

CHAPTER EIGHTEEN

Comparative Reconstruction

Comparative reconstruction is based firmly on one principle - that sound change is regular. In its strongest form this principle is known as the Neogrammarian Hypothesis. The Neogrammarian Hypothesis is that sound change occurs *without exception*. This means that if one instance of /d/ becomes /t/, then **all** instances of /d/ become /t/. This happens in the history of High German, for instance. Compare English day, German Tag.

A reconstructed form is one from which the attested forms (those which we have actual physical evidence of, either spoken or written) in the various daughter languages can be derived. Ideally the reconstructed form is identical with what was actually spoken in the proto-language, but there is no way of knowing if our reconstructed forms are actually identical with the forms of the original language. Who can tell us? All of the original speakers are dead. Therefore reconstructed forms are first and foremost a point of reference, a summary of our knowledge about the languages involved.

Types of sound change

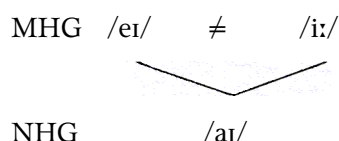
There are a number of different types of sound change which we can observe in the histories of various languages of the world. We will be concerned here with four major types and one subtype.

Merger

Merger is the falling together or coalescence of two phonemes. This is an extremely common type of change, perhaps the most common. When two phonemes merge, *all* instances of both phonemes merge and the phonological inventory of the language is reduced by one.

In Middle High German (MHG 1050 - 1350) there was a diphthong /ei/ and there was a long monophthong /i:/. MHG /weis/ "know" contrasted with MHG /wi:s/ "white". In the transition from MHG to New High German (NHG) these two sounds merged in that /i:/ diphthongised to /ai/, taking /ei/ along with it. Thus the two MHG words are now both pronounced [ˈvaɪs], as in *ich weiß* and *Das Papier ist weiß*. A similar merger occurred with MHG /u:/ and /ou/. Both merged to /au/, e.g. MHG /boom/ "tree", /hu:s/ "house", NHG *Baum*, *Haus*.

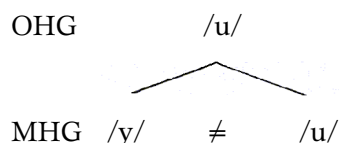
A merger of this type can be presented schematically as follows, where \neq is to be read "is in contrast with", meaning "is a separate phoneme from".



Split

Split is the opposite of merger. A phoneme develops two different allophones which at some point separate completely and become different phonemes. A split increases the phonemic inventory by one.

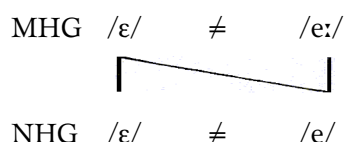
In late Old High German (OHG 750-1050) back vowels like /u/ developed fronted allophones before /ɪ, i:/ or /j/ in the immediately following syllable. This was touched on briefly in chapter 13. The front allophone [y] occurred only before a following /ɪ, i:/, and the back [u] occurred elsewhere. At the end of the OHG period unstressed vowels merged to /ə/, with the result that [y] and [u], which had been in complementary distribution, now both occurred in the same phonetic environment, namely before /ə/, and were therefore in contrast. In other words, the allophones [y] and [u] of the phoneme /u/ had now become separate phonemes /y/ and /u/.



Subtype: Split with Merger

Split with merger, like split, involves the division of one phoneme into two, but it differs from split in that one of the resulting sounds merges with an already existing phoneme. Therefore no new phonemes are added to the system. The phonemic **inventory** therefore remains the same, but the **distribution** of the phonemes, i.e. the words in which various phonemes occur, is different.

In MHG the stressed vowel of *geben*, *leben*, *leder* was short /ɛ/. The same vowel occurred in the MHG word *lerche* "lark". At the end of the MHG period short vowels in open syllables were lengthened. Thus the /ɛ/ of *geben*, *leben*, *leder* became /e:/, but the /ɛ/ of *lerche*, not being in open syllable, remained short. The lengthened vowel of *geben*, *leben*, *leder* merged with the already existing long /e:/ of words like MHG *sê* "lake; ocean". Thus no new phonemes were added, but the number of words containing /e:/ increased at the expense of the words containing /ɛ/.



