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An Animated and Narrated Glossary of Terms used in Linguistics

presents

Segment

(phonetics/phonology)

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Consonants and Vowels

Segment:

Individual speech sounds that make up a syllable

Two kinds of segments:

Consonants and Vowels

Ashby and Maidment (2005:7)

Segmentation is “influenced by knowledge of where linguistically significant changes in sound can be made”.

IPA (1999:5)

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English

Consonants

	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palatal	Velar	Glottal
Plosive	p b			t d			k g	
Affricate					tʃ dʒ			
Nasal	m			n			ŋ	
Fricative		f v	θ ð	s z	ʃ ʒ			h
Approximant				ɹ		j	w	
Lateral Approximant				l				

So, what exactly is a segment (consonant)?

p	'pie'	t	'tie'	k	'kite'
b	'buy'	d	'die'	g	'guy'
m	'my'	n	'nigh'	ŋ	'hang'
f	'fie'	θ	'thigh'	h	'high'
v	'vie'	ð	'thy'	tʃ	'chin'
		s	'sigh'	dʒ	'gin'
		z	'zoo'	ʃ	'shy'
w	'why'	ɹ	'rye'	ʒ	'azure'
		l	'lie'	j	'you'

Ladefoged in IPA (1999:40)

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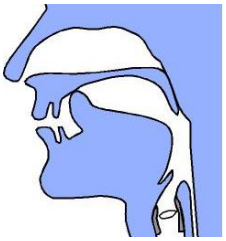
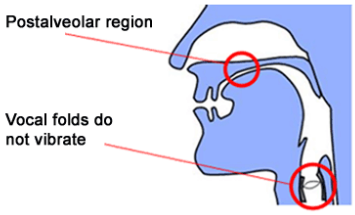
Articulatory Gestures

[t]: tip of tongue comes into contact with alveolar ridge. No airflow through mouth or nose. Vocal folds do not vibrate.

[ʃ]: front of tongue comes close to the post-alveolar area. Airflows noisily out of the mouth. Vocal folds do not vibrate.





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Articulatory Gestures

[tʃ]:

i. Top surface of tip of tongue comes into contact with the postalveolar area blocking all airflow through the mouth.

ii. The contact in (i) is broken to allow air to flow noisily out of the mouth.

(cf. [t] and [ʃ] as a sequence)

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Segment is …

- … not a singular state of configuration of the articulators
- … not a "single" speech sound.

  note that there are languages where [mb], [nd], [pf], [p^h] … are singular segments

  (contra Ashby and Maidment 2005:7, cited earlier)

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Sense of isochrony

But we get the sense that

[t] = [ʃ] = [tʃ] as single units of linguistic speech
[d] = [ʒ] = [dʒ] as single units of linguistic speech

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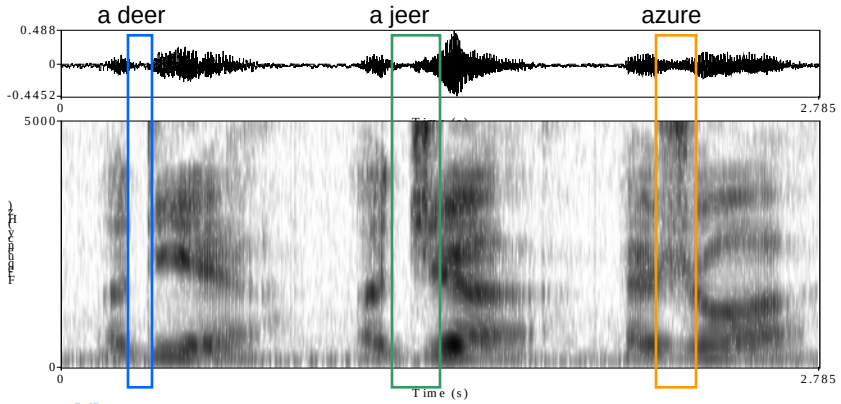
Segment as a temporal unit



[d] = 0.0761s [dʒ] = 0.1494s [ʒ] = 0.0849s

Note [d] = 0.0761s + [ʒ] = 0.0849s ≠ [dʒ] = 0.1494s, but [dʒ] is longest

Isochrony of segments is not physically real, but is psychological.

Note: Length of segments differ across individuals.

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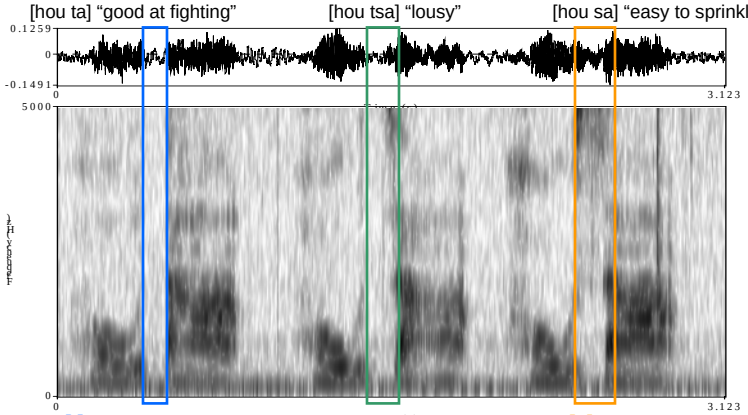
Segment as a temporal unit

Example from Cantonese

[hou ta] "good at fighting" [hou tsa] "lousy" [hou sa] "easy to sprinkle"



[t] = 0.1093s [ts] = 0.1403s [s] = 0.1314s

Note [t] = 0.1093s + [s] = 0.1314s ≠ [ts] = 0.1403s, but [ts] is longest

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Acoustic analysis indicates that

i. length of segments may be different

ii. complex segments are made up of multiple articulatory gestures

iii. length of complex segments cannot be simply calculated from adding the time of segments corresponding to the component gestures

We need an explanation for the feeling of isochrony of segments, i.e. why are simple and complex segments perceived as similar units?

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Segment is …

- … an abstract phonological unit of time perceived by the speaker of language X.
- Within that perceived phonological unit of time, one or more articulatory gestures may be made.

For example,

[f], [v], [tʃ], [dʒ], … are segments in English

[ts], [tsʰ], [p], [pʰ], … are segments in Cantonese

[mb], [nd], … are segments in Kikuyu

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Segment and Phoneme

- segment = phoneme ? (potentially IPA 1999:5)

Example from English

/p/ → [pʰ] when it is the singular onset of a syllable carrying primary stress.

∴ [p] and [pʰ] are the same phoneme.

/p/ in “rapid” and “rapidity” sound different.

Either:

[p] and [pʰ] are

i. different segments, same phoneme (segment ≠ phoneme)

ii. different phones, same segment (segment = phoneme, possible)

iii. different phones, same phoneme (segment = phoneme, possible)

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Further reading

Ashby, Michael and John Maidment (2005) *Introducing Phonetic Science*, p. 7, Cambridge University Press.

International Phonetic Association (1949/84) *The Principles of the International Phonetic Association*.

International Phonetic Association (1999) *Handbook of the International Phonetic Association: A Guide to the Use of the International Phonetic Alphabet*. Cambridge University Press.

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The End

Wee, Lian-Hee and Winnie H.Y. (2009)
An animated and narrated glossary of terms used in Linguistics.
Hong Kong Baptist University.