Phonology II ~ Morphology I

Thursday, 15 August 2019

Checking In

How was Discussion 2?

Big Picture Review

Our learning goals for phonology are to develop the skills to:

1. Determine whether two sounds are allophones or phonemes.
2. Use prose to describe a phonological rule written in standard form. ✅
3. Identify alternations in small data sets and write rules to describe them.
4. Identify common phonological processes from pairs of forms. ✅

Contrast

Speech sounds **contrast** when they can be used to change a word's meaning.

In this class, we use minimal pairs to diagnose contrastiveness.

- Recall: minimal pairs are sets of words that are exactly alike except for one sound.
- What are some minimal pairs that include [bæt]?

Contrast

Behavior 1: V ➔ [+long] / __[+voice][-continuant]#

- Do long and short vowels contrast in English?

Behavior 2: [-voice][-continuant] ➔ [+aspiration] / .__V

- Do aspirated and unaspirated stops contrast in English?

Phonemes

A language's **phonemic inventory** is the set of all sounds that are contrastive in that language.

A **phoneme** is a member of a language's phonemic inventory, a contrastive phonological segment.

- Phonemes are language-specific
- Phonemes are abstract units, not physical entities

Allophones

Sounds that differ phonetically but do not contrast are **allophones**.
[from Greek: allo = ‘other’, phone = ‘sound’]

Behavior 1: V ➔ [+long] / __[+voice][-continuant]#

Behavior 2: [-voice][-continuant] ➔ [+aspiration] / .__V

Phonemes & Allophones

(surface form) (environment)

A phoneme's phonetic form is **predictable** from its phonological context.

- That's why we can write rules to describe where **allophones** occur!
- [t^h] and [t] do not occur in the same context.
- We call this **complementary distribution**

Phonemes are **not predictable** from the phonological context

- **/tæ__/** What sounds can occur in the blank?
- /p/ and /k/ can occur in the same context.
- We call this **contrastive distribution**

Phonemes and Allophones

Sounds in **complementary distribution** never occur in the same phonetic environment.

- **Example 2:** Voiceless aspirated stops occur word-initially before vowels. Voiceless unaspirated stops occur elsewhere.
- **Example 3:** Nasalized vowels occur before nasal consonants. Oral vowels occur elsewhere.

Superman and Clark Kent are in complementary distribution!

Phonemes & Allophones

What color is a chameleon?

Phonemes & Allophones

What color is a fox’s fur?

Akan

Are the oral and nasal vowels in complementary or contrastive distribution?

Akan	**Gloss**	**Akan**	**Gloss**
ka	‘bite’	kã	‘speak’
fi	‘come from’	fĩ	‘dirty’
tu	‘pull’	tũ	‘hole/den’
nsa	‘hand’	nsã	‘liquor’
tʃij	‘hate’	tʃĩj	‘squeeze’
pam	‘sew’	pãm	‘confederate’

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Contrastive distribution: look at all the minimal pairs!

English

Are oral and nasal vowels in complementary or contrastive distribution?

English	**Gloss**	**English**	**Gloss**	**English**	**Gloss**
bi	‘be’	bif	‘beef’	bĩm	‘beam’
leɪ	‘lay’	leɪs	‘lace’	leĩm	‘lame’
bæ	‘sheep’s call’	bæd	‘bad’	bæ̃ŋ	‘bang’

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Complementary distribution: V → [+nasal] / __[+nasal]

Pair Quiz Practice

1. What is a phoneme?

2. What set of consonants in English is dorsal and voiced? Name all of them.

3. Stops in English are devoiced word-finally. Write a rule for this pattern.

4. What things would you like more clarification on?

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Break

Learning Outcomes

1. Identify common types of morphological word formation from pairs of words.
2. Draw a tree structure to disambiguate the meaning of an morphologically ambiguous word.
3. Write morpho-phonological rules to describe the formation of morphologically-related words.

