

HISTORICAL LINGUISTICS – LECTURE 7 - THE PHONETICS OF SOUND CHANGE

Hale (2008)

historical linguistics → what's the relation between phonetics and phonology

frequently a low-level, coarticulation effect (fronting, rounding of velars) /k^wu:l/ 'cool' /k'i:n/ 'keen', becomes a phonological, (grammatical) fact (phonologisation)

phonemic level (structuralism)

rules (generative grammar) (optimality, different environment of course)

phonetic level (neogrammarians)

transduction
the actual physical level

Ohala (1993) The phonetics of sound change

historical linguistics → properties of comparative methodology → linguists do not have to understand why languages are structured as they are or behave as they do, it is enough to be aware of structure and behaviour frequently encountered. Numerous linguists (e.g. Osthoff and Brugmann 1878) have insisted that we can understand language change better by paying more attention to **phonetic** and **psychological** aspects of change.

Two points of departure:

- 1) Some changes are language- and culture- specific (spelling pronunciation, paradigm regularisation, fashion (social dimension)). But there are changes attested independently in a number of unrelated languages, hence most likely arising from universal factors – physiological and psychological factors common to all language users.
- 2) we study preconditions for sound change and not their actual trigger or the subsequent spread through the lexicon, dialect community or one speech style to another. Questions such as 'why did this sound change occur in such-and-such language at such-and-such time are fruitless.

Two major facts about phonetics that form departure points for further discussion:

- 1) the infinite variability of speech (Lindblom 1963)
- 2) parallels between phonetic variation (in production and perception) and sound change, *some examples: (variation in production)*

TONOGENESIS: tonal distinctions on vowels can develop from voice voiceless contrast on pre-vocalic consonants. In Kammu (Laos)

southern	northern
klaaŋ	kl'aŋ
glaaŋ	kl'aŋ

parallel to this is the discovery that the fundamental frequency (f_0) on vowels is higher following voiceless consonants than voiced.

SPONTANEOUS NASALISATION: development of distinctive nasalisation on vowels in words that never had any lexical nasal consonant (this usually happens in the context of segments characterised by high air-flow: voiceless fricatives, especially [h], aspirated stops, affricates)

Sanskrit	Prakrit	Mn Hindi
paks	pakkha	paṅkhā

High airflow segments have greater glottal opening (partly assimilated by adjacent vowels), creating anacoustic effect that mimics nasalisation. (In Polish the fricative context is the one that favours the retention of nasalisation, waś vs. zrobie)

variation in perception:

[θ] – [f] SUBSTITUTION

[θiŋ]_ [fiŋ] in dialects of English

in different phonetic studies of consonant confusion these two sounds are frequently involved

SUBSTITUTION OF LABIALISED VELARS BY LABIALS

IE classical Greek

ekwōs hippos

g^wiwos bios

acoustic similarity is responsible for the frequent confusion of [ku] and [pu] (measured in different studies that concluded that the rate of confusion for these two syllables is the highest among different CV syllables studied)

VOWEL QUALITY CHANGE UNDER NASALISATION

(distinctively nasalised vowels tend to be lower)

French

brune [bʁyn] ‘brunette’ brun [bʁœ]

this happens because the coupling of oral and nasal resonators leads to an elevation of the first formant [F1] in non-low vowels = lowering of perceived vowel height.

THE IMPLICATION OF THESE PARALLELS

does this mean that the phonetic variation is sound change?

Variation in perception (confusion of acoustically similar but articulatorily different) is a ‘sound change’ that happens between a single speaker and a single hearer. It could be assumed that this is a pretty frequent phenomenon but what keeps such ‘misperceptions’ from leading to sound change are the following factors: 1) pronunciation norms are redundantly represented in a speech community (you can listen to the misapprehended word in the speech of other speakers, the reaction of other speakers is also likely to alert you to your odd pronunciation, sometimes orthography gives you a clue to correct pronunciation; 2) It is probably rare for one speaker’s innovative pronunciation to spread to sizeable numbers of other speakers.

Variation in production (e.g. the f₀ difference on vowels after voiced and voiceless consonants) does not automatically equal sound change. 1) these effects are the unintentional consequence of other effects intended by speakers. (allophonic vs. phonemic distinction of structuralism), 2) most examples of variation in production occur widely in virtually all languages- it is likely that phonetic features that are universal are physically caused and not

maintained by culturally established templates, 3) listeners can normalize predictable variation - /s/ and /ʃ/ differ in the lower centre frequency of /ʃ/. But the centre frequency can also vary due to contextual factors, lip rounding of the following round vowel lowers the frequency as well. Mann and Repp (1980) found that a fricative identified as /ʃ/ before /a/ is identified as /s/ before /u/, so it seems that listeners can **correct** the speech signal in order to arrive at the pronunciation intended by the speaker minus any added contextual perturbations. But if variation is not sound change how come the parallel between sound change and production variation.

How variation in production can lead to sound change – **hypo-correction**

for the vast majority of assimilative sound changes hypocorrection is at work

hypo-correction – when the listener fails to ‘correct’ the speech signal containing the phonetic components that originally form just fortuitous results of speech production become part of the pronunciation norm (phonologisation). Why should such hypo-correction happen? 1) lack of experience (children), 2) a listener may fail to perceive the environment that causes variation, very frequently we observe changes that take place with the simultaneous loss of the conditioning environment – tonogenesis example above, the rise of nasal vowels correlated with the loss of the conditioning nasal, i-umlaut in Germanic (here the temporal gap between cause and effect may also be important), etc. It makes sense – if the listener fails to detect the conditioning environment, he fails to take it into account.

CHANGE (results from unintended failure of the perceptual process)

speaker /vn/ → [ṽn]

/vn/ → [ṽn]

listener [ṽn] → /vn/ ‘correction’

[ṽn] → /ṽn/ or /ṽ/ ‘hypo-correction’

The most interesting aspect of this account is that it explains why ‘natural’ sound changes parallel variation found in ordinary speech production.

For dissimilative ‘unnatural’ changes **hyper-correction** can be assumed, resulting from errors in listener’s corrective strategy.

Latin

It

/kwiŋkwē/ → /kiŋkwē/ → /tʃiŋkwe/

Initially in /kwiŋkwē/ lip rounding [kw] is present distinctively at two sites. A listener can be confused as to whether the lip rounding detected at the beginning of the word is distinctive or non-distinctive perturbation caused by the lip-rounding on the second syllable.

support: dissimilation doesn’t result in the loss of the conditioning environment (the listener blames the environment for the perturbation), doesn’t produce novel segments (it results from the listener applying the normalisation procedure, recovering a ‘standard’ sound present in the language)

IMPORTANT CHARACTERISTICS OF THIS ACCOUNT

- Sound change is non-teleological (contra a very long tradition in historical linguistics, which sees change as making speech easier to pronounce, easier to hear, easier to process by making it simpler). Here sound change is non-teleological, there is no intention involved to change the pronunciation. the change does not occur in the message source (speaker’s brain), message destination (listener’s brain) but in the

transmission channel between them.

teleology – change occurs to preserve lexical contrast (GVS), but contrast is lost quite often

teleology – poor scientific strategy

structuralism is essentially teleological (change motivated by structural properties of language system) but this is completely unconstrained. Given a change one can devise a number of structural ‘pressures’ to explain it *post factum*.

- sound change is phonetically abrupt