

Phonemes

Introduction to Linguistics

John Goldsmith

The phoneme

- Idea goes back to – perhaps the inventor of orthography, but in a conscious way in the late 19th century.
- Developed extensively in the first half of the 20th century.

Two views of what the phoneme is

- Empiricist notion: the phoneme is a collection of sounds
- Mentalist: the phoneme is the mental category that corresponds to a coherent set of sounds in a language

What problem is the phoneme a solution to?

1. Too many different sounds: in a single speaker's production, among the speakers of a dialect, among the speakers of different dialects: where's the *language*?
2. Speakers of one language hear their own language's sounds and difference, and fare poorly with other languages' sounds.

3. Very few combinations of the (detailed) sounds of a language are permitted: why? Answer: words consist of sequences of *phonemes*, and the specific sounds used to realize the phonemes are determined by the sound context in which the phoneme occurs. (Lots more to say about that!)

Example(s)...

Phoneme difference = lexical contrast

- One view: to learn a language is to learn a set of contrasts or differences that are crucial to the language, in that such differences (almost) always distinguish between lexical items in the language. You can't change one phoneme to another and expect to have the same word (morpheme).

Chas Hockett

“The human vocal apparatus can produce a very great variety of different sounds differing from each other in numerous features. At first, the child attaches no significance to any of these and babbles randomly, using a very wide selection of these possible sounds. After a while he learns to distinguish between certain parts of his repertoire and discovers some utility

- in certain sequences of sounds. None of the latter are pronounced with any high degree of precision or consistency, but nevertheless some distinctions become established and at this point speech has begun. The process is not one of learning to produce sounds, but of distinguishing between sounds.” (258, Intro to Descriptive Linguistics)

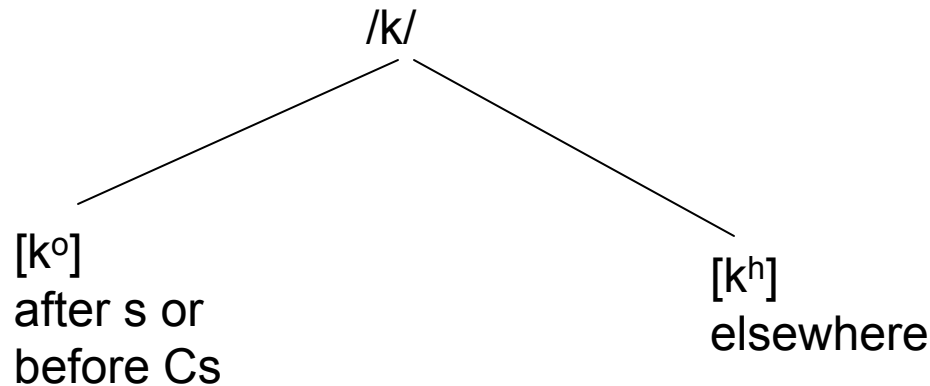
- The process of learning a second language involves, among other things, learning to make distinctions, both in hearing and speaking, that are phonemic in the new language, and learning to overlook those distinctions which are not significant, even though they may be phonemic in the mother tongue. Often the two languages will use very similar sounds but organize them into quite different phonemic systems. (260)

- To make [this definition] workable...it is necessary to add to it some objective criteria of the range of sounds that may be included within any given phoneme. There are two such criteria, and both must be met. (1) The sounds must be phonetically similar...(2) The sound must show certain characteristic patterns of distribution in the language or dialect under consideration. ..Basically both [patterns] are types of distribution which make it impossible for minimal pairs to occur.

- “The simplest of the patterns is free variation.”
- This is sometimes associated with having a single-peaked normal (Gaussian) distribution (mean, variance)
- But there can be multiple-peaked sets of phoneme-realizations.
- *Complementary distribution*: “Sounds are said to be in complementary distribution when each occurs in a fixed set of contexts in which none of the others occur.” (263)

Allophone

- “Any sound...which is in complementary distribution with another so that the two together constitute a single phoneme is called an allophone of that phoneme.”(263)



Philosophy

- Hockett (269) Speech is a process that involves activity of the human brain...and as such can be legitimately and productively studied by psychologists. The phoneme is not, however, a psychological concept; it cannot be defined in psychological terms. Our description of the process of learning of phonemic distinction in this chapter was not intended as any sort of definition of a phoneme, but only as a subsidiary, or even parenthetical, remark.