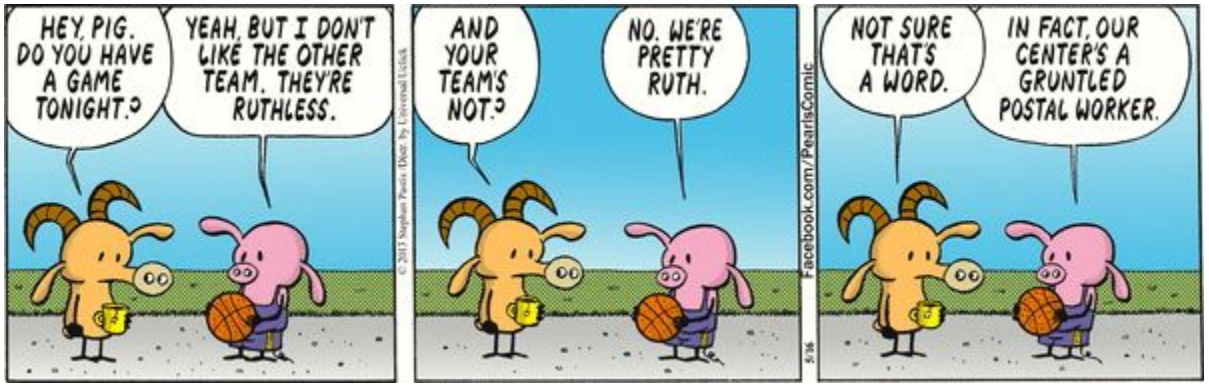
Morphology

Morphology is the study of the structure of words and how they are formed.

What is a word?

Morphology is one area in which languages can really differ from one another.

This makes it difficult sometimes to define “word” across different languages



How many words?

1. Á ta na wa ɔmù (Engenni)
   one go to seek house
   “Let’s go look for the house”

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2. Teninonhsihsákha (Mohawk)
   te-ni-nonhs-ihsak-ha
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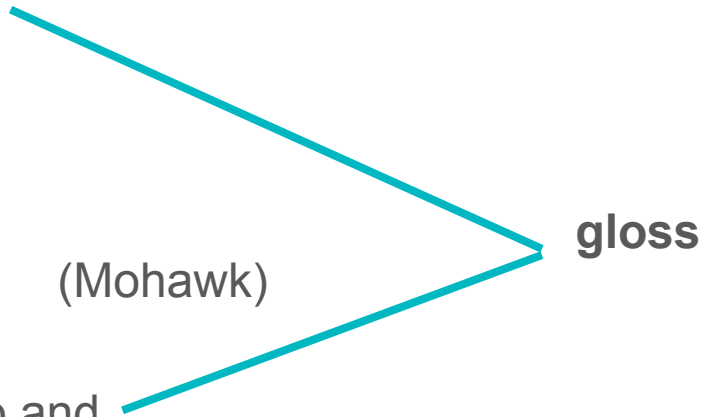

What is a word?

How many words are there in this sentence?

I want ice cream.

A) 4

B) 3

C) 2

What is a word?

How about in this sentence?

He made off with 20,000 dollars.

A) 6

B) 5

C) 4

D) 3

How many words?

These examples illustrate that the concept of wordhood is not always trivial.

But speakers have pretty strong intuitions about word boundaries (though spelling sometimes may interfere).

Defining wordhood

A word:

- is the smallest free form in a language
- can be pronounced alone
- refers to a single concept, entity or idea
- can be identified on the basis of phonological evidence such as stress
    - Finnish stress is on first syllable of each word
    - Spanish stress is on penultimate syllable

Content and function words

Content words: the nouns, verbs, adjectives, etc that have more easily identifiable meanings.

Content words are also called open class words because we add to the class of open words all the time: blog, mansplain, flash drive, Pokémon, yeet, etc.

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Function words: words like conjunctions and prepositions that don't have clear meaning of their own.

