

Sanskrit and Proto-Indo-European

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1. In this paper I argue that on the evidence of Sanskrit much of the rationale of indoeuropean comparative linguists may well be wrong and may need radical reconsideration: the three-grade ablaut (=vowel gradation) in Sanskrit, for example, seems much more convincing than the five-grade one proposed by indoeuropeanists; also the retroflex/cerebral consonants in Sanskrit may well have been original in Proto-Indo-European but lost in the other branches. I should clarify that with “Sanskrit” I mean Vedic as well and that although I consider this language (especially that of the *R̥gveda*) to be closer to Proto-Indo-European than any other branch, I do not regard Vedic as the IE mother-tongue.¹ In addition, the *RV* should now be placed firmly within the fourth millennium BC (Levitt 2003; Kazanas 2003, 1999). Edmund Leach wrote that after the discovery of the Indus-Sarasvatī civilization “Indo-European scholars should have scrapped all their historical reconstructions and started again from scratch. But this is not what happened. Vested interests and academic posts were involved” (1990). Although IE comparative philology has promoted considerably our understanding of the *IE* family of languages and although Leach’s remarks may sound too harsh, I agree with his main point that the “reconstructions” should be scrapped and a new beginning be made – if this pursuit is thought to be necessary. In this article I indicate some points where the “scrapping” can begin and at the same time give evidence for the much greater antiquity of Sanskrit.

2. In his *The American Heritage Dictionary of Indo-European Roots* C. Watkins gives three PIE roots for ‘man’ *man*, *ner* and *wī-ro* (p 51, 58, 101: all these without asterisk); he points out the older form of *ner* is **ǵ₂-ner-* and its basic meaning is ‘vigorous, vital, strong’. In all his derivations he cites Pokorny (1959), whose spelling and some conclusions for PIE reconstructions are now superseded, but he obviously has consulted many other studies although he does not cite more recent publications, like those of S.E. Mann (1984-7) or H.Rix (1998).

Let us start with **ǵ₂-ner* asking ourselves if this is indeed the original form. To begin with, the asterisk indicates clearly that this word is a conjectural reconstruction and does not exist in any extant early language; nor is there any means at all of verifying the conjecture. The incautious or uninformed reader will perhaps (in going through Watkins’ *Dictionary...*), think that all those roots printed without an asterisk are genuine words. They are not: they are conjectural reconstructions. T. Burrow, the eminent sanskritist, gave a warning more than three decades ago: “...in the case of Indo-European it is certain that there was no such unitary language which can be reached by means of comparison... the Indo-European that we can reach by this means was already deeply split up into a series of varying dialects” (1973: 11). Although some comparativists feel arrogantly confident about their conjectural reconstructions, others do express candidly the uncertainty involved. Thus O. Szemerényi, an eminent comparativist, admits that the reconstructions are used to facilitate comparisons, using one word instead of many IE variants, and cites Hermann’s statement that “complete forms (e.g. **deiwos* [=S *deva-s*]) cannot be reconstructed at all, only single sounds, and even these are meant as approximation only” (1996: 33, my square brackets). Nonetheless, he makes very great efforts to “reconstruct” PIE forms and evinces considerable faith in these reconstructions.

3. The hypothetical stem **ǵ₂-ner* is found in Phrygian and Greek *a-nar/nēr-*, Oscan (=Old Italic)

1 Abbreviations used: IE = IndoEuropean. PIE = Proto-IE. *RV* = *R̥gveda*. *AV* = *Atharvaveda*. S = Sanskrit. Alb = Albanian. Arm = Armenian. Av = Avestan. C = Celtic. Cret = Cretan. E = English. Gk = Greek. Gmc = Germanic (i.e. all or any one branch). Goth = Gothic. Hitt = Hittite. Ion = Ionian Gk. Ir = Irish. L = Latin. Lith = Lithuanian. O = Old (as OIr = Old Irish = one branch of Celtic). P = Pāṇini’s *Aṣṭādhyāyī*. Phr = Phrygian. Sl = Slavic (any one branch: Bulgarian, Polish, Russian etc). Toch = Tocharian A or B.

