Polysynthesis and noun incorporation

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Polysynthetic languages

An isolating language:

(1)   *Chinese:*
      wo mai le   yi   ben shu
      I   buy ASP one CL   book
      'I bought a book.'

A polysynthetic language:

(2)   *Inuktitut:*
      annulaksi-kkanni-nginna-jualu-gasu-lauqsima-guma-nngit-tsiaq-galuaq-tunga
      imprison-again-really-a.lot-try-ever-want-NEG-EMPH-EMPH-1SG.INTR.DECL
      'I would never ever even want to try to end up in jail ever again even for a bit.'
      (Johns 2007)

Polysynthetic languages

"This type is called the incorporative or polysynthetic. It tends to the excessive and abnormal agglomeration of distinct significant elements in its words; whereby, on the one hand, cumbrous compounds are formed as the names of objects, and a character of tedious and time-wasting polysyllabism is given to the language." - William Dwight Whitney, 1867

- ▸ Today's lecture aims to shed light on some properties of polysynthetic languages, as well as understand them a bit better.
- ▸ **Takeaway:** Polysynthetic languages are not that different from non-polysynthetic languages!

Polysynthetic languages

Polysynthesis: A typological classification for languages that have the following properties:

- ‣ Words may be morphologically complex and express propositional-level content
- ‣ "Free" (or at least extremely fluid) word order

Some sample languages:

- ‣ *North America:* Inuktitut, Mohawk, Nahuatl . . .
- ‣ *South America:* Various Amazonian languages, Guarani, Quechua . . .
- ‣ *Asia/Oceania:* Ainu, Chukotko-Kamchatkan languages, Gunwinjuan languages, various Papua New Guinean languages . . .

Polysynthetic languages

1. Words may be morphologically complex and *express sentence-level content*.

(3)   *Inuktitut:*
      kapi-ja-u-lau-nngit-tuq
      stab-PASS-be-PST-NEG-3S.INTR.DECL
      'It was not stabbed.'

2. (Relatively) free word order.

(4)   *Inuktitut:*
      nanuq   kapi-ja-u-lau-nngit-tuq   angunasukti-mut
      polar bear stab-PASS-be-PST-NEG-3S.INTR.DECL hunter-OBL
      'The polar bear was not stabbed by the hunter.'

   ‣ All six possible word orders are permitted:
   ‣ N K A, K A N, N A K . . .

1. Words may be morphologically complex and *express sentence-level content*.
   ‣ Not the same as...
       ‣ Lots of compounding:

(5)   *German:*
      generalstaatsverordnetenversammlungen
      general-staats-verordneten-versammlungen
      'general states representatives meetings'

   ‣ (Why not?)

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Word internal syntax
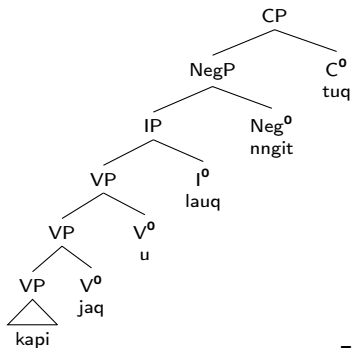
(6) *Inuktitut:*

kapi-ja-u-lau-nngit-tuq
stab-PASS-be-PST-NEG-3S.INTR.DECL
'It was not stabbed.'

The order of morphemes in a word (from left to right) maps pretty well to clausal hierarchy in various non-polysynthetic languages (moving up a tree).

▸ (Note, Inuktitut is right-headed.)

(7) kapi -ja- -u -lau -nngit -tuq
     Verb < Voice < Aux < Tense < Neg < Mood

(8)

```
                         CP
                    ┌─────┴─────┐
                  NegP         C⁰
              ┌────┴────┐      tuq
             IP       Neg⁰
          ┌───┴──┐    nngit
         VP     I⁰
      ┌───┴─┐   lauq
     VP    V⁰
   ┌──┴─┐   u
  VP   V⁰
  ◹    jaq
 kapi
```

Word internal syntax

And morpheme order often interacts with *interpretation*.

(9) *Yupik:*

    a. ayag-ciq-**yugnarqe**-ni-llru-uq
       go-FUT-**probably**-claim-PST-3S.INTR.DECL
       'He said he would probably go.'

    b. ayag-ciq-ni-llru-**yugnarqe**-u-q
       go-FUT-claim-PST-**probably**-3S.INTR.DECL
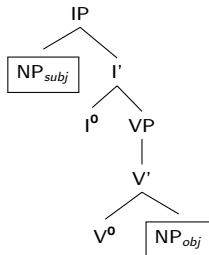   'He probably said he would go.'

