middle of the river is crucial information, actually the main point of the sentence, and is expressed by a full noun.
21) Kári xás 'iške:š-'a:čip 'u-'u:m. then and river-middle he-arrive
And then he got to the middle of the river.

He drinks so much that he falls into the water. Again, the direction of
the fall is significant, and expressed by a separate word 'u:o. Falling
into water, seen as a unitary concept, is expressed by a single word, kyi:m-kar,
'fall-into river'.

Víri va: vúra 'upi-kyíviv-ra: thus so emphatic he fall-into the river
So he fell over.

Vássihkam 'ú:9 'ú-kyi:m-kar.
backwards toward center he-fall-into the river
He fell backwards into the river.

He begins to float downriver. When the direction or destination is a main
point of a sentence, it is expressed with a separate word. When it only
incidentally modifies a verb of motion, a suffix is used.

Kári xás yůruk 'u-θívrur:h-rup then and far downriver he-float-hence
downriverward

And he floated downriver.

Čavúra tá yí:v tó:pəfvrur:h-varak. finally punct far back-float-hither from
upriver
Finally he floated a long ways downriver back
to here.

Čavúra 'o:k 'iθivθané:n-'a:čip tó:pəfvrurh-varak. finally here world-center back-float-hither
from upriver
Finally he floated back downriver here to the
center of the world.

A new scene is introduced by a separate word.

Kári xás yůruk 'u-trů-putih then and far downriver he-looked
And then he looked downriver.

This shifts our attention to a spot downriver where some young women are
leaching acorns. The relation between locative affixes and separate words is thus the
same as that between the other affixes and their lexical equivalents.
Separate words are used to communicate new, salient information, or to emphasize it. Affixes are used to place the information in the background and avoid sidetracking the attention of the audience.
2. Compounding

A large number of polysynthetic languages build new words by compounding, that is by combining two or more noun, verb, or adjective stems to form a larger stem.

2.1. Lexical Compounding

The Navajo nouns below are formed by the combination of two stems, by two nouns, as in 22), or by a noun and a verb, as in 23).

<table>
<thead>
<tr>
<th>Navajo Athapaskan</th>
<th>noun + noun &gt; noun</th>
<th>t'aa-kał</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young and Morgan (1980)</td>
<td>•'kee-ts'aa'</td>
<td>dirt-basket</td>
</tr>
<tr>
<td></td>
<td>dish, earthenware</td>
<td>skirt</td>
</tr>
<tr>
<td>noun + verb &gt; noun</td>
<td>t'ee-oh-chin</td>
<td>tsé-t'ees</td>
</tr>
<tr>
<td></td>
<td>grass-smell</td>
<td>griddle</td>
</tr>
<tr>
<td></td>
<td>onion</td>
<td></td>
</tr>
</tbody>
</table>

What is the difference between compounding and simple description? Is there a difference between a noun like 'earthenware' and a phrase like 'vessel made out of dirt'? There is. Compounds designate, they do not simply describe. The formation of a compound is the creation of a name for something. Compounds are formed because a concept or object is deemed nameworthy by a speaker. The compound t'ee-oh-chin, above, does not actually refer to just any grass which happens to smell. If someone walked past some grass which had been sprayed by a skunk, (s)he would probably refer to it with a phrase, instead of the compound. Compounding is functional. It establishes a name for a recognizable, unitary concept.

The same is true for verb compounds. Two verb roots may be combined to yield a larger compound verb stem, as in Tonkawa, a now extinct language isolate of central Texas.

<table>
<thead>
<tr>
<th>Tonkawa</th>
<th>verb + verb &gt; verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoijer (1934)</td>
<td>24) hedai'o:he:co:gyawa-</td>
</tr>
<tr>
<td></td>
<td>join a group-fight</td>
</tr>
<tr>
<td></td>
<td>to join in fighting</td>
</tr>
<tr>
<td></td>
<td>da'an-aidjona-</td>
</tr>
<tr>
<td></td>
<td>grab-go up</td>
</tr>
<tr>
<td></td>
<td>.to pull something up</td>
</tr>
<tr>
<td></td>
<td>yac'en-nadjga-</td>
</tr>
<tr>
<td></td>
<td>be cut-kill</td>
</tr>
<tr>
<td></td>
<td>yagau-ga-na</td>
</tr>
<tr>
<td></td>
<td>kick-throw away</td>
</tr>
<tr>
<td></td>
<td>to kick away</td>
</tr>
</tbody>
</table>

Of course these compounds also have syntactic counterparts. One could say 'to join a group and fight'. There is a difference, however. The compound denotes a single activity or event, rather than two distinct ones. It is also an event considered nameworthy in its own right.