ner-um and the Roman name *Nero*, in Welsh *ner*, Albanian *njer* and Avestan *nā/nar-*. Vedic has the stem *nār-a* and also *nṛ*. Now according to the AIT (=Aryan Invasion/Immigration Theory) the Aryans came to Saptasindhu, ‘the land of the 7 rivers’, in N-W India and Pakistan, c 1700-1500 bringing their Indoaryan speech, which was a branch of the older Indo-Iranian (a language supposedly spoken by the Indoaryans and Iranians which is not attested anywhere but is only conjecturally “reconstructed” by comparative linguists). According to this, then, the stem *nara* should be very common in the *RV*, which is the oldest extant Indoaryan text, composed c 1200-900 (always according to the AIT). Indeed, *nara* is frequent in the *RV* as is also the fem *nārī* ‘woman, wife’. But so is *nṛ*, seen clearly in declension: plural 2 *nṛn*, 3 *nṛbhis*, 4-5 *nṛbhyas*, 6 *nṛnām* and 7 *nṛṣu*.

IE linguists comment profusely on *nara* but hardly even bother to consider the full declension of *nṛ*. Yet here we find a paradoxical situation. If *nara* is older than *nṛ* (and *nṛ* is an Indoaryan innovation, or whatever else, but, in any case, not earlier than *nara*), we should find in the *RV* more compounds with *nara-* as first member than compounds with *nṛ*. Fortunately, this statistical game is an easy one. There is only one *nara-* compound – *narāsāmsa* ‘men’s desire/praise’, epithet of Agni. On the other hand, we find numerous compounds of *nṛ+* : *nṛcākṣas-* ‘watching men’, *nṛjīt* ‘conquering men’, *nṛtama* ‘most manly’, *nṛpāti* ‘men’s lord’, *nṛpātī* ‘queen’, *nṛbāhū* ‘man’s arm’, *nṛmādana* ‘gladdening men’, *nṛvāhana* ‘conveying men’, etc, etc. Here one might argue that the older stem *nara* is falling into desuetude and *nṛ* ascends in frequency. But what we find is that compounds of *nara* increase in post-rigvedic texts: e.g. *nara-kāka* ‘crow-like man’ *nara-tā/tva* ‘manhood’, *nara-deva* ‘men’s god, king’, *naranātha* and *narapati* ‘king’, *narayāṇa* ‘mandrawn cart’, *narādhi(-pati)* ‘king’, *narottama* ‘best of men’, etc. Moreover even the forms *nar-a*, *narya* ‘human, heroic’, *nāra* ‘human’ and *nārī* ‘woman’ can be seen as primary or secondary derivatives of *nṛ* according to the formation of such derivatives by the addition of suffixes and the vowel gradation (*ṛ* → **ar** guṇa and **ār** vṛddhi). Consequently, since there are not even traces of *nar-a* in any other formation to suggest its greater antiquity, we must take it that *nṛ* is the oldest form.

4. According to the rigvedic evidence *ner* could not be the PIE primary form but only a derivative. The alleged **e₂-ner-* is based mainly on the Gk *a-nēr-*. Greek is well-known for its tendency to prefix phonemes not found in the cognates in other IE branches. E.g. the common IE stem for ‘horse’ (S *aśva*, L *equus*) is in Gk *h-ippo-s*, where the double *-pp-* is explained as substitution for the *v/u* while *p* is often equivalent for S/L *s/q*; but the initial *h* (a rough breathing) is an addition since this usually corresponds to IE *s* or *v* and no IE cognate for horse has such an initial; in any case, the Mycenaean *iqqo* (much earlier form in Greece) has no *h*. The fact that other IE branches, including Avestan, have *ner/nar* but not *nṛ* proves nothing, since they do not have *ṛ* at all. Szemerényi states that *ṛ* appears in IE branches other than Sanskrit as *ar/ir* etc or *ra/ri* etc (1996: 48-9).