Shift

Shift does not involve either split or merger. No new phonemes are added to the system and none are lost, but the shape of the phonological system itself is changed.

The most famous example is Grimm's Law, discussed in the last chapter. In a subset of this Proto-Indo-European (PIE) *p becomes Pre-Germanic *f, PIE *b becomes PGmc *p, and PIE *bh becomes PGmc *b.

PIE	/p/	≠	/b/	≠	/bh/
PGmc	/f/	≠	/p/	≠	/b/

In PIE there are only stops. There are two sets of contrasts or oppositions which distinguish the stops. The primary opposition is *voiceless* (p) versus *voiced* (b, bh), and the secondary opposition among the *voiced* stops is *plain* (b) versus *aspirated* (bh). In PGmc the primary opposition is *voiceless* (p, f) versus *voiced* (b), and the secondary opposition within the *voiceless* sounds is *stop* (p) versus *fricative* (f).

Another example is a change which has taken place in some varieties of New Zealand English (NZE). Australian English (AE) has three front lax vowels, high /ɪ/, mid /ɛ/ and low /æ/, as in *fit*, *fed* and *fat*. In the varieties of NZE under discussion the corresponding words are [fɪt], [fɪd] and [fæt]. The three-way contrast is maintained, but there is no low /æ/, and a centralised vowel /ɪ/ has appeared.

AE	NZE		Note: the vowels are numbered for purposes of identification. Vowel 1 is the one which occurs in <i>fit</i> , vowel 2 is the vowel of <i>fed</i> , and vowel 3 occurs in <i>fat</i> .
ɪ ₁	ɪ ₂	ɪ ₁	
ɛ ₂	ɛ ₃		
æ ₃			

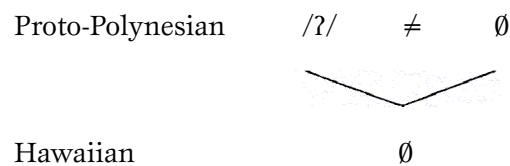
Schematically what happens in New Zealand can be represented like this:

I → → i
 ↑
 ε
 ↑
 æ

Loss (also referred to as *merger with zero*)

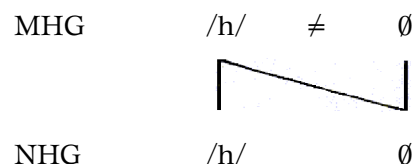
There are two types of loss - complete loss and partial loss. Complete loss occurs when a phoneme disappears in all positions, which reduces the phonemic inventory of the language by one. An instance is Latin /h/. It disappeared completely in the modern Romance languages, e.g. Latin *habere* "have", French *avoir*, Italian *avere*.

Proto-Polynesian had a glottal stop, which was a consonant. This consonant was simply lost in some Polynesian languages, including Hawaiian, Tahitian and Rarotongan. All of these languages have glottal stop consonants, but the glottal stops in these languages have developed from other consonants.



Partial loss, or partial merger with zero, occurs when a phoneme is lost in one or more positions but is retained in others. Thus the inventory remains the same (as is not the case with complete loss), but the distribution changes.

In MHG /h/ occurred between vowels when the first vowel was stressed, e.g. MHG *sehen* /'sehən/ "see". In New High German (NHG 1350 - present) /h/ does not appear in this position. It occurs in the spelling, to be sure, but it is not pronounced. All it does is indicate that the preceding vowel is tense. NHG *sehen* /'zeən/. This is partial loss of /h/. /h/ still occurs in initial position in German, but it no longer occurs medially before unstressed vowel.



In OHG /h/ occurred freely before /l,r,w/ at the beginnings of words, e.g. OHG *hlahhen*, *hring*, *hwer*. By MHG times /h/ had disappeared from this position, e.g. MHG *lachen*, *ring*, *wer*. Since /h/ was retained in other positions this represented only partial loss.

There are several other types of phonological change, but these represent the major types.

Principles of Historical Reconstruction

To reconstruct a proto-form from two or more daughter languages we follow certain principles.

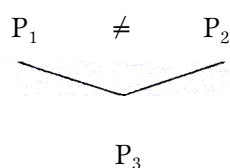
1) If something exists in all of the daughter languages it is reconstructed for the proto-language. This extends to all levels - phonological, morphological, lexical, syntactic.