A fourth kind of lexical compounding, the combination of a noun and verb to derive a larger verb, is often referred to as noun incorporation. The compounds below are from Tsetelcingo Nahuatl, a Uto-Aztecan language of Morelos, Mexico.
Nahuatl noun + verb > verb
Uto-Aztecan 25) j-saka
Tuggy (1979) water-cart
          to cart water

ihtecuška
stomach-cry
his stomach grows

kwah-tlieko
tree-ascend
to tree-climb

koč-kama-koyw-1
sleep-mouth-open-intr
yawms

As in other compounding, the modifying noun does not necessarily refer to
a specific entity. It simply narrows the scope of the verb. The first
compound stem refers to carting involving water. No specific bucketsful
are referred to. Because the noun does not refer, it does not appear with
an article, nor with a demonstrative, nor with a number marker (singular
etc.), nor with a number. This would be comparable to saying in English:

26) I am *the babysitting.
    *three
    *those

if caring for three children.

All languages which incorporate in this way, combining nouns and verbs
to derive compound verbs, have syntactic paraphrases of the compounds.
If one can say in a language something like 'to water-cart', we can
accurately predict that there will be a grammatical alternative such as
'to cart water'. This kind of combining must also be functional.

If fact, it is, in much the same way as are the other kinds of compounding.
It forms a single unit to represent a unitary concept. The incorporated
noun, which is not referential and is not an argument of the sentence as
a whole, loses its pragmatic salience along with its syntactic status.
The derived verb does not express the chance occurrence of some activity
or state and some patient, but rather denotes a recurring or habitual
event. Like other compounds, noun-verb compounds are coined to denote
nameworthy events. A similar construction in English illustrates the
status of such compounds as names. If you ask me where my brother is,
I might reply:

27) He is out berrypicking.
    He is off mountain-climbing.

or

if he is picking berries or climbing a mountain. I would be unlikely to
say, however,

28) He is out ladder-climbing.

even if he is in fact climbing a ladder. Ladder-climbing is not a recog-
nizable activity of the same status as mountain-climbing. If I did say
it, you might suspect that ladder-climbing must be a recognizable activity
in some context, say, as a necessary profession, a new sport, or a test
for joining the fire department. Compounds have lexical status that their
syntactic counterparts do not.
2.2. The Manipulation of Case Roles

A number of languages that compound nouns and verbs to form verbs, as above, also have a second type of incorporation as well. This second type affects more than the predicate; it affects the roles of other participants in the event. In fact, it is a strategy for advancing oblique arguments (possessors, locatives, etc) to more prominent case roles, namely, direct objects and subjects. A direct object or patient subject is incorporated into the verb, and loses its status as a separate argument, as in Type I compounding. In this second type of incorporation, however, another participant in the event jumps into the vacated case role. Compare the intransitive sentences below from Blackfoot, an Algonkian language.

Blackfoot 29)a. No'kakíni áiststsíwa.
Algonkian my-back dur-pain-it
Frantz (1971) My back hurts.

b. Nitáísttsso'kakini
I-dur-pain-back
I have a backache.

In 28)a., I am simply the possessor of the back. In b, I am the patient subject of the sentence, the one undergoing the pain. Now compare the transitive sentences in 30.

?? 30)a. Nfitssikihipa óma nínaawa o'kakíni.
I-break-it that man his-back
(I broke the back of that man.)

b. Nfitssiko'kakínaw óma nínaawa.
I-break-back-him that man
I back-broke that man. (=I broke that man's back.)

Frantz reports that 30)a. was rejected as peculiar by speakers. In this form, the back is the direct object and the man simply the possessor of the back. Since most speakers would presumably be more interested in the effect of the event on the man than on the back, b is preferred, with the man in object position. This second type of incorporation thus provides a strategy for juggling important participants, such as affected persons, into important case roles.