The stems *ner/nar* in the other IE branches and *nṛ* > *nar-* in Vedic are isolated: there are no cognate verbal forms (e.g. **narati* ‘be/ behave as man’) as with S *bhṛ* > *bhār-ati/ bībhar-ti*, Av *baraīti*, Gr *pher-ei* etc ‘one bears’. The other branches have no other cognates of any kind, except Greek which has words from the stem *andr-* (e.g. *andr(e)ía* ‘manliness, bravery’) but they are all from a period much later than Homer or Hesiod (*GEL andr-*) and this suggests innovations not original cognates. Vedic at least, apart from the words cited earlier, has patronymics with the normal vṛddhi form – *nārkalpi*, *nārśada*, *nārāyaṇa* etc. This is the aspect of the organic coherence of a language whereby roots generate primary stems of verbal forms in conjugation or nominal forms in declension and also secondary derivatives. In Vedic, more than any other language, this unfolds fairly regularly through ablaut, i.e. the graded change of the vowel in the root, or in the primary stem, and the addition of affixes and terminations. Thus, as is observable and as the NIGT (=native Indian grammatical tradition) holds, the simple vowel *ṛ* is transformed into its guṇa grade **ar** and its vṛddhi grade **ār** for primary and secondary derivatives respectively. Note that IEL (=Indo-European Linguistics) does recognize this general process of ablaut and does take it into account but evaluates it differently and does not give to the organic coherence of a language the importance it deserves. (We

shall return to this.)

5. Let us now examine the verb ‘to bear (=carry, bear children)’. Here too IEL gives as root **bher* and regards *bhṛ* as “zero grade”, i.e. a falling off (=derivative or devolute) from the root proper. Different cognates are found in OIr *berid*, Gth *baira*, L *fer-*, Alb *bie*, Gr *pher-*, Phr *ab-ber-et*, Arm *ber*, Sl *bere*, Av *bar-* and Toch A/B *pär*. Vedic has both *bhar-* and *bhṛ-*. Here *bhar-* is in many words: *bhar-a* ‘bearing, what-is-borne’, *bhar-aṇa* ‘the act of bearing’, *bhar-atá* ‘to be supported’ (epithet for Agni), *bhar-tṛ* ‘bearer, husband, lord’ etc; also *bhāra* ‘load’, *bhārata* ‘sprung from Bharata’ (also for Agni), etc. The stem *bhar-* is common in verbal forms also: *bi-bhar-ti*, *bhār-ati* ‘one bears’, etc. But we find also *bhṛt* in compounds like *iṣu-bhṛt* ‘arrow-bearing’, *bhṛta* ‘borne’, *bhṛ-ti* ‘maintenance’, etc. All these are regular formations and many parallels can be cited from other dhātus like *kṛ*, *dhṛ*, *vṛ*, etc. There are also verbal forms: *bibhṛtás*, *bibhṛhí*, *ja-bhṛṣé*, *jar-bhṛtás*, etc.

Unlike *nṛ* which has no verbal forms, *bhṛ* is a full dhātu according to the NIGT and is conjugated as a verb also. As such it is conjugated in two modes, as class I (thematic) and as class III (or reduplicating, where the reduplication itself need not detain us). The class I *bhārati* ‘bears’ is quite regular taking the affix *-a-* in the stem before the terminations (hence ‘theme’ and ‘thematic’: *bhār-a-ti*); since the stem or theme remains *bhār-a-* unchanged before the terminations, it has not much to reveal. Again many parallels can be cited, like *jāratī*, *dhāratī* etc. The class III formations reveal the important aspect of ‘strong’ and ‘weak’ forms or persons. Strong are the three persons in the singular indicative and imperative of the present (and some others) and weak are the three in the dual and plural ind and impv pres (and others). The strong persons have the stem *bhar-* and the weak *bhṛ-* : thus *bī-bhar-ti* (ind) ‘bears’ (strong) and *bi-bhṛ-tām* (impv) ‘do bear, you two’ (weak). There are not many verbs in class III but *√sṛ* ‘flowing’ provides parallels: *sī-sar-ti* (ind) ‘flows’ (strong) and *si-sṛ-tām* (impv) ‘do flow, you two’ (weak). As is observable and as the NIGT holds, the strong stem has the guṇa form *ar* of the radical vowel while the weak one has the simple vowel unchanged (or zero-grade in IEL, which with some verbs shows the loss of the radical vowel altogether).² After discussing accent and strong and weak stems in the verb (S *√i > eti*, Gk doric *eiti*, L *it* ‘goes’), Szemerényi, indeed, states that the “OInd [=Sanskrit] paradigm continues the Indo-European almost without change” (p 315). We can extend this judgment to many other aspects of these languages, e.g. *bhṛ*. Consequently, here too, as with *nṛ*, the stem *bhṛ-* is in fact the original root-form *√bhṛ* and *bhāṛ-* derivative.