- Obviously, psychological processes are involved in the production and recognition of phonemes, but no adequate psychological definition of the phoneme has yet been produced. ...The phoneme cannot therefore be acoustically defined. The phoneme is instead a feature of language structure.

Spanish (Hockett)

p t k

i u

b d g

e o

β ð γ

a

s

l

Tap/flap

ɾ

r

trill

m n ŋ

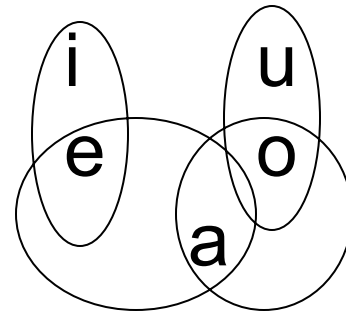
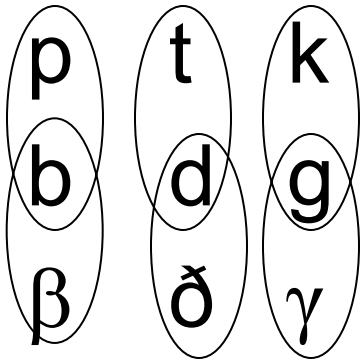
Spanish (Hockett)

aβana	Havana	donde	where
bala	ball	du _r a _r	to endure
baya	rope	gana _r	to earn
beso	kiss	gato	cat
bođa	wedding	gola	throat
damos	we give	gosa _r	to enjoy
dios	God	kasa	house
deβer	to owe	kuβa	Cuba
donde	where	buro	burro

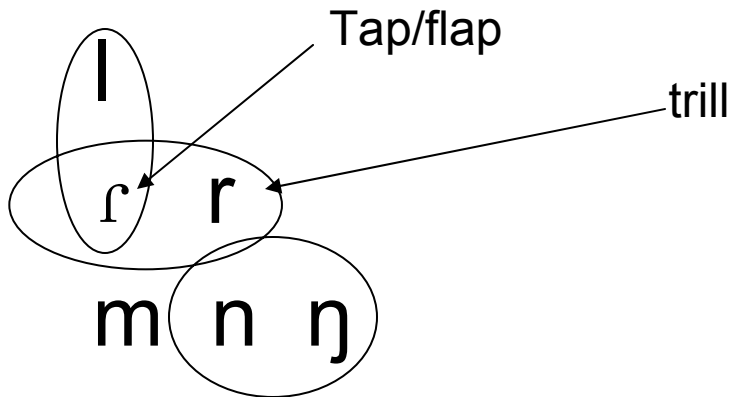
layo	lake
nađa	nothing
nuđo	knot
pe _r o	but
pero	dog
pipa	pipe
ponde _r oso	heavy

pongo	I put
siyaro	cigar
tengo	I have
tođo	all
taβako	tobacco
uβa	grape

pairs to test...



s



- Before | γ | s | δ | r | r | p | n | η | _#
- [b] x x x x x
- [p] x x x x x x

- Before [i] [e] [a] [o] [u]
- [p] x x x x
- [b] x x x x

[b], [β]

	Initial	Medial
[b]	x	
[β]		x

reduce these to one phoneme /b/

Similarly for /d/ and /g/

Name of symbol in each case.

German [ç] and [x]

- Bücher [byçər] *books*
- Süchte [zyçtə] *addictions*
- höchst [höçstə] *greatest*
- möchte [möçtə] *would like*
- ich [Iç] *I*
- Pech [pɛç] *bad luck*
- Milch [mɪlç] *milk*
- Mönch [mönç] *monk*
- Storch [storç] *stork*
- manch [manç] *many*
- durch [durç] *through*
- Buch [bux] *book*
- Sucht [zuxt] *addiction*
- hoch [hɔx] *high*
- mochte [mɔxtə] *wanted*
- Macht [maxt] *power*

[ç] is a palatal fricative, and

[x] is a velar fricative.

What else are they?

Ç word-initially

- Charisma [çarisma]
- Chemie
- Cherub
- Chiasmus
- China
- Chirurg, etc.

-chen controversy

- Kuhchen “little cow”
[kuçən]
- Frauchen (cf. Frau) or
Grauchen (cf. Grau
‘donkey’)
- kuchen “to cook”
[kuxən]

- More discussion: Phonetics and Phonology of Modern German, by Wilbur Benware

Two crucial notions:

- Free variation
- Complementary distribution

and also

contrast (and *minimal pair* showing a contrast)