Yucatan Maya shows the same type of construction. Direct objects may be incorporated into verbs. When the object role is thus vacated, another object may be advanced to object status, and the verb marked as transitive.

Yucatec 31)a. K in č'ak-ók če' ičil in kòol.
Mayan inc I chop-it-hab tree in my cornfield
Bricker (1978) I chop the tree in my cornfield.

b. K in c'ak-če'-t-ik in kòol.
inc i chop-tree-tr-imprf my cornfield
I clear my cornfield. (I tree-chop my field.)
32)a. K in wek-Ø-k ha’:\ninc i spill-it-inprf water
I spill water.

b. K in wek-ha’a-t-ik
inc i spill-water-tr-imprf
I splash him. (I water-spill him.)

Incorporation provides a tool for moving an interesting entity (here the
field and the person) into a more interesting case role, that of direct
object.

2.3. The Arrangement of Information in Discourse

A number of languages, which have incorporation of Types I and II, also
have a third type of incorporation. While Type I affects just the predicate,
and Type II the clause, Type III goes beyond the clause to reflect discourse
structure.

Languages with this type of incorporation share several interrelated
characteristics. They typically have obligatory pronominal affixes that
mark subjects and objects, or agents and patients, within the verb. They
arrange constituents within the clause according to their importance to
the discourse. New, significant information appears near the beginning
of clauses, and less important, or old information, appears later. Informa-
tion that is clear from context, such as the identify of subjects and
objects, need not appear at all, since it is marked in the verb by the
pronominal affixes.

In many cases, information is not new and salient, but it is not
completely clear from the discourse because time has elapsed and/or
other entities are present. The speaker would not wish to divert the
attention of the audience with a separate noun, but needs one to identify
the referent. The solution is incorporation. The sentences below are
from Ten'a, an Athapaskan language of Anvik, Alaska, on the Lower Yukon.
The first time the neck is mentioned, an independent noun is used. There-
after, it is placed in the background by incorporation.

Ten'a
33) "Gîlû si qän ñqên," yîhn'Y.
Athapaskan
now my neck put it on he said
Chapman (1914)

Qâi-yi-qän-ñiyineon.
They-him-neck-put it on.

The text below shows the same use of incorporation in Tewa, a Tanoan language
of New Mexico. In this tale, a boy gives his sister a dog, telling her to
feed it every time she herself eats. If she does not, her fire will go out.
The first mention of the fire is as an independent noun.

Tewa
34) kô:yôn¥ wîñâhûyûmpi, ãvî fâ:
Tanoan
in case it does not eat your fire
Harrington
(t'ê kî wompâ'î.
(1947)
all it on you will go out.
A witch lives nearby, so the boy does not want his sister to leave the house. If the fire should go out, she would have to get more from her only neighbor, the witch. The fire, known information, is incorporated.

\[
\text{hèmbò} \quad '\text{î'ìnyûké:} \quad nàfà:kyèmmè:
\]

\[
\text{but the girl had to go get some (fire)}
\]

\[
'\text{itsùyè'irì} \quad tèhwà'ì:wè' \quad hàrìho' \quad ðmò:pàrì.
\]

\[
\text{the witch's house at if it (the fire) went out.}
\]

One day, the girl fails to give the dog anything to eat, and he puts out her fire. At this point, the fire, old information, is again incorporated.

\[
\text{hàrìho} \quad '\text{itsè'è:ri} \quad ðmò:pà:.}
\]

\[
\text{and little dog put it (her fire) out}
\]

As the tale continues, the girl goes to the witch's house for fire. The fire, known information, is again incorporated.

\[
\text{nàfà:kyèmmè:}
\]

\[
\text{she went to get some (fire)}
\]

She ends up stealing some.

\[
\text{òfà:sè } '\text{màn}
\]

\[
\text{she stole some (fire)}
\]

As the text above illustrates, incorporation is an effective means of keeping reference straight without sidetracking the attention of the audience with separate nouns.

2.4. Classificatory Incorporation

Some languages with incorporation of types I, II, and III, have a fourth type as well. Like other languages, they do not incorporate very specific nouns. In fact, they develop a set of general terms which are incorporated in place of large sets of nouns and noun phrases. The system thus categorizes entities according to which classificatory stem is incorporated in their place. The source of these stems is often quite concrete. The sentences below are from Caddo, a Caddoan language of Oklahoma.

