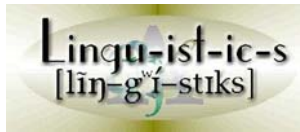


## LNGT0101 Introduction to Linguistics



Lecture #15  
Oct 29<sup>th</sup>, 2014

## Announcements

- [Talk by Prof. Deborah Cameron tomorrow at 4:30 in RAJ.](#) You're required to attend. Please take notes that will help you write a 250-word response essay to the talk. This will be one of the questions on HW 4.

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## Announcements

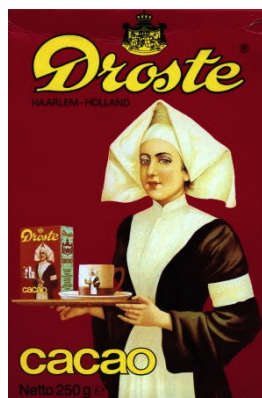
- [Event: The Middlebury Linguistics Club is screening "Is The Man Who Is Tall Happy?", the animated Noam Chomsky film, on Tuesday, November 11th, at MBH 104 at 8:00pm.](#)
- If you were at Toni Cook's lecture but didn't indicate that on HW 3, please let me know after class.

## Back to cartoons



## Today's agenda

- Syllabic consonants in English.
- Finishing discussion of suprasegmental features.
- Phonology.



## Syllabic Consonants

- In English, nasals and liquids can function as syllable nuclei when they occur in an unstressed syllable at the end of a word after any consonant. In narrow phonetic transcription, syllabic consonants are marked by an under-stroke [ ,̩]. Examples:

*tunnel* [tʰʌn̩l̩]                      *ladder* [læd̩ɹ̩]  
*chasm* [kʰæz̩m̩]                      *button* [bʌt̩n̩]

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## Suprasegmental features

- In addition to “segmental” features, e.g., place of articulation, voicing, tongue height, etc., other phonetic features may “ride on top of” these segmental features.
- Four of these are: length, tone, intonation, and stress.

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## Length

- The duration of a sound may be influenced by the sounds around it, e.g., compare your pronunciation of the two words in each pair below:
  - seat* vs. *seed*
  - leak* vs. *league*
  - leaf* vs. *leave*
- In narrow phonetic transcription, length is typically marked by a colon-like symbol “:” after the lengthened sound.

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## Vowel length in Finnish

- In some languages, the long-short contrast is crucial, since substituting a long segment for an otherwise identical short segment in a word can result in a change of meaning. Consider these data from Finnish:

[muta]            “mud”  
 [mu:ta]          “some other”  
 [muta:]          “but”

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## Consonant length (gemination) in Italian

- Italian shows the same length effect for consonants:
  - fato [fatɔ] “fate”    vs.    fatto [fat:ɔ] “fact”
  - casa [kasa] “house” vs.    cassa [kas:a] “box”

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## Pitch

- Depending on the tenseness of the vocal folds and the amount of air passing through the glottis, we may get either a high or a low pitch.
- Pitch is an auditory property of a sound that allows us to put it on a scale that ranges from low to high.
- Two kinds of controlled pitch movement found in human language are **tone** and **intonation**.

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## Tone

- In many languages, the pitch at which the syllables in a word are pronounced can make a difference in the meaning of the word. These are called **tone languages** (e.g., Thai, Zulu, Igbo, and Navajo).
- We use the uppercase letters H, M, and L, to stand for high, mid, and low tones. Consider this example from Mandarin:

[ma]	H	“mother”
[ma]	MH	“hemp”
[ma]	MLH	“horse”
[ma]	HL	“scold”

[Link to Thai tones](#)    [Thai tongue twisters](#)

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## Intonation

- Intonation is the pattern of rises and falls in pitch across a stretch of speech such as a sentence.
- For example, the same string of speech could be interpreted either as a statement or as a question, depending on its intonation contour:

*Max is studying linguistics.* (falling intonation)

*Max is studying linguistics?* (rising intonation)

*Max is studying linguistics, ...* (level intonation)

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## Stress

- Stress refers to the perceived prominence of a particular syllable relative to syllables around it.
- In essence, stress is the combined effect of pitch, loudness, and length.
- In some languages, stress placement is predictable, e.g., in Czech stress almost always falls on the first syllable, whereas in Welsh stress falls on the next to last syllable.

