

## Phonemes and allophones (âm vị và tha âm vị)

Cơ sở âm vị học và ngữ âm học

13/7/12

## Review: classification of segments

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- Sound waves are continuous, but in many ways we perceive speech in terms of **segments**.
- Segments can be classified according to the way in which they are produced in the vocal tract.

## Segment inventories

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- Languages have different inventories of segment types.
- There are two ways in which languages can differ:
  - ▶ Segment **types**: the use/non-use of certain phonetic types/dimensions.
  - ▶ Segment **contrasts**: differences in the way phonetic dimensions are exploited.

## Differences of type (*loại hình*)

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- Certain types of segments are only used by some languages.
  - ▶ clicks (Southern African languages)
  - ▶ pharyngealised consonants (e.g. Arabic)
  - ▶ interdental fricatives (e.g. English, Spanish, Greek)
  - ▶ front rounded vowels (e.g. German, French)
  - ▶ ejectives (e.g. Georgian, Quechua)

## Differences of contrast (*tương phản*)

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- These differences are conspicuous, but **superficial** (*sơ lược*).
- More fundamental differences occur between what **counts as different** in a language. This is the concept of **contrast** (*tương phản*).

## Differences of contrast

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English	ba	pa	
Thai	ba	pa	p <sup>h</sup> a

- These languages make **different distinctions** along the **same phonetic dimension**.

- Universally, we can talk of a “voiceless bilabial stop”
- But for Thai, it’s important to also specify whether it’s aspirated or unaspirated.
- In English, it’s not quite so important.

## Language-specific distinctions

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From the point of view of a non-native speaker, many of these distinctions can be extremely subtle.

Polish distinguishes

[ɕ] and [ʃ]

[ʒ] and [ʒ]

‘kasiarz’ [kaɕaɕ]

English distinguishes

[si] and [ʃi],

which may be difficult for

Greek or Japanese speakers.

## Language acquisition

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- These differences present difficulties for L2 learners...
- But also for L1 learners:
  - ▶ What are the categories?
  - ▶ What counts as ‘different’ in my language?

## Phonemes (âm vị)

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- Contrastive sound categories are called **phonemes**.
- Phonemes are the smallest units in a language that distinguish word meanings (*đơn vị nhỏ nhất được dùng để phân biệt ngữ nghĩa của từ.*)
- Phonemes are **abstract** segments (*âm đoạn trừu tượng*).

## Let me repeat that again

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- Phonemes are the smallest units in a language that distinguish word meanings (*đơn vị nhỏ nhất được dùng để phân biệt ngữ nghĩa của từ.*)
- Phonemes are **abstract** segments.

## Phonemes (âm vị)

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- Phonemes are **abstract** segments.

There are some problems with the idealisation of a phoneme, but the concept is surprisingly useful.

## Finding phonemes

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- Phonemes are chiefly identified by finding **minimal pairs** (*cặp tương ứng tối thiểu*).
- A minimal pair is a pair of words which
  1. differ in meaning and
  2. differ in exactly **one segment**.

## Minimal pairs in Vietnamese

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[t]	[t <sup>h</sup> ]	[s]	[z]
ta	tha	xa	da
tư	thư	sự	dự
tờ	thờ	sờ	giờ

## Minimal pairs in Vietnamese

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[t]	[t <sup>h</sup> ]	[s]	[z]
ta	tha	xa	da
tư	thư	sự	dự
tờ	thờ	sờ	giờ

## Minimal pairs in English

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[d]	[t]	[d]	[t]
dire	tire	do	two
dim	Tim	had	hat
said	set	bend	bent

## Minimal pairs in English

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[d]	[t]	[d]	[t]
dire	tire	do	two
dim	Tim	had	hat
said	set	bend	bent

Since we can find minimal pairs differing only between [d] and [t], we say that this difference is **contrastive** in English (*tương phản*).

## Minimal pairs in English

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[p]	[p <sup>h</sup> ]	[p]	[p <sup>h</sup> ]
pin	spin	pat	spat
[p <sup>h</sup> in]	[spin]	[p <sup>h</sup> at]	[spat]

## Minimal pairs in English

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[p]	[p <sup>h</sup> ]	[p]	[p <sup>h</sup> ]
pin	spin	pat	spat
[p <sup>h</sup> in]	[spin]	[p <sup>h</sup> at]	[spat]

Since we can't find any minimal pairs differing **only** in [p] and [p<sup>h</sup>], we conclude these sounds are **not contrastive** in English.

## Why abstraction?

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One reason for using phonemes is because their precise phonetic realisation can often be predicted on the basis of

- social variation
- regional dialect
- phonological environment.

## Exercise: phonetic variation

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- Say the following words aloud, paying particular attention to the **place of articulation** of the final sounds:

<i>éch</i>	<i>óc</i>
<i>ước</i>	<i>Úc</i>
<i>anh</i>	<i>ông</i>
<i>ưng</i>	<i>ung</i>

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- Say the following words aloud, paying particular attention to the **place of articulation** of the final sounds:

<i>é</i> ch [ek]	<i>ó</i> c [ɔk̚p̚]
<i>ư</i> óc [u̠ə̠k̚]	<i>Ú</i> c [uk̚p̚]
<i>anh</i> [ɛŋ]	<i>ô</i> ng [oŋm̚]
<i>ư</i> ng [uŋ]	<i>ung</i> [uŋm̚]

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<i>é</i> ch [ek]	<i>ó</i> c [ɔk̚p̚]
<i>ư</i> óc [u̠ə̠k̚]	<i>Ú</i> c [uk̚p̚]
<i>anh</i> [ɛŋ]	<i>ô</i> ng [oŋm̚]
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<i>é</i> ch [ek]	<i>ó</i> c [ɔk̚p̚]
<i>ư</i> óc [u̠ə̠k̚]	<i>Ú</i> c [uk̚p̚]
<i>anh</i> [ɛŋ]	<i>ô</i> ng [oŋm̚]
<i>ư</i> ng [uŋ]	<i>ung</i> [uŋm̚]

Phân bố của hai biến thể là gì?