Caddo

35) Kassi' hâh'îč'áswi'sa'.
bead prog-she-eye-string-ing

She is stringing beads.

36) Ka'as hâh'îč'ahir'sa'.
plum prog-ît-eye-grow-ing

Plums are growing.

Both verbs above contain a sequence -'a(h)-, which is normally a noun root for 'eye'. It is used in the sentences above, however, as a
classifier, indicating that the direct object of 35), and the subject of 36) are 'small round objects'. It thus qualifies the meaning of the verbs. Once the classification of beads and plums as small round objects is clear, the classifier alone in the verb can serve to keep reference straight in subsequent discourse. The classifier -dâñ- 'granular substance' is used this way in the text below. When parched corn is first introduced, a separate noun is used. From then on, its identify is maintained by the classifier alone.

In this tale, Wildcat's wife is recounting to her husband what happened when Turkey came to the house.

Caddo
Caddoan
Chafe (1977)

37) . . . kúmbaka' kišwah dakhkûndâña'na'.

he told me parched corn you make granular substance for me

He told me to make parched corn for him.

Nátcîndâña'nîhâh, dâmbfnu'nâh nâhiyah.

after I made the he put the he left

granular substance granular subs

for him on his back

After I had made it (the granular substance) for him, he put it (the granular substance) on his back and left.

3. Creative Morphologization as a Special Skill

Speakers of many American Indian languages often make a comment that speakers of English rarely seem to make. They are aware of who speaks their language especially well. This recognition is not reserved for formal oratory, or public presence. They are conscious of stylistic skill, which appears in the recounting of legends, in anecdotes, jokes, or conversation.

The speakers who are thus recognized generally share a specific trait: they frequently create new, morphologically complex words. They incorporate very often. They expand the lexicon by putting together new combinations. They actualize the possibilities their language has to offer. Weltfish wrote of Pawnee, "Conversations with older people indicate that this type of integration has a very real aesthetic value for speakers of the older language" (1937:vi).

Polysynthesis is not easy for children to acquire when they are learning their first language. There appears to be an initial restriction on the number of syllables a child can utter in a single word. Children begin speaking Mohawk, for example, using separate, morphologically unanalyzable words. Meaning that would be backgrounded by an adult is simply omitted by young children.

Mohawk has obligatory pronominal prefixes on the verb referring to subject and object. The child is initially unaware of the prefixes, and uses the same verb for all persons. The verb below, te:kehr, is based on the first person form te:kehr, te'-'not' + -k- 'I' + -ehr-e' 'want'.

...
Children do learn to manipulate the morphology very quickly, once they get started. They learn one system at a time: major pronominal prefixes, tense, direction/location, but are limited in how many they can combine at once. For those they do not yet know, they use separate emphatic particles. One of the last prefixes learned is the coincident, which indicates that two entities or times are the same. When asked how tall his friend was, a five-year-old boy, who realized that he needed a coincident prefix, but could not produce one, replied as below.

39) Adult

sha' teyákena
same-both-we-two-big
we two are the same size

Child, 5 years

nį:ra
ni:'i
so-he-big I

Interestingly, one of the very last operations to be learned is creative incorporation. Children use compounds that they have learned as lexical units early on, presumably unaware of their internal structure. By age six, however, they are still not producing new combinations on their own. Although they use word order to reflect the relative importance of information to the discourse very early, almost as soon as they combine words, they still do not use incorporation actively to background information until very late.

The difficulty of creative morphologization is similarly mirrored in language loss. Younger speakers of polysynthetic languages, who are completely fluent but speak English more often, use affixes appropriately as well as lexical compounds, but do not incorporate creatively as often as older speakers. They use well-known combinations when needed, but do not make up their own. Of Pawnee, Weltfish noted:

... 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. [Weltfish 1937:vi]

Comparison of a thriving dialect of Cayuga in Ontario with a fading dialect in Oklahoma bears this out. The best Oklahoma speaker, who had occasion to use Cayuga only a few times a year, controlled all of the productive prefixes individually, but tended not to combine too many into a single word. In an interview conducted in Cayuga, she was asked how she would say 'she has a big house'. She replied with an appropriate verb, -owané 'big', plus correctly incorporated noun, -nphs- 'house', but used a simple neuter pronominal prefix, yielding a correct word but failing to mention the possessor.
Cayuga 40) Ontario 41) Oklahoma
Iroquoian konghsowá:nēh kanqhsowá:nēh
Henry (personal her-house-large it-house-large
communication) she has a big house the house is big
Thompson (personal
communication)

When asked for another word, 'her onion is large', she provided two separate words instead of incorporating. The combination 'big house' is one which would have been heard many times, while the combination 'big onion' would be much rarer and perhaps created on the spot instead of stored in the memory.

