Table 6.3. *The 'basic' vocabulary of Proto-Indo-European and its attestation in the major Indo-European groups*

Word	PIE	Ct	It	Gm	Bt	Sl	Al	Grk	Arm	An	Ir	Ind	Toch	Total
I	*$h_1e\hat{g}$	+	+	+	+	+	+	+	+	+	+	+	+	12
You	*$t\acute{u}h_x$	+	+	+	+	+	+	+	+	+	+	+	+	12
We	*$w\acute{e}i$	+	+	+	+	+	+	+	+	+	+	+	+	12
This	*so	+	+	+	+	+	+	+	+	+	+	+	+	12
That	*$\hat{k}is$	+	+	+	+	+	+	+	+	0	0	0	0	8
Who	*$k^wós$	+	+	+	+	+	+	+	+	+	+	+	0	11
What	*$k^wíd$	0	+	0	0	+	0	0	+	+	+	+	0	6
Not	*ne	+	+	+	+	+	0	0	0	+	+	+	+	9
All	*$wi\hat{k}$-	0	0	0	+	+	0	0	0	0	+	+	0	4
Many	*$pélh_1us$	+	+	+	0	0	0	+	0	0	+	+	0	6
One	*h_1oin-	+	+	+	+	+	+	0	0	+	+	+	0	9
Two	*$dwéh_3(u)$	+	+	+	+	+	+	+	+	?	+	+	+	12?
Big	*$me\hat{g}h_a$-	+	+	+	0	0	+	+	+	+	+	+	+	10
long	*$d_o^lh_1ghós$	0	+	+	+	+	+	+	0	+	+	+	0	9
Small	*pau-	0	+	+	0	0	0	+	0	0	0	0	0	3
Woman	*$g^wénh_a$	+	0	+	+	+	0	+	+	+	+	+	+	10
Man	*$h_1n\acute{e}r$	+	+	0	0	0	+	+	+	+	+	+	0	8
Person	*$dh\hat{g}hm$-$ón$-	+	+	+	+	0	0	0	0	0	0	0	0	4
Fish	*$dh\hat{g}huh_x$-	0	0	0	+	0	0	+	+	0	0	0	0	3
Bird	*h_aewei-	+	+	0	0	0	+	+	+	0	+	+	0	7
Dog	*$\hat{k}(u)w\bar{o}n$	+	+	+	+	+	0	+	+	+	+	+	+	11
Louse	*lu-	+	0	+	+	+	0	0	0	0	0	+	0	5
Tree	*$dóru$	+	+	+	+	+	+	+	0	+	+	+	+	11
Seed	*seh_1men-	+	+	+	+	+	0	0	0	0	0	0	0	5
Leaf	*$bhel$-	0	+	+	0	0	0	+	0	0	0	0	+	4
Root	*$wr(h_a)d$-	+	+	+	0	0	+	+	0	0	0	0	0	5
Bark	*$lóubho/eh_a$-	+	+	+	+	+	+	0	0	0	0	0	0	6
Skin	*$péln$-	0	+	+	+	+	0	+	+	0	0	+	0	7
Flesh	*$(s)kwéh_xtis$	+	+	+	+	0	0	+	0	0	0	0	+	6
Blood	*$h_1ésh_2r_o^-$	0	+	0	+	0	0	+	+	+	0	+	+	7
Bone	*$h_2óst$	+	+	0	0	0	+	+	+	+	+	+	+	9
Grease	*$sélpes$-	0	0	+	0	0	+	+	0	0	0	+	+	5
Egg	*$h_a\bar{o}(w)iom$	+	+	+	0	+	0	+	0	0	+	0	0	6
Horn	*$\hat{k}er$-	+	+	+	+	+	0	+	+	+	+	+	+	11
Tail	*$puk(eh_a)$-	0	0	+	0	0	0	0	0	0	0	+	+	3
Feather	*$pet(e)r$-	+	+	+	0	0	0	+	+	+	0	0	0	6
Hair	*$\hat{k}ripo$-	0	+	0	0	0	+	0	0	0	+	+	0	4
Head	*$\hat{k}_o^rr\acute{e}h_2$	0	+	+	0	0	+	+	0	+	+	+	+	8

(*Cont'd.*)

Table 6.3. (*Cont'd*)