6. Yet Szemerényi, as almost the entire IEL, regards the strong or guṇa grade as “the basic form”. And because this issue is crucial I quote him in full:

“With regard to the ablaut alternations, it is in the first place clear that loss of the basic vowel is connected with the position of the accent. Forms like Skt. *ás-mi* ‘I am’: *s-ánti* ‘they are’ from IE **és-mi*: **s-énti* (cf. Dor. *ἦμί*: *ἐντί*, Goth. *im*: *sind*, OCS *esmǐ*: *sǫtǔ*) can only be understood on the assumption that the root **es-* lost *e* and became *s* in the plural because of the shift of the accent from the root to the ending (cf. also Skt. 1st pl. *s-más*, 2nd pl. *s-thá* from IE **s-més*, **s-t(h)é*; in any case, one can only reach *s-* from *es-* and not vice versa.

This is important, because the Indian grammarians in their theory of vowel gradation started from the zero grade as the basic form and accounted for the other two grades as arising from it by successive additions of *a*: thus basic grade

2 The term zero or nil grade seems more fitting for this syncope or loss of vowel (which the NIGT regards as *lopa*, temporary ‘disappearance’ *adarsana* : P I, 1, 60): e.g. *√dā* ‘giving’ *> dá-dā-ti* ‘one gives’ (strong), *da-tam* (impv) ‘do give, you two’ (weak syncope and sandhi of *d > t* before *-ṭ*). The radical *ā*, being already strong (*vṛddhi* grade of *a*), remains in the strong persons but disappears in the weak ones leaving only *da-d-* (*dad-mas* ‘we give’, etc). A full discussion of this aspect and of accent, which early on was musical, would take us too far away.

diš- ‘show’, *guṇa* (‘secondary quality’) *dēš-* < **d-a-iš-*, and *vṛddhi* (‘increase’) *daiš-* < **d-a-a-iš-*. In fact, the only possible basic form is the full grade, the *guṇa*-grade of the Indians, even if in isolated cases a zero grade can acquire a new full grade formed on the analogy of existing alternations.

Note here **(a)** The importation of conjectural forms marked with asterisk * (even S **d-a-iš* = *diš* with *guṇa* > *deš-*). **(b)** It is probably true that the initial *a-* was lost eventually in the weak persons because it remained unaccented (e.g. *s-vás*, *s-más* etc) but there is a trace of it in 2nd sing impv *edhí* (ultimately < **a-s-hí?*). **(c)** More important, Szemerényi should not have used as an example these forms, since they are different from the examples of $\sqrt{dis} > des-$ (and the examples we have examined so far) and, above all, the Indian grammarians gave not *s* as the basic form or root for this verb ‘to be’ but \sqrt{as} . **(d)** He calls the *guṇa* grade “full grade” whereas for the NIGT the *guṇa* grade is middle and the “full” is *vṛddhi*.³

7. The root *bhṛ* must also have been PIE like *nṛ*. Indoeuropeanists class **ṛ** as a “syllabic liquid” and accept it (as well as **ḷ** and their long forms) as PIE (Szemerényi, p 48-9; Baldi 1982: 16). However, they rarely cite a root with **ṛ** (except **kṛd-* ‘heart’). They prefer to cite the conjectural stems **ner-*, **bher-*, **kerd* (=heart), **dher-* (= S $\sqrt{dhr} > dhar-$) and so on, perhaps because the **ṛ** is not attested as a phoneme (in contrast to the common **r**) in any early IE language other than Sanskrit (not even in Avestan, its closest relative, or in the allegedly earlier Hittite). On the other hand, the NIGT treats **ṝ** generally like the other simple vowels **ā**, **ī**, **ū**. Even Western grammars of Sanskrit present **ṛ** as the vowel of the retroflex or cerebral (= *murdhanya*) sequence of phonemes and **ḷ** as that of the dental family (*dantya*). Now, whether we call **ṛ** “vowel” or “syllabic liquid”, the fact remains that in Sanskrit it behaves generally like a simple vowel and appears in dhātus, in nominal and verbal stems and even in a suffix like **-ṛ** which generates numerous nouns of agency or relationship: *as-ṛ* ‘thrower’, *joṣṛ* ‘cherisher’, *dhātṛ* ‘establisher’, *bhartṛ* ‘supporter, husband’, *māṛ* ‘mother’, etc.

