Morphology
- Ling 105-

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Week 4, Class 2

Roadmap for today's class

1. Linguistic Atlases
2. More on the morpheme-based model
3. The word-based model

3.1 non-concatenation

3.2 cross-formations

4. Morphology Lab 9

Extra resources for data gathering: two databases

1) **World Atlas of Language Structures** (WALS): https://wals.info

2) **Syntactic Structures of the World's Languages**: https://terraling.com/groups/7

Morphological Rules: methods and models

- for now, two representative formalisms for morphological rules will be presented and contrasted:

1) **morpheme-based model**:
emphasizes commonalities between morphology and syntax and favors a restrictive architecture of description

2) **word-based model**:
minimizes the importance of parallels between syntax and morphology and invests in system-external explanations

Morphological Rules: methods and models

1) **morpheme-based model**:
‘Morphology is the study of the combination of morphemes to yield words’

2) **word-based model**:
‘Morphology is the study of systematic covariation

in the form and meaning of words’

Advantages of the morpheme-based approach

- morphology and syntax exhibit fundamental similarities: we can assume that morphology and syntax operate according to shared principles
- perhaps that's the reason that concatenative patterns are more commonly found!
- If so, a model that maximizes the formal similarity between morphology and syntax is *very convenient* and *elegant*
- therefore, the morpheme-based, concatenation-only approach

to morphological analysis has been popular

limits of morpheme-based model

- There are some disadvantages to positing that concatenation is the only rule type:

➢base modification and conversion are difficult to accommodate

-example of plural formation in Albanian: textbook p. 45

-example of plural formation in Romanian (board)

Q: what about conversion? how are we going to derive ‘hammer’ (V) from ‘hammer’ (N) through the morpheme-based approach?

Distributed Morphology

- A recent type of morpheme-based approach
- Theoretical model
- Halle and Marantz (1993, 1994)
- Harley and Noyer (1998) => optional reading

Word-based model

word-based model: the **word as a center**

- in this model the fundamental significance of the word is emphasized
- the relationship between complex words is captured by formulating **word-schemas** that represent the features which are common to morphologically related words

- For example:
  the morphological similarities among the English words bags, keys, gods, ribs, bones, gems, cats etc. are expressed through a
  word-schema

word-based model: the **word as a center**

- the morphological similarities among the English words *bags*, *keys*, *gods*, *ribs*, *gems*, *cats* etc. are expressed through a **word-schema**

a. Words: *bags, keys, gods, ribs, bones, gems, …*

b. Lexical entries for words

[/bægz/ N 'bags'] [/kʰijz/ N 'keys'] [/gɑdz/ N 'gods'] [/rɪbz/ N 'ribs']

c. Word-schema

[/Xz/ N 'plurality of *x*s']

word-based model: *not* for individual morphemes

- a word-schema stands for complete words
- not for individual morphemes in the sense of the morpheme-based model
- if word-schema shows both a segmentable piece of sound and a corresponding meaning, we can call this a ‘morpheme’
- in word-schemas closely related schemas are connected to each other

a. Words: *bag, key, god, rib, bone, gem, …*

b. Lexical entries

$$\left[\begin{matrix}/\text{bæg}/_{\text{N}} \\ \text{‘bag’}\end{matrix}\right] \quad \left[\begin{matrix}/\text{k}^{\text{h}}\text{ij}/_{\text{N}} \\ \text{‘key’}\end{matrix}\right] \quad \left[\begin{matrix}/\text{gɑd}/_{\text{N}} \\ \text{‘god’}\end{matrix}\right] \quad \left[\begin{matrix}/\text{rɪb}/_{\text{N}} \\ \text{‘rib’}\end{matrix}\right]$$

c. Word-schema

$$\left[\begin{matrix}/\text{X}/_{\text{N}} \\ \text{‘}x\text{’}\end{matrix}\right]$$

(1)

a. Words: *bag, key, god, rib, bone, gem, …*

b. Lexical entries

[/bæg/$_N$ ‘bag’] [/kʰij/$_N$ ‘key’] [/gɑd/$_N$ ‘god’] [/rɪb/$_N$ ‘rib’]

c. Word-schema

[/X/$_N$ ‘*x*’]

(2)

a. Words: *bags, keys, gods, ribs, bones, gems, …*

b. Lexical entries for words

[/bægz/$_N$ ‘bags’] [/kʰijz/$_N$ ‘keys’] [/gɑdz/$_N$ ‘gods’] [/rɪbz/$_N$ ‘ribs’]

c. Word-schema

[/Xz/$_N$ ‘plurality of *x*s’]

(3)

[/X/$_N$ ‘*x*’] ↔ [/Xz/$_N$ ‘plurality of *x*s’]

(3) expresses the morphological relationship between these sets

double arrow:
for some word matching the schema on the left, there is a corresponding word matching the schema on the right

word-based model: advantages

1) non-concatenative patterns can be described with it quite naturally, (such phenomena are difficult to accommodate in morpheme-based models)

(examples: conversion; base modification; reduplication)

2) even some concatenative patterns cause problems for morpheme-based models but are easily described within a word-based model

Conversion in word-based model

- Conversion in English:

  - correspondence for English noun–verb conversion of nouns denoting instruments

a. *hammer*$_{N}$/*hammer*$_{V}$, *saw*$_{N}$/*saw*$_{V}$, *spoon*$_{N}$/*spoon*$_{V}$, *funnel*$_{N}$/*funnel*$_{V}$, …

b. $\left[\begin{array}{l} /X/_{N} \\ `x \text{ (= an instrument)}' \end{array}\right] \leftrightarrow \left[\begin{array}{l} /X/_{V} \\ `\text{use } x \text{ (= an instrument)}' \end{array}\right]$

Base modification in word-based model

- Hindi/Urdu

a. *ma:r-* 'kill', *mar-* 'die'

b. [/XV:Y/v, 'A causes B to happen'] ↔ [/XVY/v, 'B happens']

Reduplication in word-based model

-described by copying part of the phonological string in one of the word-schemas

- Somali

a. *buug/buugag* 'book(s)', *fool/foolal* 'face(s)', *koob/koobab* 'cup(s)', …

b. [/XC1/N, 'x'] ↔ [/XC1aC1/N, 'plurality of xs']

Cross-formations in word-based model

attract	*attraction*	*attractive*
suggest	*suggestion*	*suggestive*
prohibit	*prohibition*	*prohibitive*
elude	—	*elusive*
insert	*insertion*	—
discuss	*discussion*	—
—	*illusion*	*illusive*
—	*aggression*	*aggressive*

$$\left[\begin{array}{l} /X\textit{ion}/\text{N} \\ \text{`action of doing}x\text{'} \end{array}\right] \leftrightarrow \left[\begin{array}{l} /X\textit{ive}/\text{A} \\ \text{`prone to doing}x\text{'} \end{array}\right]$$

This Rule reflects cross-formations:
a morphological rule in which both word-schemas
in the correspondence exhibit a constant phonological element

Cross-formations in word-based model

seasick	*airsick*
sealane	*airlane*
seafare	*airfare*
seaborne	*airborne*
seamanship	*airmanship*
seaworthy	*airworthy*
seaman	*airman*

We cannot interpret all of these examples **compositionally**

- their meaning is **NONCOMPOSITIONAL**:
  the meaning of the word-form is *more than* the sum of the meanings of the parts:

-'seaman': low-ranking navy member
(not any man with some relation to the sea)
-'airman': low-ranking air force member

$$\left[\begin{array}{l} /seaX/ \\ \text{'an } x \text{ having to do} \\ \text{with sea travel'} \end{array}\right] \leftrightarrow \left[\begin{array}{l} /airX/ \\ \text{'an } x \text{ having to do} \\ \text{with air travel'} \end{array}\right]$$

Cross-formations in word-based model

seasick	*airsick*
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We cannot interpret all of these examples **compositionally**

So: what **Rule** would capture these cross-formations?

$$\left[\begin{array}{l} /seaX/ \\ \text{`an } x \text{ having to do} \\ \text{with sea travel'} \end{array}\right] \leftrightarrow \left[\begin{array}{l} /airX/ \\ \text{`an } x \text{ having to do} \\ \text{with air travel'} \end{array}\right]$$

Despite being concatenative, cross-formation patterns cannot be described
so easily in a purely morpheme-based model.
the morpheme-based model usually assumes that complex words are not stored in the lexicon:
- we would need to retrieve a root and detect the affixes that attach to the root

Cross-formations in word-based model

attract	*attraction*	*attractive*
suggest	*suggestion*	*suggestive*
prohibit	*prohibition*	*prohibitive*
elude	—	*elusive*
insert	*insertion*	—
discuss	*discussion*	—
—	*illusion*	*illusive*
—	*aggression*	*aggressive*

→

$$\left[\begin{matrix}/X\textit{ion}/\,\text{N} \\ \text{`action of doing}x\text{'}\end{matrix}\right] \leftrightarrow \left[\begin{matrix}/X\textit{ive}/\,\text{A} \\ \text{`prone to doing}x\text{'}\end{matrix}\right]$$

Based on the morpheme-based model, complex words are not stored in the lexicon:
-it must posit that ***illusion*** and ***illusive*** are each derived from a root ***illude***,
with the suffixes having the lexical entries [/-ion/; N; V__] and [/-ive/; A; V__]
-ISSUE:
once *illude* is posited as the root, the morpheme-based model cannot readily explain why the verb illude does NOT exist!

Morphology Lab 9

-Observe the following dataset.
-In this language (Language A) something happen when a type of verb is derived by the adjective.

fikas	‘strong’	fumikas	‘he is becoming strong’
kilad	‘red’	kumilad	‘he is becoming red’
bato	‘strong’	bumato	‘he is becoming stone’
fusul	‘enemy’	fumusul	‘he is becoming an enemy’

- what type of morphological process is involved here?
- what is the Rule you would write?
- which formalism would you use?

TIP: it’s not reduplication!

I will see you next week:
what can we do in the meanwhile?

- review the lecture slides

- do reading from the textbook
- *optional* reading: paper on 'Distributed Morphology'

- the guidelines for assignment #2 (Midpoint development of the paper) will be ready next week

- in the meanwhile focus on collecting the relevant data

STAY SAFE