- The relative scope of the adverb 'probably' is determined by *c-command*.
- (This should sound familiar. When else have we talked about scope and relative c-command?)

Word external syntax

2. (Relatively) free word order.

‣ We won't talk about how to *derive* the various word orders (though there are lots of analyses out there!).

‣ But I will try to convince you that, regardless of the word order at S-structure, **the NPs are generated in their θ-positions at D-structure**.

(10)

```
                IP
              /    \
         NP_subj    I'
                   /  \
                 I⁰    VP
                        |
                        V'
                      /    \
                    V⁰    NP_obj
```

9

Noun incorporation

What's happening here?

(11)   *Mapudungun:*

a.   ñi chao kintu-le-y   ta chi pu **waka**
     my father seek-PROG-IND.3S.SUBJ the COLL **cow**
     'My father is looking for the cows.'

b.   ñi chao kintu-**waka**-le-y
     my father seek-**cow**-PROG-IND.3S.SUBJ
     'My father is looking for the cows.'

Noun incorporation

"A regular process by which lexical units which are syntactically complements of verbs can also be realized as elements within the verb itself" (Matthews 1997).

- ‣ I'll illustrate throughout with Mohawk (Iroquian) and Mapudungun (Araucarian).

(12)   *Mohawk:*

    a. wa'-k-hninu-'   ne ka-**nakt**-a'
        FACT-1SG-buy-PUNC NE NOM.PREF-**bed**-SUF
        'I bought the/a bed.'

    b. wa'-k-**nakt**-hninu-'
        FACT-1SG-**bed**-buy-PUNC
        'I bought a bed.'

Noun incorporation

Some properties of noun incorporation:

- ▸ Can "strand" possessors, modifiers, etc. That is, only the bare noun incorporates!

(13) *Mohawk:*

    a.   wa'-k-**ather**-a-hninu'   **thikv**
         FACT-1SG-**basket**-∅-buy-PUNC **that**
         'I bought that basket.'

    b.   hrao-**nuhs**-rakv   ne **sawatis**
         3SG-**house**-white NE **John**
         'John's house is white.'

Noun incorporation

Some properties of noun incorporation continued:

- The incorporated argument is often interpreted as *generic*, or as *definite but referring to an established discourse referent*.
- It cannot be interpreted as a specific/wide-scope indefinite.

(14)   *Mapudungun:*
Mapuche nie-**kawell**-la-y-ngün
Mapuche have-**horse**-NEG-IND-3P.SUBJ
'The Mapuche do not own horses.' $\neg > \exists$
Not: 'There are horses that the Mapuche do not own.' *$\exists > \neg$

Noun incorporation

Important: Only the direct object can incorporate.

(15) *Mapudungun:*

    a.   ñi chao kintu-**waka**-le-y
           my father seek-**cow**-PROG-IND.3S.SUBJ
           'My father is looking for the cows.'
           Not: 'The cow is looking for my father.'

    b.   Juan ngilla-**waka**-lel-fi-y
           Juan buy-**cow**-APPL-3OBJ-IND.3S.SUBJ
           'Juan bought a cow for him/her.'
   *Not:* 'Juan bought it for the cow.'

In other words, elements receiving a theme/patient θ-role may incorporate.

A head movement analysis for NI

Baker (1988): Noun incorporation is derived by **head movement**.

- N^0 moves to V^0, forming a $N^0 + V^0$ constituent.
- Specifically, the direct object NP is base-generated as the complement of V^0, and the N^0 undergoes head movement out of the NP to V^0.
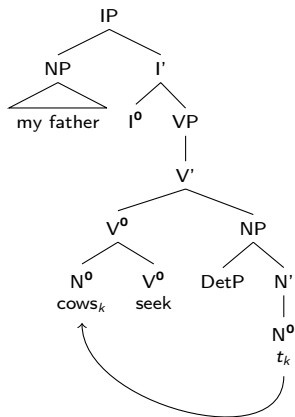
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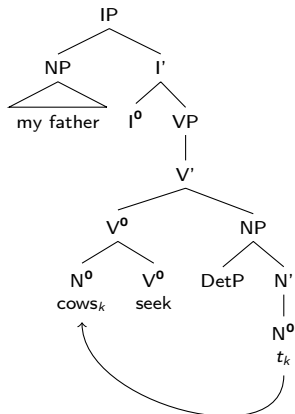
A head movement analysis for NI

This account, though simple, captures some of the aforementioned properties of NI:

- ‣ Only objects incorporate into the verb complex.
- ‣ Possessors, modifiers, etc. are "stranded."
- ‣ (Non-specific/indefinite interpretation, with some extra semantic work)

(17)

A head movement analysis for NI

And some predictions are borne out too.