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## Stress

- In other languages, like English and Russian, stress is unpredictable and has to be learned for every word.
- In such languages stress placement may also create a difference in meaning:
  - export* could be [ˈɛkspɔɪt] or [ɛksˈpɔɪt]
  - present* could be [ˈpɪɛznt] or [pɪɛˈznt]
- Some languages also distinguish between primary [ˈ] and secondary [ˌ] stress.

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## Phonology

## Phonology

- Introducing **phonemes** and **allophones**.
- How to figure out if two or more sounds are phonemes or allophones in a particular language. (An algorithm for solving phonology problems).
- Doing some phonology problems (problem-solving skills)

## Phonology

- While phonetics studies how speech sounds are articulated, what their physical properties are, and how they are perceived, phonology studies the organization of speech sounds in a particular language.
- As it turns out, while two or more languages may have the same sounds, no two languages organize their sound inventories in the same way. Let's look at an example.

## [s] and [ʃ] in Japanese vs. English

- In both English and Japanese we hear the sounds [s] and [ʃ]:
  - Japanese: [ʃimasu] "do"
  - English: [slæʃ] "slash"

## [s] and [ʃ] in Japanese vs. English

- In English, however, the occurrence of each sound is **unpredictable**.
- Given [ \_oɪ], which sound do you think should occur in the blank?
- Either one can, giving us two words with two different meanings:
  - [ʃoɪ] "shore" vs. [soɪ] "sore"

## [s] and [ʃ] in Japanese vs. English

- By contrast, in Japanese, we do not find pairs where [s] and [ʃ] create a difference in meaning.
- In Japanese, if we have [ \_imasu], and a choice of [s] and [ʃ], we predict that only [ʃ] may occur in the blank: [ʃimasu] "do".
- Similarly, if we have [ \_an], we predict that only [s] may occur in the blank: [san] "three"
- If we make the wrong choice in the blank, we get a nonsense word. Japanese cannot have [simasu] or [ʃan]. These are just impossible words in Japanese.

## [t] vs. [tʰ] in English

- Given [ \_ɪm], which of these two sounds can occur in the blank: [t] or [tʰ]?
- Given [ s\_ɪm], which of these two sounds can occur in the blank: [t] or [tʰ]?
- Aspiration of voiceless stops is predictable by rule in English.

## Phonology

- Phonology addresses questions related to the sound system of a given language. Basically:
  1. Which sounds are predictable and which sounds are unpredictable in a given language?
  2. What are the rules regulating the occurrence of predictable sounds?
  3. How can we state speakers' knowledge of these rules in a 'formal' notation?

### Phonological knowledge is subconscious

- Native speakers of a particular language typically treat certain sounds as being the same, even when they are phonetically different, e.g.,
  - the [l] in *lay* and *play*
  - the [t] in *top* and *stop*
- But other sounds are considered different even when they sound the same:
  - [ˌaɪrəɪ] ‘rider’ and [ˌaɪrəɪ] ‘writer’

### Phonemes vs. allophones

- Phonologists explain the difference by invoking a distinction between **phonemes** and **allophones**.
- A phoneme is a sound that distinguishes meaning in a language, whereas an allophone is a phonetic variant of a particular phoneme that does not affect meaning.
- Phonemes are non-predictable, whereas allophones are predictable by rule.

### Minimal pairs

- Phonemes create words that differ in meaning. Hence, they are **contrastive**.
- But how do we know if two sounds are contrastive in a particular language?
- Answer: **Minimal pairs**.
- A minimal pair is two words with different meanings that are identical except for one sound that occurs in the same place in each word, e.g.,
  - seed* [sid] and *seat* [sit]

### Phonemes or allophones?

- So, bearing this in mind, let’s consider more examples from English.
- Based on the minimal pair *light* [laɪt] and *right* [raɪt], are the [l] and [r] phonemes or allophones in English?