Word	PIE	Ct	It	Gm	Bt	Sl	Al	Grk	Arm	An	Ir	Ind	Toch	Total
Ear	*$h_a$óus-	+	+	+	+	+	+	+	+	0	+	0	0	9
Eye	*$h_3$ok^w	+	+	+	+	+	0	+	+	0	+	+	+	10
Nose	*$h_x$náss	0	+	+	+	+	0	0	0	0	+	+	0	6
Mouth	*$h_{1/4}$ óh$_1$(e)s-	0	+	+	0	0	0	0	0	+	+	+	0	5
Tooth	*$h_1$dónt-	+	+	+	+	+	0	+	+	0	+	+	0	9
Tongue	*dn̥ghuh$_a$-	+	+	+	+	+	0	0	+	0	+	+	+	9
Claw	*$h_3$nogh(*w*)-	+	+	+	+	+	0	+	0	0	+	+	+	9
Foot	*pḗds	+	+	+	+	+	+	+	+	+	+	+	+	12
Knee	*gónu	+	+	+	0	0	+	+	+	+	+	+	+	10
Hand	*ĝhes-r-	0	+	0	?	0	+	+	+	+	0	0	+	7?
Belly	*udero-	0	+	0	+	0	0	+	0	0	+	+	0	5
Neck	*moni-	+	0	+	0	0	0	0	0	0	+	+	0	4
Breasts	*psténos/speno-	+	0	+	+	0	0	+	+	0	+	+	+	8
Heart	*k̂ḗrd	+	+	+	+	+	0	+	+	+	+	+	+	11
Liver	*yék^{w}r̥(*t*)	0	+	0	+	0	0	+	0	0	+	+	0	5
Drink	*peh$_3$(*i*)-	+	+	0	+	+	+	+	+	+	+	+	0	10
Eat	*$h_1$édmi	+	+	+	+	+	0	+	+	+	+	+	+	11
Bite	*denk̂-	0	0	+	0	0	+	+	0	0	+	+	+	6
See	*derk̂-	+	0	+	0	0	+	+	0	0	+	+	0	6
Hear	*k̂leu-	+	+	+	+	+	+	+	+	0	+	+	+	11
Know	*weid-	+	+	+	+	+	0	+	+	0	+	+	0	9
Sleep	*swep-	+	+	+	+	+	+	+	+	+	+	+	+	12
Die	*mer-	0	+	+	+	+	0	+	+	+	+	+	0	9
Kill	*nek̂-	+	+	+	0	0	0	+	0	+	+	+	+	8
Swim	*pleu-	+	+	+	0	+	0	+	+	0	+	+	+	9
Fly	*pet-	+	+	0	+	0	0	+	+	0	+	+	0	7
Walk	*$h_1$ei-	+	+	+	+	+	0	+	0	+	+	+	+	10
Come	*g^{w}em-	0	+	+	+	0	0	+	0	0	+	+	+	7
Lie	*k̂ei-	0	0	0	0	0	0	+	0	+	+	+	0	4
Sit	*sed-	+	+	+	+	+	0	+	+	0	+	+	0	9
Stand	*(*s*)teh_2-	+	+	+	+	+	+	+	+	0	+	+	+	11
Give	*deh$_3$-	0	+	0	+	+	0	+	+	+	+	+	0	8
Say	*wek^w-	+	+	+	+	0	0	+	+	0	+	+	+	9
Sun	*séh$_a$ul	+	+	+	+	+	+	+	0	+	+	+	0	10
Moon	*méh$_1$nōt	+	+	+	+	+	+	+	+	0	+	+	+	11
Star	*h$_2$stḗr	+	+	+	0	0	0	+	+	+	+	+	+	9
Water	*wódr̥	+	+	+	+	+	+	+	+	+	+	+	+	12
Rain	*h$_1$wers-	+	0	0	0	0	0	+	0	+	+	+	0	5
Stone	*h$_4$ék̂mōn	0	0	0	+	+	0	+	0	+	+	+	0	6

(*Cont'd.*)

Table 6.3. (*Cont'd*)