- What in the world does "it" mean in "It is raining"?
- Function words are closed class words, since they don't allow new additions as easily as content words.

Word Structure

Words are made up of smaller units.

A **morpheme** is the smallest meaningful unit of language (compare to phoneme that has no meaning in itself)

- builder: 2 morphemes (build + er)
- bookings: 3 morphemes (book + ing + s)

Word Structure

A **morpheme** is the smallest meaningful unit of language (compare to phoneme that has no meaning in itself)

Some words are made up of many morphemes (complex words)

- builder: 2 morphemes (build + er)
- bookings: 3 morphemes (book + ing + s)

Other words are a morpheme on their own (simple words, monomorphemic)

- shake
- go
- ladder

What does it mean to know a language?

Every language can be thought of as having two components.

(morphemes)

We need **pieces of meaning** and we need **rules** to put them together.

- We've already seen rules in phonology (sound grammar!)
- Today we're learning about rules in morphology (word grammar!)
- Later we'll learn about rules in syntax (phrase grammar!)

The two components that every language has are **Lexicon** and **Grammar**

The Lexicon

The **lexicon** is the mental dictionary that every speaker of a language has.

- It's the repository of morphemes

Entries in the lexicon may look something like this:

Pronouncing Morphemes = Morphophonology

Remember, a morpheme is the smallest unit of meaning, like the –s of the plural suffix or the –ed of the past tense suffix.

But crucially, the pronunciation of these morphemes differs based on the context they occur in.

When a morpheme's pronunciation differs in this way, these varied pronunciations are called **allomorphs** [from Greek, allo = other, morph = form].

Pronouncing the regular English plural

Word	Pronunciation	Word	Pronunciation	Word	Pronunciation
cabs	kæb-z	caps	kæp-s	buses	bʌs-əz
dads	dæd-z	cats	kæt-s	bushes	bʊʃ-ez
bags	bæg-z	backs	bæk-s	quizzes	kwɪz-əz
loves	lʌv-z	cuffs	kʌf-s	garages	gərɑʒ-əz
lathes	leð-z	faiths	feθ-s	badges	bædʒ-əz
cams	kæm-z				
cans	kæn-z				
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[z] after voiced non-sibilant

[s] after voiceless non-sibilant

[əz] after sibilant

Relating allomorphs to one another

How do we relate the three allomorphs of the plural to one other?

1. Memorize every form for every word. There is no relationship between the sounds.
2. Use rules to relate them to each other.

Humans do the second, and not memorization.

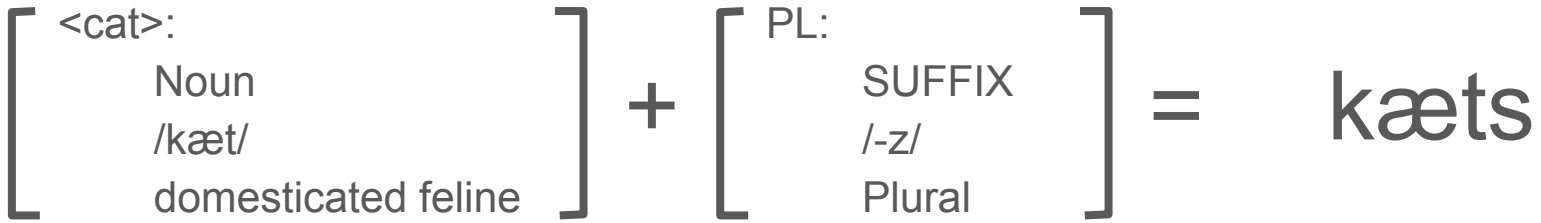
How do we know?

- If people just memorized things, they wouldn't know how to pronounce a new word.
  - Here's a word you probably didn't already know, cambist.
  - What's the plural? If you know, it's not because you've memorized it!

