


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
Phonology 1



Introduction to phonology

- Phonology: a branch of linguistics that studies the sound systems of languages (i.e. the patterns that regulate how sounds are organized to form words).
- Its aim: to demonstrate the patterns of distinctive sounds found in a language and to make as general statements as possible about the nature of sound systems in the languages of the world.


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Introduction to phonology

- The study of sounds is partitioned between two distinct but related disciplines: phonetics and phonology (both mean “sound” in Greek).


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Phonetics vs. phonology

- Phonetics studies the physical aspects of speech (e.g. physiological and acoustic - concrete - bases of speech), while phonology is concerned with the linguistic patterning of sounds in human languages (i.e. it is a more abstract - cognitive - concept).

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Phonetics vs. phonology

Phonology → Phonetics


/ p e j p ə r / → [p^h e j p ə r]

→ **phoneme: / /**

```

    / p /
   /   \
  [ ph ] [ p ] → allophones: [ ]
  
```

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Phonetics vs. phonology

- **In sum:** every language has an inventory of distinctive sounds (i.e. phonemes, e.g. /p/ in English), but each of these sounds can have a number of different realizations (i.e. allophones, e.g. [p^h] and [p] above).

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Some definitions

- **Phonemes**: sounds used *contrastively* (i.e. they serve to differentiate words). How do I know whether /p/ is contrastive in English?
- Through **minimal pairs**: words that differ by only one segment found in the same position in each form. E.g.:

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Minimal pairs

/pæt/	/tæp/
/bæt/	/tæb/
/mæt/	/tæn/
/sæt/	/tæg/

Conclusion: /p/, /b/, /m/, /s/, /n/ and /g/ are phonemes in English

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Minimal pairs

/pæt/
/pɪt/
/pi/
/pet/

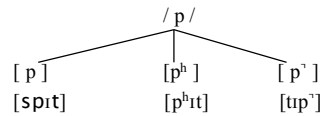
Conclusion: /æ/, /ɪ/, /i/, and /ɛ/ are phonemes in English

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Allophones

- Allophones: the different realizations of a phoneme.
- /p/ has at least three different realizations (allophones) in English:



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Allophones

- Note:
- 1) Unlike phonemes, allophones are NOT contrastive:
[p^hæt] [pæt] = <Pat>
It is difficult for English speakers to hear the difference between these sounds.

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Allophones

- Note:
- 2) [p] and [p^h] are allophones in English. In Hindi (and in some other languages), these two sounds are contrastive, i.e. they are **phonemes**:
/pa/ 'take care of'
/p^hal/ 'edge of knife'

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Complementary distribution

- Two sounds are said to be in **complementary distribution** if they occur in mutually exclusive contexts. E.g. [p^h], [p] and [p̚] are in complementary distribution:

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Complementary distribution

- [p^h] occurs word-initially¹: [p^hæt], [p^hɪt]
 - [p] occurs word-internally: [spɪt], [meɪpəl]
 - [p̚] occurs word-finally²: [læp̚], [mæp̚]
- This is not quite an accurate generalization. More details will be given in next week's lecture.
 - In fact /p/ has three *free variants* word-finally: [p] (released), [p̚] (unreleased) and [p̚̚] (glottalized).

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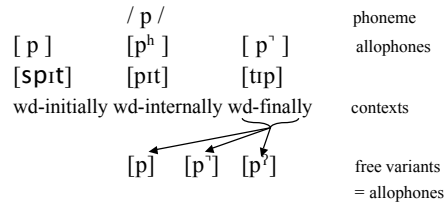
Free variation

- When different sounds occur in the same environment (just like phonemes!), but they do not signal a change in meaning (unlike phonemes!). E.g.

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Free variation



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Quick homework 1

- Arabic [h] and [ħ]: Arabic has two “h”-like sounds: [h] and [ħ]. [h] is the familiar glottal fricative; [ħ] is a pharyngeal fricative pronounced with pharyngeal (i.e. throat) constriction. The following words very clearly indicate the status of these sounds in the language.

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Arabic

ħuru:b	‘wars’	mahdu:d	‘destroyed’
tarhi:b	‘intimidation’	faħm	‘coal’
abah	‘similarity’	maħdu:d	‘limited’
habba	‘gust’	huru:b	‘flight’
abaħ	‘ghost’	ħa:l	‘condition’
fahm	‘understanding’	tarħi:b	‘greeting’
ha:l	‘cardamom’	ħabba	‘grain, seed’

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Arabic

- Question: are [h] and [ħ] in complementary distribution, do they represent different phonemes or are they in free variation in Arabic? Justify your answer.

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Hints on solving phonology problems

- Make a separate column for each relevant sound (e.g. [h] and [ħ]). List all the words containing the sound in question.

[h]	[ħ]
mahdu:d	ħuru:b
tarhi:b	faħm

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Hints

- Look for (near-) **minimal pairs**. If you find a minimal pair, determine whether there is a meaning distinction
 - **If yes: you are dealing with separate phonemes**
 - **If no: you are dealing with free variation**

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Hints

- If the sounds in question cannot form minimal pairs and they are in **complementary distribution** (i.e. they occur in different environments and their appearance is predictable), then you have **allophones**

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Hints

- Note: it is also important to observe the immediately preceding and following environment (they often trigger the appearance of “different” forms - allophones)

- **Brazilian Portuguese** /t/
 - [tʃ] (before [i])
 - [t] (elsewhere)

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