Every Germanic language has a word beginning with *br* which means "brother". We therefore reconstruct a word, beginning with *br* and meaning "brother", for the proto-language.

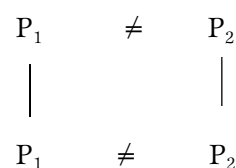
The reverse of this principle is also true: if the daughter languages show no evidence of a proto-form, we do not reconstruct it for the proto-language. Thus, since Hawaiian, Tahitian, Rarotongan and Maori show no evidence of a proto /ʔ/ we do not reconstruct */ʔ/ for Proto-Eastern Polynesian.

2) If one language has two phonemes where another has one, we have two choices:

- a) we can say that the proto-language had two phonemes and that they *merged* in one language but not in the other, i.e.:

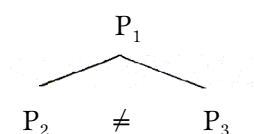


Language 1



Language 2

- b) we can say that the proto-language had one phoneme and that it *split* into two in one language but not in the other, i.e.:



Language 1



Language 2

Splits are always *conditioned*, which means that some factor, usually in the immediate phonetic environment, causes the development of different allophones which eventually separate. Unless we can find distinct phonetic environments which would account for a split, it is safer, especially in the beginning stages, to reconstruct two proto-phonemes rather than one and to hypothesise a merger in one language.

For instance, Iraqi Arabic and Lebanese Arabic differ in the number of dental stops and fricatives they have. Look at the following examples, where δ represents a voiced dental fricative like English *th* in *then* and where θ represents the corresponding voiceless fricative (e.g. *th* in *thin*). η is a voiced pharyngeal fricative.

English gloss	Iraqi	Lebanese ¹
<i>arm</i>	δ raa η	draa η
<i>black</i>	sooda	sooda
<i>cheek</i>	xad	xad
<i>cold</i>	baarid	baarid
<i>corn</i>	δ urra	durra
<i>figs</i>	tiin	tiin
<i>girl</i>	binit	bint
<i>gold</i>	δ ahab	dahab
<i>heavy</i>	θ gill	t η iil
<i>house</i>	beet	beet
<i>like</i>	mi θ il	mitil
<i>medicine</i>	dawa	dawa
<i>oil</i>	zeet	zeet
<i>second</i>	θ aani	taani
<i>snow</i>	θ ilid ζ	til ζ
<i>he studied</i>	diras	daras
<i>he takes</i>	yaaxu δ	yaaxud
<i>third</i>	θ aali θ	taalit
<i>this</i>	haa δ a	hayda
<i>he wrote</i>	kitab	katab

¹Problem from Cowan (1971).

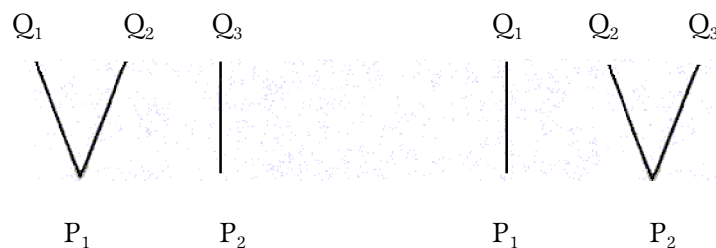
Iraqi Arabic has two voiced dentals /ð, d/ and two voiceless dentals /θ, t/. Lebanese Arabic has only /d/ and /t/. Wherever Iraqi has /ð/ Lebanese has /d/, and wherever Iraqi has /θ/ Lebanese has /t/. And wherever Iraqi has /d/ Lebanese also has /d/, and the same holds true for /t/. In other words, where Iraqi Arabic has stops, Lebanese Arabic also has stops, and where Iraqi Arabic has fricatives, Lebanese Arabic has stops. There appear to be no conditioning factors here, so the safest reconstruction is to reconstruct a proto-language with the same system as Iraqi Arabic, that is to say with all four dental sounds. This system remains unchanged in Iraqi Arabic, but in Lebanese Arabic the fricatives merge with the stops.