Creative morphologization is a difficult and fragile process.

4. The Value of Polysynthesis

Polysynthesis is thus not merely an arbitrary equivalent to syntax. It is difficult to learn, difficult to use, and fragile, but functional.

4.1. Polysynthesis as a Tool

A well-developed, productive morphological system provides its speakers with two different types of benefits. The first is stylistic. A morpho-
logical alternative permits speakers to use unitary expressions for unitary concepts. It allows speakers to indicate that an entity or activity is nameworthy in its own right. It also permits speakers to manipulate the flow of information, by backgrounding known or less important details.

The second benefit concerns productivity. Most languages have some formally unanalyzable words which embody a set of semantic distinctions. Such words in English might be 'kick', 'slap', 'sock', 'poke', 'bludgeon', in which different types of instruments are implied but not overtly expressed, or 'fly', 'swim', 'crawl', in which location or medium are implied. Are opaque systems, like those above, any different from transparent systems, like the Lakhota verbs with overt instrumental prefixes? In an interesting sense, they are. Speakers of polysynthetic languages, with transparent systems, have a useful set of resources at hand for creating new lexical items as they need them. A whole set of potential, but so far non-existent, words is already mapped out. Furthermore, if a speaker does combine existing pieces in a new way to create a new word, the audience will probably be able to interpret it. Speakers of more analytic languages may not be so lucky. It is not at all clear what terms could be added to the 'kick', 'slap', 'sock', 'poke', 'bludgeon' set if a need arose. A speaker would be forced to circumlocute syntactically, or invent an entirely new word out of nowhere. If (s)he chose the latter, the audience would of course be unable to interpret the new word without an explanation. Perhaps this difference has played at least some role in language maintenance.
Many American Indian languages show much less European infiltration of their vocabularies than might be expected, in light of the quantity of new objects and concepts that have arrived with such insistence in the recent past. Speakers of polysynthetic languages have had the tools at hand for developing new terms of their own as the need arose.

Polysynthesis can thus provide speakers with two tools that analytic languages may not: a special type of stylistic plasticity and a mechanism for extending the lexicon instantaneously to encompass new concepts.

4.2. The Legacy of Polysynthesis

Polysynthesis can leave the mark of cognitive traditions on a language in a way in which less synthetic languages may not. Languages do not grammaticalize distinctions randomly. Only those distinctions that are considered significant enough to be specified systematically will become part of the grammar. The set of affixes in a language has two effects. First, it is a record of those distinctions and semantic relationships that speakers of that language considered sufficiently important, at some point, to morphologize. The locative prefixes in Karok referring to direction with respect to bodies of water constitute such a set. Second, the repertoire of affixes establishes a set of distinctions which speakers must learn to observe in order to speak grammatically. Obligatory affixes obviously have a more significant effect in this area than optional ones.

Even a relic system can have a lasting effect on the everyday language of speakers. Eyak, a Nadene language of Alaska, distantly related to the Athapaskan languages, provides a good example of this. Prefixes on verbs indicate that there was once classificatory incorporation of Type IV, although it is no longer productive. Nevertheless, nouns are classified according to the prefix which occurs with verbs of which they are patient subjects or direct objects. Compare the verbs below.

Eyak 42) 'u:d svtaẖ 'it (a stick) lies there'
Nadene 'u:d ḥsvtaẖ 'it (a board) lies there'
Krauss (1968) 'u:d ḥvsvtaẖ 'it (a log) lies there'
Krauss (1966a) 'u:d ṯij:svtaẖ 'it (leaf or feather) lies there'

New nouns which come into the language, such as a term for 'butter' borrowed from Russian, are assigned to a class and pulled into the system.