8. Unlike **ṛ** which is very common, **ḷ** is found only in the few derivatives of $\sqrt{kḷp}$ ‘preparing’. We find **ḷ** in weak verbal forms *cā-kḷp-úr* ‘they have prepared’, ‘á- *cī-kḷp-at* ‘one prepared’ (redupl aor), etc, the ppp *kḷp-ta* ‘prepared’, often adjectival, and in the fem noun *kḷp-ti* ‘preparation’: both the ppp (-*k-ta* in NIGT) and the abstract feminines with the suffix *-ti* are formed without ablaut, though some other changes in the root may occur; in some cases we find a weakening of the vowel as in $\sqrt{sth-ā} > sthita$, *sthiti*. This phoneme is even rarer than the long **ṝ**, which appears in some dhātus (*kṝ*, *tṝ*, *pṝ*, etc)⁴ and in the acc and gen pl of nouns in *-ṛ*: *astṝn* ‘throwers’, *pitṝṇ* ‘fathers’, *astṝṇām* ‘of throwers’, *pitṝṇām* ‘of fathers’. In fact the long **ṝ** of dhātus is not retained even in conjugational forms where we would expect it, i.e. in weak persons: thus from $\sqrt{pṛ}$ ‘filling’ as class III, we have the regular strong stem *pṛ-* *par-tu* (impv) ‘let one fill’, but the weak stem is *pṛ-pṛ-tām* (impv) ‘let the two fill’ and as class IX $\sqrt{pṛ}$ has only weak grade *pṛ-nātu* ‘let one fill’, where the strong person is denoted by both the affix *-nā-*, and the ending *-tu* and *pṛ-ṇitām* ‘let the two fill’, where the weak person is denoted by both the affix *-nī-* and the ending *tām*.

Naturally, one wonders why **ḷ** is so very rare and long **ṝ** appears only in the specific cases mentioned, while long **ḹ** does not appear at all. But before we look for a plausible reason, we should examine the important aspect of the nature of vowels and the basic principles of sounding them in practice.

3 Here I may be unfair to Szemerényi as I have consulted only his publication in the English translation but not the German original, where he may be using a different adjective. However, “full” in this context could hardly be other than German *voll*.

4 These are so given in the *Dhātupaṭha* and some Western publications (e.g. MSD and Macdonell’s *Vedic Grammar for Students*) but other Western books give these dhātus with short **ṛ** (e.g. Whitney’s *Roots, Verb-forms...*) or not at all (e.g. Mayrhofer 1956-).

9. We said that *r̥* is the vowel of the murdhanya family and *l̥* of the dantya. Similarly *a* is the vowel of the velar or guttural *kaṇṭhya*, *i* of the palatal *tālavya* and *u* of the labial *oṣṭhya* family. The vowels may seem easy to pronounce but this appearance is deceptive. Even the short *a* requires much attention actually. The sounds that ordinarily, in everyday use, pass for *a* are in fact many different versions or shades of *a*, many more than the sounds heard in the English words *sat*, *shut*, *Sarah*, *sofa*, or *shaft* – leaving aside any regional varieties; the variant spelling of *dispatch* and *despatch* shows one of several difficulties regarding *i*; the difficulties with *u* are less obvious (but seen in German *buch* ‘book’, *bücher* ‘books’).