- ‣ Unaccusative vs. unergative subjects:
- ‣ Unaccusative subjects can also incorporate (in some languages), because they are generated at D-structure in object position (complements of V^0).
- ‣ Unsurprisingly, unergative subjects can't.

(18)   *Mohawk:*

    a.   wa'-ka-**wír**-<u>ʌ'</u>-ne'
         FACT-NS-**baby**-<u>fall</u>-PUNC
         'The baby fell.'

    b. *wa'-t-ka-**wir**-<u>ahsʌ'tho</u>-'
         FACT-DUP-NS-**baby**-<u>cry</u>-PUNC
         Intended: 'The baby cried.'

Theoretical extensions

If NI is derived simply with head movement of N^0 to V^0, we might expect it to occur outside of discussions of polysynthesis.

Hale & Keyser (1993, 2002): Unergative verbs (across different languages) are formed using the same (general) mechanism as noun incorporation.

- ‣ What are unergative verbs again?
- ‣ Intransitive verbs which assign an agent θ-role to their subject (sing, laugh, dance, breathe, etc.).
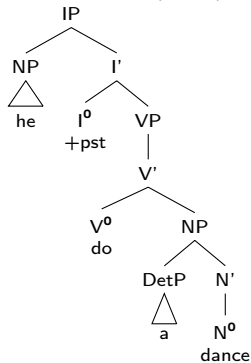- ‣ Unergative subjects are generated in Spec-IP at D-structure.

Theoretical extensions

H&K: English unergative verbs may be morphologically decomposed into a (null) verb incorporating its nominal object.

(19) *He danced (intrans.):*
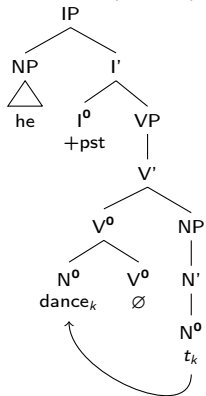
(20) *He did a dance (trans.):*

Theoretical extensions

A supporting argument:

- In Basque, unergative verbs are always formed with *egin* 'do' (a light verb) and a direct object.
- So Basque is like English, except English allows the V^0 and N^0 to combine into a single word.

(21) *Basque:*

N_{obj}	V_{do}	trans.
negar	egin	'to cry'
eztul	egin	'to cough'
lo	egin	'to sleep

- **Light verbs** lack lexical (semantic) meaning and select for some semantically contentful predicate.

(22) take a shower, take a nap, take a look

Obligatory noun incorporation

The discussion of **light verbs** brings us to a different type of noun incorporation—obligatory incorporation.

In Inuktitut, noun incorporation occurs only with **a limited set of verbs** and is **obligatory**.

(23) *Inuktitut:*

    a.   pitsi-**tu**-vunga
          dried fish-**consume**-1SG.INTR.DECL
          'I'm eating dried fish.'

    b.   ***tu**-vunga   pitsi-mik
          consume-1SG.INTR.DECL fish-OBL
          Intended: 'I'm eating dried fish.'

(24) a.   **nigi**-vunga   pitsi-mik
          eat-1SG.INTR.DECL fish-OBL
          'I'm eating dried fish.'

    b.   *pitsi-**nigi**-vunga
          dried fish-**eat**-1SG.INTR.DECL
          Intended: 'I'm eating dried fish.'

Obligatory noun incorporation

Compare with Mapudungun (non-obligatory NI):

(25)   *Inuktitut:*

    a.   pitsi-**tu**-vunga
        dried fish-**consume**-1SG.INTR.DECL
        'I'm eating dried fish.'

    b.   ***tu**-vunga   pitsi-mik
        consume-1SG.INTR.DECL fish-OBL
        Intended: 'I'm eating dried fish.'

(26)   *Mapudungun:*

    a.   ñi chao kintu-le-y   ta chi pu   **waka**
        my father seek-PROG-IND.3S.SUBJ the   COLL **cow**
        'My father is looking for the cows.'

    b.   ñi chao kintu-**waka**-le-y
        my father seek-**cow**-PROG-IND.3S.SUBJ
        'My father is looking for the cows.'

Obligatory noun incorporation

In Inuktitut, the verbs that require incorporation are **all light verbs**.