Speakers learn to feel, on some level, relationships that are the result of morphologization which is no longer productive or even transparent. Such a case comes from work by Mary Haas (1941) and Karen Booker (1981) on Muskogean languages. They noted that large sets of verbs in Choctaw begin with the same sequences, although the sequences are not otherwise recognizable elements of the language. Compare the Choctaw verbs below, all of which begin with nok-.

Choctaw 43) noktaka:li 'to have something stuck in the throat'
Muskogean nokšika:ni 'to smart, tingle in the throat'
Haas (1941) nokbiki:li 'to be stifled as from overeating'
nokšamalli 'to choke or suffocate'
nokpowalli 'to feel nauseated'
nokšiti:li 'to choke with a cord'
nokšila 'to be thirsty'
All appear to pertain to the neck or throat. The Choctaw word for 'neck', however, is iqko-la, unrelated to the above. A comparison of the nouns in related languages for 'neck' and 'throat', indicates clearly that the Proto-Muskogean noun for 'neck' was *nok-. Choctaw has retained the noun only in terms that were once verbs with incorporated nouns. The Type II incorporation is no longer a productive process, but it has left relics in the lexicon.

A second set of Choctaw verbs indicates another interesting fact. Note the meanings of the words below.

44) nokha:nklo 'to be sorry'
  nokwilo:ha 'to be sad, sorrowful'
  nokwanniçi 'to tremble through fear'
  nokòka:nči: 'to startle'
  nokšobli 'to frighten, terrify, intimidate'
  noklibiša 'to be in a passion'
  nokpalli 'to be interested, excited, tempted'
  nokòta 'to be jealous'
  noktala:li 'to quiet, appease, soothe'

This set of verbs is less concrete than the last, and refers primarily to emotion. As Haas points out, it indicates that the throat was once considered by Choctaw speakers to be the seat of emotion, at least metaphorically, much like the heart in English. The set illustrates the tendency of morphologically complex lexical items to develop metaphorically.

Finally, the vocabulary of a language shows not only what can be said, but, more importantly, what has been said. Speakers learn lexical items as wholes, unlike most sentences. When speakers hear a morphologically complex word, they are generally aware on some level, of whether 1) it is a possible word in the language (professionalization versus discursiveness), and also 2) whether they have actually heard it. The same is not generally true of sentences. Speakers do not keep track of the sentences they 'know' in the same way.

A language may have a productive causative affix, which is readily used by speakers to derive new words. It will have been used to form certain complex lexical items but not others, however, the English lexicon contains the words 'blacken' and 'whiten', but not 'purplen'. Causing things to become black or white are common, recurring, recognizable events, frequently encountered in the course of normal cooking, cleaning, and housekeeping. Causing things to become purple is not.

Lexicalized compounds provide a record of the concepts for which speakers have felt a name was needed, as well as the semantic elements they considered sufficiently salient in order to form the basis of the name. The Comanche compounds cited earlier provide such a set. Sapir points out some other interesting compounds in Navajo which provide evidence of their northern homeland. The modern Navajo term for 'corn', nà:dài:, is actually a lexicalized compound meaning, originally, 'enemy food'. The Navajo, who did not have their own term for 'corn', were new to the region. (Sapir 1936:217).

The old maxim that all languages can be used to communicate any idea, given sufficient time, is still true. The fact remains, however, that they
are not. Languages develop to meet the needs of their speakers. This is especially clear in the case of polysynthetic languages. They not only offer speakers tools for stylistic intricacy and for creative development of the lexicon, they also offer a map of the distinctions and relationships that past speakers have considered important enough to grammaticalize, and concepts that they recognized sufficiently to lexicalize.

Note

1. I am especially grateful to the following individuals for sharing their expertise concerning their languages: Monica I. Brown, of Saskatoon, Saskatchewan, for Plains Cree; the late Elton Green, of Lewiston, New York, for Tuscarora; Reginald Henry, of Six Nations, Ontario, for Cayuga; Annette Jacobs, of Kahnawake, Quebec, and Mary MacDonald, of Aekwesahsne, New York, for Mohawk; Stanley Redbird, of Rosebud, South Dakota, for Lakhota; and Minnie Thompson, of Turkey Ford, Oklahoma, for Cayuga.
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