Wug Testing

Pronouncing the regular English plural

Recall the two components of every language: Lexicon and Grammar



- Phonologists assume each morpheme has one underlying form. This is the form that is the input to phonological rules.
- If we assume that the underlying form must be one of the possible output forms, which is the underlying form for the plural? [-s]? [-z]? [-əz]?

Pronouncing the regular English plural

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- [-s]? [-z]? [-əz]?

This is the form we stick onto the root in morphology.

How do we choose? What diagnostics do we have to help us choose between these three options?

- Let’s try making rules for each of the three possible underlying forms.
- *Important* underlying forms are marked with //, not [].

Pronouncing the regular English plural

If the underlying form is /s/, then:

- When the root-final sound is [-voice], do nothing.
- When the root-final sound is [+voice], turn /s/ → [z]
- When the root-final sound is [+sibilant], turn /s/ → [əz]

Note: /s/ → [əz] involves 2 changes:

1. inserting a schwa
2. changing /s/ → [z]

Pronouncing the regular English plural

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Note: /z/ → [əz] involves 1 change:

1. Inserting a schwa

Pronouncing the regular English plural

If the underlying form is /əz/, then:

- When the root-final sound is [-voice], turn /əz/ → [s].
  This involves 2 changes:
  1. deleting schwa
  2. turning /z/ → [s]
- When the root-final sound is [+voice], turn /əz/ → [z]
  This involves 1 change:
  1. deleting schwa
- When the root-final sound is [+sibilant], do nothing.

Pronouncing the regular English plural

Which analysis was simpler?

All three involve 3 different conditioning environments ([+voice, -sibilant], [-voice], and [+sibilant]), but assuming the underlying form is /z/ requires fewer changes.

- With /z/, only two changes need to happen to get all the data right.
- With /s/ or /əz/ as the underlying form, three changes are necessary.

So, fewer changes are better, generally speaking.

This typically means you’re capturing the right generalizations (i.e. understanding the pattern rightly).

Interim Summary

For the regular plural suffix, we've:

- Figured out what the underlying form is.
  - The underlying form needs to be one of the actual output forms.
  - Choose the underlying form that minimizes the rules/changes necessary to generate all the correct outputs.
- Constructed an economical set of ordered rules that generate the correct outputs.
  - Simpler usually = better!

Phonological rules applied to specific morphemes to generate their outputs (i.e. actual pronunciations), are called morphophonemic rules.

Roots and Affixes

Root: the morpheme that remains when all affixes are stripped away from a complex word.

- carries its lexical meaning
- carries affixes
- tend to be free morphemes (this depends on the language)

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Affix: a bound morpheme that attaches to a stem or root

- Adds grammatical meaning
- is always bound
- attaches to a specific word category

Free & Bound Morphemes

Free morpheme: a morpheme that can stand on its own; a word

Bound morpheme: a morpheme that must be attached to another element

Affixes are always bound morphemes, but roots may be bound morphemes, too.

- **<ceive>** does not have any meaning of its own in <receive>, <deceive>, <conceive>, <perceive>, etc.
- **<cran>** has no meaning apart from <cranberry>, neither does <boysen> or <huckle> (at least in contemporary English).

Free or bound?

Group the following morphemes into bound or free:

1) ‘s
2) will
3) her
4) ed
5) un
6) more
7) er
8) ‘d
9) an
10) the

Rules of word formation

If I have entries for <cat> and PL in my mental lexicon, I still need to know how to put them together to make a complex word.

- **prefix** s-cat scat = WRONG
- **infix** ca-s-t cast = WRONG
- **suffix** cat-s cats = CORRECT

I have to know that you add the plural to the end of the noun. It is a suffix.

In addition, this suffix can only attach to nouns, not verbs or adjectives or other grammatical categories.

Back to the Plural

In English, the plural is indicated by adding a suffix.

This is not the case in all languages, though.