3) If a phoneme appears in one language and not in the other(s), assume in the first instance that it existed in the proto-language and was retained in one language and lost in the other(s). For instance, examine the following data from three Altaic languages spoken in Asia².

English gloss	Mongol	Manchu	Yakuts
chase	ürgü	fuce	ürgüt
fork	aca	acan	as
fox	ünege	funexe	ünügäs
gradual	ulam	ula	ullariy
nipple	eyün	fuxu	üön
take	ali	ali	il
thread	utasun	futa	utax
thumb	erekei	ferxe	ärbäx

In these related languages only Manchu ever has initial *f*-. There is nothing to suggest that this initial *f*- sprang out of a vacuum. That is one type of sound change which just does not happen. We therefore reconstruct the proto-words for *chase*, *fox*, *nipple*, *thread* and *thumb* with an initial **f*- and say that initial **f*- is lost in Mongol and Yakuts.

4) If each of two languages has the same two phonemes, P_1 and P_2 , but in a distribution which cannot be accounted for, assume *three* proto-phonemes, Q_1 , Q_2 and Q_3 . In one language Q_1 and Q_2 merge, in the other language Q_2 merges with Q_3 .

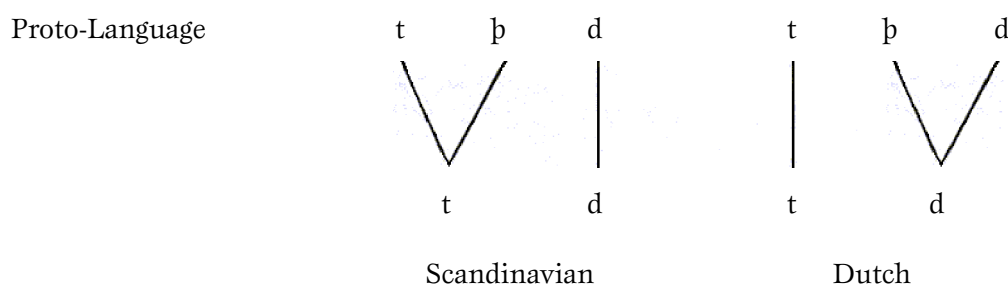


The following is a list of cognate (related) words in Dutch and Swedish/Norwegian, which I will refer to as *Scandinavian* for convenience. The sounds in question are the initial *d*- and *t*-.

²Problem from Cowan (1971).

English gloss	Dutch	Scandinavian
tame	tam	tam
tooth	tand	tand
token	teken	tecken
drink	drinken	dricke
dream	dromen	drömma
dead	dood	död
three	drie	tre
thunder	donder	tor
roof, thatch	dak	tak
thank	dank	tack
thing	ding	ting

Dutch *t* always corresponds to Scandinavian *t*, but Dutch *d* is sometimes Scandinavian *t*, sometimes *d*. The English glosses provide the answer. Wherever English has *t*, both Dutch and Scandinavian have *t*. Where English has *d* the other languages both have *d*. But where English has *th*, Dutch has *d* and Scandinavian has *t*. We thus reconstruct three proto-phonemes, **t*, **p*, **d*.



It helped here to have the English glosses, since English is related to the other languages and has maintained all three proto phonemes. However, this is not necessary. Rigorous application of the comparative method would have led to the same results without reference to English.

5) Proposed phonetic changes have to be believable.

What this means is that observation of historical change has shown that certain types of theoretically possible changes do not happen or occur only extremely infrequently, whereas other types of change are very common. The most common changes involve a minimal change in the distinctive features of articulation. For instance, a change of /p/ to /f/ involves only a stop becoming a fricative. Everything else remains as is, since both /p/ and /f/ are voiceless labials. A change of /p/ to /b/ involves only a change in voicing. Both of these are plausible and credible changes, and they are also both relatively common. A change of /b/ to /h/, on the other hand, is not really plausible, at least not all in one step. The two sounds are just too different. Similarly, vowels tend not to become obstruents and vice versa. Also, it is common in some languages for consonants to develop into glottal stops, e.g. Proto-Polynesian */*k/* becomes Samoan */ʔ/*, but it is not common for glottal stops to turn into something else.

In the next chapter we will begin to look at the periodisation of the German language.