## Exercise: phonetic variation

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- Say the following phrases aloud, paying particular attention to the **place of articulation** of the **N** sounds:

1.     **in** a
2.     **in** the
3. the me**n** think
4. the me**n** do

## Exercise: phonetic variation

- Say the following phrases aloud, paying particular attention to the **place of articulation** of the **N** sounds:

[ɪn ə]

- in a
- in the
- the men think
- the men do

## Exercise: phonetic variation

- Say the following phrases aloud, paying particular attention to the **place of articulation** of the **N** sounds:

[ɪn ə]

- in a
- in the
- the men think
- the men do

[ɪn̩ ðə]

## Exercise: phonetic variation

- Say the following phrases aloud, paying particular attention to the **place of articulation** of the **N** sounds:

[ɪn ə]

- in a
- in the
- the men think
- the men do

[ɪn̩ ðə]

[ðə mɛn̩ θɪŋk]

## Exercise: phonetic variation

- Say the following phrases aloud, paying particular attention to the **place of articulation** of the **N** sounds:

[ɪn ə]

- in a
- in the
- the men think
- the men do

[ɪn̩ ðə]

[ðə mɛn̩ θɪŋk]

[ðə mɛn du:]

## Systematic phonetic variation

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- Much phonetic variation doesn't produce minimal pairs, but is an automatic consequence of the phonetic environment.
- It is **systematic** and **predictable**.

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Labiovelars [k̠p, ŋ̠m] occur before rounded vowels

Plain velars [k ŋ] occur everywhere else

## Systematic phonetic variation

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- Much phonetic variation doesn't produce minimal pairs, but is an automatic consequence of the phonetic environment.
- It is **systematic** and **predictable**.

Dental [ɲ̪] occurs before fricatives

Alveolar [ɲ] occurs everywhere else

## Complementary distribution

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If the phonetic differences between two sounds are systematic and predictable, then they never contrast, because their distributions differ.

- We say these variants are in **complementary distribution** (*phân bố bổ sung*).
- The variants of a phoneme are called **allophones** (*thà âm vị*).

[p]	[p <sup>h</sup> ]	[n]	[ɲ̪]
pin	spin	in a	in the
[p <sup>h</sup> in]	[spin]	[ɪn ə]	[ɪɲ̪ ðə]

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pin	spin	in a	in the
[p <sup>h</sup> in]	[spin]	[ɪn ə]	[ɪn̥ ðə]

## Sound categories

Phoneme:

/n/

Allophones :

[n]      [n̥]

## Allophonic variation: Korean

In which environment does each variant occur?

[l]		[r]	
[kal]	it'll go	[irɯmi]	name
[kɯnɯl]	shade	[kri]	road
[ilkop]	seven	[kɯrəm]	then
[onɯlppəm]	tonight	[kariro]	to the street
[pal]	leg	[uri]	we
[p <sup>h</sup> al]	arm	[saram]	person

## Allophonic variation: Korean

In which environment does each variant occur?

[l]		[r]	
[ka <b>l</b> ]	it'll go	[irɯ <b>mi</b> ]	name
[kɯnɯ <b>l</b> ]	shade	[k <b>r</b> i]	road
[i <b>l</b> kop]	seven	[kɯr <b>ə</b> m]	then
[onɯlpp <b>ə</b> m]	tonight	[ka <b>r</b> iro]	to the street
[pa <b>l</b> ]	leg	[u <b>r</b> i]	we
[p <sup>h</sup> <b>al</b> ]	arm	[sa <b>r</b> am]	person

## Japanese /r/

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In Japanese the phoneme /r/ has several variants:

alveolar tap ( <i>võ</i> )	[r]
palatalised tap	[rʲ]
lateral approximant	[l]

- The different variants do **not** signal different meanings
- The variation is **not** predictable from the context.

## Japanese /r/

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In Japanese the phoneme /r/ has several variants:

alveolar tap	[r]
palatalised tap	[rʲ]
lateral approximant	[l]

- The different variants do **not** signal different meanings
- The variation is **not** predictable from the context.

The allophones are not in complementary distribution, but in **free variation** (*biến thể tự do*).

## Language specificity

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- In English, [l] and [ɹ] are **phonemes**: they can distinguish minimal pairs, e.g. *leaf* [li:f] and *reef* [ri:f].
- In Japanese, [l] and [r] do not contrast, but their distribution is **not** predictable: they are allophones in **free variation**.
- In Korean, [l] and [r] do not contrast either, but their distribution is **is** predictable: they are allophones in **complementary distribution**.

## Goals of phonology

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- A major concern of phonology is sorting out the relationship between specific phonetic segments and the abstract mental constructs (the phonemes).
- In Korean, [l] and [r] are fundamentally “the same thing”, but each is realised in a different environment.
- Likewise for English [n] and [ŋ]...
- ...or Vietnamese [k] and [k̚].

## Summary

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- **Contrast** is the key to understanding phonological systems of languages
- Every language has a specific inventory of sound categories, or **phonemes**, distinguished by **minimal pairs**.
- Variants of a phoneme are called **allophones**.