How is the plural marked in Isthmus Zapotec?

zigi	“chin”	kazigi	“chins”
zike	“shoulder”	kazike	“shoulders”
diaga	“ear”	kadiaga	“ears”

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Using a prefix, ka-

The Future

In English, how do we make a verb refer to the future?

- If they study every day, then tomorrow they _____.

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- If they study every day, then tomorrow they _____.
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How does Spanish indicate the future tense?

- Simple future Yo estudiare. “ I will study.”
- Periphrastic future Yo voy a estudiar. “I’m going to study.”

Spanish has 2 ways to indicate the future, one is morphological (simple future), and one is syntactic (periphrastic future).

The Future

But the only way to indicate the future in many languages is only via the addition of some affix.

Tutrugbu (Ghana)

ɛvɛ “I went”	bɔvɛ “We went”	avɛ “s/he went”

- In Tutrugbu, what is the morpheme that means “go/went”?
- What are the morphemes that mean “I”, “we”, and “s/he”?

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ɛbavɛ “I will go”	bɔbavɛ “We will go”	abavɛ “S/he will go”

- What is the morpheme that indicates the future (~ “will” in English)?
- Is the future marked by a prefix or an infix in Tutrugbu?

Infixes and circumfixes

An infix is inserted in the middle of another morpheme.

Bontoc

fikas	“strong”	fumikas	“to be strong”
kilad	“red”	kumilad	“to be red”
fusul	“enemy”	fumusul	“to be an enemy”

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The infix /um/, which means “to be” is inserted after the first consonant of the noun or adjective.

See how this is different from Tutrugbu. /ba/ occurred between two morphemes, but was not inserted into the middle of a single morpheme.

Expletive insertion in English

English actually uses infixation, too, although in a very limited way.

Systematic pattern: f***in’ is inserted before a stressed syllable:

- absoLUtely → abso-f***in’-lutely
- TenneSSEE → Tenne-f***in’-see (not *Te-f***in’-nnesee)
- AlaBAma → Ala-f***in’-bama (not *A-f***in’-labama or Alaba-f***in’-ma)

Examples from: McCarthy, John J. 1982. “Prosodic structure and expletive infixation.” *Language* 58, 2. 574-590.

Infixes and circumfixes

A **circumfix** is attached to bot the beginning and end of a morpheme.

Chickasaw

chokma	“he is good”	ikchokmo	“he isn’t good”
lakna	“it is yellow”	iklakno	“it isn’t yellow”
palli	“it is hot”	ikpallo	“it isn’t hot”

This circumfix, which means “not” attaches to beginning and end of the word (and at the end, cause the final vowel of the stem to delete).

How to decompose a word into its morphemes

- Look for recurring sound-meaning correspondences
  - In Tutrugbu, all the words ended with vɛ and all meant something related to “go”, so /vɛ/ probably means “go.”
  - All the forms that started with /a/ meant “s/he”, while all the forms that started with /bɔ/ meant “we”, so /a/ = “s/he” and /bɔ/ = “we”

- Determine what kind of morpheme you’re looking at is. Is it a root, prefix, suffix, etc?

Building complex words

Generally, the meaning of a word is the composition of its constituent morphemes.

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So, a word like <unfriendly> has 3 parts:

- <un-> “not”
- <friend> = “person you like”
- <-ly> “having the characteristics of”

The meaning of the word is something like “not having the characteristics of someone you like (i.e. a friend)

Practice with English

Identify the morphemes (roots and affixes) below:

believable	“able to be believed”
doable	“able to be done”
thinkable	“able to be thought”
believability	“ability to be believed”
doability	“ability to be done”
unbelievable	“not able to be believed”
unthinkable	“not able to be thought”
unbelievability	“inability to be believed”

Paired Quiz Practice

1. What is a morpheme?

2. Give an example of an affix in English.

3. How many morphemes are in <governmental> (think of the words, <govern>, <government>, <supply>, <supplement>, and <supplemental> for help)?

4. What concept from today are you most unclear on?