- ▸ Lack lexical (semantic) meaning and therefore select for some semantically contentful predicate.

(27)   *Some incorporating light verbs in Inuktitut:*

-u	'be'
-tuq	'consume'
-qaq	'have'
-taaq	'get'

- ▸ Accordingly, lexical verbs (e.g., tickle, kill, kiss, love, discover, etc.) don't ever incorporate.

Obligatory noun incorporation

Different reasons for incorporation in Mohawk/Mapudungun and Inuktitut:

- **Non-obligatory NI:** happens for nominal-licensing reasons. There are multiple ways to license a nominal, and incorporation is one of them (e.g., incorporation of a nominal means that it can bypass the Case FIlter).

- **Obligatory NI:** happens for verb-related reasons! All words in Inuktitut require a *root*—some sort of contentful morpheme to which other morphemes may attach. Light verb constructions lack a lexical verb, so the noun is incorporated as the root instead.

Obligatory noun incorporation

Unification of obligatory noun incorporation with our discussion of English unergatives!

In both cases, the N^0 within an object NP undergoes head movement to V^0.

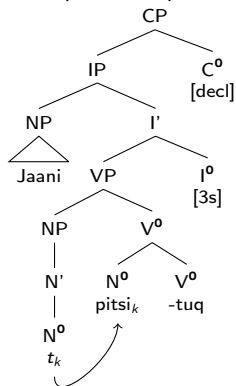(28)   *Jaani pitsi-tu-vuq* 'Jaani is eating dried fish'
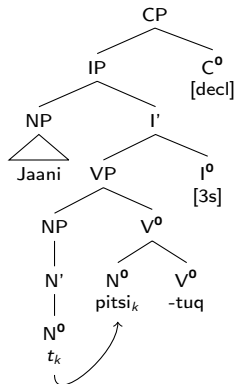
▸ (You should be a little concerned about this tree, though!)

Back to polysynthesis

We haven't discussed something crucial about polysynthesis yet—how we convert syntactic trees into single words?

(29) *Jaani pitsi-tu-vuq* 'Jaani is eating dried fish'

‣ How do the elements in C^0, I^0, V^0, and the object form a phonological word *to the exclusion of the subject*?

Proposal: Wordhood is a PF phenomenon (Compton & Pittman 2010).

▸ In other words, Inuktitut and English have very similar syntactic structures, but look different because Inuktitut is subject to an extra morphological requirement.

Recall the T-model:

(30)   D-Structure
            |
        S-Structure
          ╱   ╲
      [PF]   LF

27
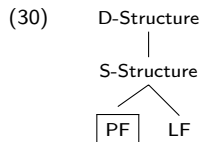
Back to polysynthesis

The PF requirement: In Inuktitut (perhaps other polysynthetic languages, too), **CPs and NPs are phonological words.** Nothing else gets to be a standalone word.

▸ Everything that is dominated by a CP will form a word together, and everything that is dominated by an NP will also form a single word together.

Indeed, the only standalone words in Inuktitut are either *nominal* or *clausal*.

▸ **Not standalone words:** Adjectives, adverbs, prepositional cases, lexical verbs . . .
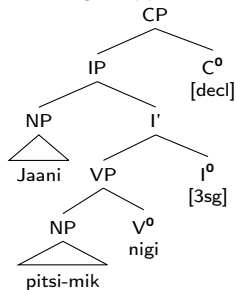
(31) *Inuktitut:*

    a. iglu-**vinir**-**mut**
         house-**old**-OBL
         'to the old house' (an NP)

    b. ani-**saali**-juit
         leave-**early**-3PL.DECL
         'They left early.' (a CP)

Back to polysynthesis

Word formation in Inuktitut:

(32) *Jaani nigi-vuq pitsi-mik* 'John is eating the dried fish'

$W1 = NP_{obj} \rightarrow$ pitsimik
$W2 = NP_{subj} \rightarrow$ Jaani
$W3 = CP - (NP_{subj} + NP_{obj}) \rightarrow$ nigi-[3sg]-[decl] $\rightarrow$ nigivunga

Back to polysynthesis

In noun incorporation, head movement of N^0 out of the NP results in the noun being spelled out with the rest of the CP.

‣ The material remaining inside the NP, like the relative clause in (33), gets spelled out separately.

(33) *Inuktitut:*

iglu-liu-lauq-tunga   [*t*   angi-jur-mit   ]
house-make-PST-3S.INTR.DECL [big-3S.INTR.DECL-OBL]
'I made a house that is big.'

Selected references

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