Word	PIE	Ct	It	Gm	Bt	Sl	Al	Grk	Arm	An	Ir	Ind	Toch	Total
Sand	*?*samh$_{2x}$dhos*	0	+	+	0	0	0	+	0	0	0	0	0	3
Earth	**dhéĝhōm*	+	+	0	+	+	+	+	0	+	+	+	+	10
Cloud	**nébhes-*	+	+	+	+	+	0	+	0	+	+	+	0	9
Smoke	**dhuh$_2$mós*	0	+	0	+	+	0	+	0	0	0	+	0	5
Fire	**péh$_2$ur*	0	+	+	+	+	+	+	0	+	0	0	+	8
Ash	**h$_2$éh$_x$ōs*	0	0	+	0	0	0	0	+	+	+	+	0	5
Burn	**dheg^{w}h-*	+	+	0	+	+	+	+	0	0	+	+	+	9
Path	**póntōh$_2$s*	+	+	0	+	+	0	+	+	0	+	+	0	8
Mountain	**g^{w}orh$_x$-*	0	0	0	+	+	+	?	0	0	+	+	0	6
Red	**h$_1$reudh-*	+	+	+	+	+	0	+	0	0	+	+	+	9
Green	**ḱyeh$_1$-*	0	0	+	+	+	+	0	0	0	+	+	+	7
Yellow	**ghel-*	+	+	+	+	+	0	+	0	0	+	+	0	8
White	**h$_4$elbhós*	0	+	+	+	+	0	+	0	+	0	0	0	6
Black	**k ^{w}r̥snós*	0	0	0	+	+	+	0	0	0	0	+	0	4
Night	**nek^{w}t-*	+	+	+	+	+	+	+	0	+	0	+	+	10
Hot	**g^{w}hermós*	0	+	+	+	0	+	+	+	0	+	+	0	8
Cold	**gel-*	0	+	+	0	0	0	0	0	0	0	0	0	2
Full	**pl̥h$_1$nós*	+	+	+	+	+	0	0	+	0	+	+	+	9
New	**néwos*	+	+	+	+	+	0	+	0	+	+	+	+	10
Good	**h$_1$(e)su-*	+	0	0	+	+	0	+	0	?	+	+	0	7?
Round	**serk-*	0	+	0	0	0	+	+	0	+	0	0	+	5
Dry	**saus-*	0	+	+	+	+	+	+	0	0	+	+	0	8
Name	**h$_1$nómn̥*	+	+	+	+	+	+	+	+	+	+	+	+	12
Total		64	82	75	71	62	42	80	48	46	76	82	49	

with, was a far more reliable guide. But how can this task be accomplished? Generally, we find some form of triangulation based on the earliest attested Indo-European languages, i.e. Hittite, Mycenaean Greek, and Indo-Aryan, each of these positioned somewhere between *c.* 2000 and 1500 BC. Given the kind of changes linguists know to have occurred in the attested histories of Greek or Indo-Aryan, etc., the linguist compares the difference wrought by such changes with the degree of difference between the earliest attested Hittite, Mycenaean Greek, and Sanskrit and reconstructed Proto-Indo-European. The order of magnitude for these estimates (or guesstimates) tends to be something on the order of 1,500–2,000 years. In other words, employing some form of gut intuition (based on experience which is often grounded on the known separation of the Romance or Germanic languages), linguists tend to put Proto-Indo-European sometime around 3000 BC plus or minus a millennium.

The explicit reasons for these estimations, however, are hardly clear, never really quantifiable, and there seems no way of testing the validity of such guesses. For this reason, some suggest that these are not informed estimates but groundless guesses and that Proto-Indo-European might go back to 10,000 BC or earlier. Most linguists would probably argue, however, that such a long chronology is even more speculative than the estimates of change between Proto-Indo-European and Hittite, say, as it requires a rate of linguistic change in all descendant groups to be slower than any known historically from *any* attested Indo-European or non-Indo-European family. Unless we are prepared to believe that prehistoric language change is different by an order of magnitude from historic change, it is better to work with a more realistic and shorter chronology than one going back to 10,000 BC.

Of course any assumptions about rate of change (including those upon which glottochronology is built) are only as good as the data upon which they are based. In actuality we have long observable histories of language change only for a very few languages (e.g. Greek, Indo-Aryan, Egyptian, Chinese) and none longer than about 4,000 years. And all of these observed languages are naturally enough languages of high civilizations which have had long histories of interaction with other cultures and languages. It is possible that these interactions have caused a higher rate of change than would have been the case with languages of groups less in the limelight. On the other hand, one might also expect that the weight of the written tradition of these literate societies might have had the effect of slowing change.

6.3.5 Archaeological Estimation

If linguists have hunches, archaeologists sometimes propose theories with far greater hubris and far less credibility. The characteristic approach here is to presume that if the archaeologists can identify the archaeological equivalent of the proto-language, then the dates for the archaeological culture must provide us with the dates of the proto-language. When it comes to dating, between an archaeologist and a linguist, there is no contest. The archaeologist has an arsenal of techniques to date prehistoric remains with various degrees of precision. The usual technique employed with respect to the prehistoric record is radiocarbon dating which, for the general time depth that we have been discussing, should be able to come up with a date within about 400 years of the target. And unlike glottochronology, the date is replicable and capable of being tested against even more precise dating techniques such as tree-ring dating. But the archaeologist is normally dating some form of organic remains—wood, charcoal, bone—which can then be employed to date the archaeological culture