PHONETICS IN RECONSTRUCTION
AND PHONETIC RECONSTRUCTION

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The trend of abolishing phonetics from comparative phonology has increased since generative phonology has done away with phonetics in synchronic grammar. Such a synchronic model has now been illegitimately extended into diachrony. In a way, one has taken the supposedly unknowable phonetics of a proto-language as a norm for attested languages, whereas earlier one went in the opposite direction. The current requirement of reconstructing total grammars is not possible without the traditional sound correspondences, i.e., phonetics in connection with meaning. Both in reconstruction and language learning this is the only way to penetrate into a language. The difference between synchronic analysis and reconstruction lies only in that the sampling error comes from the linguist's prejudices for the former, whereas for the latter history *(Sprachgeist)* adds its own idiosyncrasies (Katičić, Maher, Jucquois).

Phonetics plays a crucial role in the application of the comparative method, which is highly inductive, and tries to stick as close to the manifested phonetics as possible (see Figure 1). Thus one arranges the sound correspondences (1) according to a phonetic hierarchy (A) (here for Swedish, English, and German stops and spirants), i.e., one feeds the sets into the method through such phonetic screening. When the method gives the contrasts, the same phonetics influences the linguist's choice of labels for the contrasts (2). This is phonetics in reconstruction, and it has been impossible even for the formulaists to discard it in practice.

For actual phonetic reconstruction one needs the sub-grouping for the family (3). This is another area obscured by generative phonology (Leed, *Lingua* 26), and the requirement of reconstructing grammars has not helped here at all. Now, one uses the tree (3) in connection with the labels (2), and applies Boolean algebra to the latter. Many practitioners are not aware of this (similarly, many doctors do not know that they treat symptoms the same way; diagnosis is also reconstruction of origins from attested reflexes). One 'climbs' the tree by taking the sum for each node of the phonetics manifested below (either-or) (B). Here one has first written out the sound correspondences at the end points of the tree. At the top of the tree one takes the intersection (both-and) of what appears below. Thus in (B) we get [velar] and [voice] (both occurring over the deepest split), and we would choose *g. But since we handle

A

	Labial vls		Labial vcd		Dental vls				Dental vcd	Velar vls		Velar vcd		
	spirant	stop	stop	spirant	spirant	stop	one	two	all	spirant	stop	all stops	English glides or	length
Swedish	f	p p	b v	v	s s s	t t t	t	d d	d	t t h	k k	g	g g g	
English	f	p p	b v	w	s s s	t t t	θ	d ð	ð	: y h	k k	g	y w	:
German	f	pf f	b b	v	š z s	s ts t	d	t t	d	x x h	k x	g	g g g	

(Swedish / English / German labels repeated at right margin)

checking other intersections

1 — Arrangement of sets for the CM

2 — Choice of labels for reconstructed units

3 — Subgrouping: family tree

4 — Boolean algebra

5 — Typology

6 — Devising +/− matrices, etc.

B: (tree) g, R, h

C: kv → k, v

D:

p ~ v   t ~ [d]   k ~ [∅]
p ~ m   t ~ l   k ~ j
          t ~ r   k ~ v
          t ~ n   k ~ ŋ

[L]   [D]   [V]

β, δ, γ (resp.)   — [voice] +
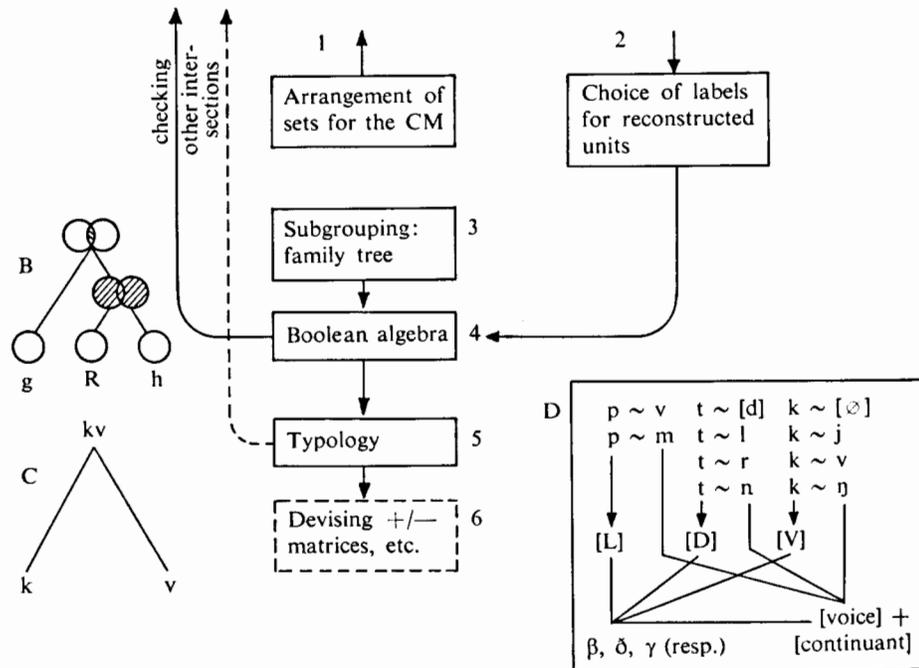   [continuant]

Fig. 1. The Phonetic Reconstruction Procedure.

one set at a time, we must correlate each intersection with others. If there were another set with velar stops throughout, $*\gamma$ must be chosen for g - R - h. Here typology and language universals take a considerable share, and can overweigh mere Boolean algebra (5). Note that this means leaning back on the original phonetics (A). If there does not seem to be an obvious intersection, as between Russian k and German v in deictics (e.g., *kogda - wann*), one can use a 'blunt' combination $*kv$ (C), which of course IS an intersection, it is BOTH k AND v. Confirmation would come e.g., from English: *when* [hw-], etc.

Boolean algebra is also applicable to internal reconstruction. Finnish consonant gradation shows uniform base forms p, t, and k, which in certain environments give a multitude of variants (D). These share [voice] and [continuancy]. The base forms (which allow the prediction of variants) provide the features [labial], [dental], and

[velar] respectively. Hence we get the intersections $*\beta$, $*\delta$, and $*\gamma$ for the so-called weak grade, now perfectly uniform within each articulatory set.

The splitting up of units into various feature matrices (6) is derivative from what has been done above. It has tended to be a mere notational game, e.g., it is surprising how the substance of Brugmann's reconstruction of Indo-European has withstood such 'elegance'. Here (6) one tries to do away with the primary induction in reconstruction through mere deduction, but "deduction as a method of argument... [is]... a process of little risk with low return," even if "induction is always something of a gamble" (Theobald). The upper part of the diagram represents phonetics in reconstruction, the lower phonetic reconstruction (section 6 mere construction). It is curious how intimately heuristic help and universalist speculation are connected in these two aspects.

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DISCUSSION

FROMKIN (Los Angeles)
Would you not argue that many generative phonologists recognize the importance of phonetics in developing general linguistic theory, i.e., constraints on grammars and a universal set of distinctive features?

ANTTILA
I took issue with *comparative* linguistics only, not synchronic descriptions or historical change. I realize that there are generative phonologists who use phonetics legitimately, but this has not been done in comparative linguistics.