### Phonemes or allophones?

- How about these further minimal pairs?  
*seat* [sit] and *sit* [sɪt]

*fool* [fuːl] and *full* [fuːl]

*sip* [sɪp] and *zip* [zɪp]

*leaf* [liːf] and *leave* [liːv]

### Phonemes or allophones?

- How about these further minimal pairs?  
*seat* [sit] and *sit* [sɪt] → [i] & [ɪ] are phonemes.

*fool* [fuːl] and *full* [fuːl] → [u] & [ʊ] are phonemes.

*sip* [sɪp] and *zip* [zɪp] → [s] & [z] are phonemes.

*leaf* [liːf] and *leave* [liːv] → [f] & [v] are phonemes.

## Aspiration in English

- Now, let's consider the following (made-up) minimal pairs:
  - a. *tar*: [t<sup>h</sup>aɪ] vs. \*[taɪ]
  - b. *star*: [staɪ] vs. \*[st<sup>h</sup>aɪ]
- Now, here's the question: Are the two sounds [t<sup>h</sup>] and [t] phonemes or allophones in English?
- Since [t<sup>h</sup>] and [t] are **not contrastive** in English, they are two **allophones** of the same phoneme, which we might represent here as /t/.  
(Notice the slash, rather than the square bracket, notation.)

## Aspiration in Thai

- But now consider aspirated and unaspirated voiceless stops in Thai.
 

[paa] "forest"	[p <sup>h</sup> aa] "to split"
[tam] "to pound"	[t <sup>h</sup> am] "to do"
[kat] "to bite"	[k <sup>h</sup> at] "to interrupt"
- Are these sounds phonemic or allophonic in Thai?

## Nasal vowels in English

- How about nasal vowels in English? Are they phonemes or allophones?
- First, let's try to find (or construct) a couple of minimal pairs:
  - a. *ban* [bæ̃n] vs. \*[bæn]
  - b. *bat* [bæt] vs. \*[bæ̃t]
- Is the contrast here phonemic or allophonic?

## Nasal vowels in French and Akan

- Now, consider nasal vowels in French:
 

<i>gars</i> [gɑ̃]	"lad"	<i>gant</i> [gɑ̃]	"glove"
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- Are they phonemes or allophones?
- How about Akan, a Ghanaian language?
 

[ka]	"bite"	[kã]	"speak"
[tu]	"pull"	[tũ]	"den"
[pam]	"sew"	[pãm]	"confederate"

## Distribution: contrastive vs. complementary

- From all these examples, you should have noticed that different allophones occur in different environments, that is, where one of them occurs, the other doesn't, and vice versa, which is not the case with phonemes.
- We say that allophones occur in **complementary distribution**, whereas phonemes occur in **contrastive distribution**. And this is the key way to distinguish between a phoneme and an allophone in a given language.

## Sounds in 'free variation'

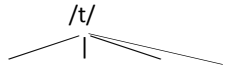
- Occasionally, two sounds in a language can be in free variation, that is, they may optionally occur in the same context without affecting meaning.
- For example, English stops may or may not have an audible release in final position.
 

<i>mat</i> [mæt] or [mæt̚]
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- The IPA symbol for 'no audible release' is ̚.
- Obviously, since sounds in free variation do not create a difference in meaning, they are \_\_\_\_\_.

## Phonemes are abstract entities

- So, phonemes are meaning-distinguishing sounds, whereas allophones are phonetic variants of the same phoneme that occur in specific contexts.
- Notice that this means that phonemes are actually **abstract** entities in your head rather than actual sounds that come out of your mouth.

Phoneme:



Allophones:

[t] [t<sup>h</sup>] [t̚] [ɾ]

## Phonemes are abstract entities

- The psychological existence of phonemes can be noticed in native speakers' slips of the tongue, e.g., *key chain* [ki tʃeɪn] may come out as [tʃi keɪn], but never as \*[ti kʃeɪn].
- This shows that the affricate [tʃ] is stored in the mind as a single unit, just as [k] is.

## Next class agenda

- Phonological analysis and writing Phonological rules.
- Language acquisition by children. Chapter 9, pp. 394-424.