By definition, any and every vowel *svara* should sound of itself, as it were, riding on the air coming out of the mouth, for as long as the outbreathing lasts and without losing its brightness and specific quality. The *a* is comparatively simple: we open the mouth keeping the jaws apart and the tongue relaxed and flat, without strain, and let the sound *a* emerge. In fact, when we experiment, we note that another sound that can arise, when we desire to hear sound, is the hissing “h-h-h” of the out-breath as the air travels through the open mouth; but there is also a slight movement of the back of the tongue constricting the opening. This is probably the basis of the three *ūṣman* ‘sibilants’, the visarga *ḥ* and *ha* (classed as *kaṇṭhya*). When we desire to hear our breath-sound or to make it ‘voiced’, the vocal chords vibrate and so arises *a*, of itself: there is no other movement, except the vibration of the vocal chords. We can prolong this sound for the duration of the outgoing breath but in order to keep it clear, bright and resonant, we must attend so that there is no movement of jaws, lips or tongue. The process sounds, and is, simple enough, but, surprisingly, as singers know well, it requires practice. From this prolonged sound *aḥ* अ॑ one can arrive at the short measure, then the long.

I experimented personally for very long periods over the years. I also experimented with many people of both sexes and of various ages: most of them were non-linguists and so totally free of preconceived notions of how phonemes arise.

To obtain prolated (prolonged or protracted: *pluta*) *iḥ* इ॑ the start is the same as with *a*: jaws and lips apart and tongue flat and relaxed. But now, for *i* the tongue arches upward towards the palate without touching it and the *a* changes, of itself, without any other effort, into *i*; even if one thinks of *a* or any other sound, so long as there is no change in the vocal machinery, there will be *इ* *i* – but a sound different from and much fuller than the variety of *i* used ordinarily. Then one finds the short and long measures *इ* *ई*. Thereafter with a slight change in the position of the arched tongue, the sound *इ* becomes *e* ए. *This is long* – if it is to retain its pure quality, its clarity and brightness. A short measure of this becomes indeterminate, something between *e* and *a*, which may be denoted by the phonetic symbol [ə].

The *uḥ* उ॑ is obtained by a similar yet different process. Here the jaws are again apart and the tongue flat but the lips close down without joining. Now the *a* becomes *u*. Again, one finds the short measure and double that gives the long *ū* ऊ. From *u*, the *o* ओ is easily obtained.

The phonemes *ai* ऐ and *au* औ are definitely diphthongs. As such they are naturally long.

MacDonell states that *o* and *e* “stand for the original genuine diphthongs *āi* and *āu*” and gives various explanations in the usual IEL line of thinking, including some cases of sandhi (pp 4-5). This may be right. But I have strong doubts about it all because in moving from *aḥ* to *iḥ* one hears first the sound *e* just before *i* arises and in moving from *aḥ* to *uḥ* the sound *o* arises before *u*. Thus *e* and *o* are natural vowels and not the result of *a+i* and *a+u*. The sounds have to do with full or restricted opening of the back of the mouth – even though for grammatical or phonetic analysis the (misleading) notation of *a+V(owel)* has been adopted generally.

The vowels *r̥* and *l̥* are more difficult. While if attention is given, *a*, *i*, *u* can be quite stable in their individual quality and their fluidity, the *r̥* and *l̥* are difficult to maintain. Theoretically *r̥* should emerge out of *a* when, with the mouth open, the tip of the tongue moves towards the front hard palate, where the corresponding murdhanya consonants are produced with contact. In my long and varied experiments, I could not maintain its clarity and brightness; even the short *r̥* tended, if the attention

wavered, to become a different sound – something like the syllables *ri* or *ru*. Theoretically again, *ṛ* should be obtained with the rise of the tip of the tongue towards the teeth or the end-part of the upper gum: this proved extremely difficult without some contact or without some additional movement of the back of the tongue. Today, it is usually pronounced as *lri* and is said to correspond to *l* representing an original *r* (MacDonell following the *RV* Prātisākhya, p 15). Whatever it was in distant antiquity, today it is a mercurial sound, sometimes bright, sometimes dark.

10 One of the greatest difficulties in these experiments was to persuade people to keep their jaws apart and then move the tongue as required. Be it noted that in Modern Greek we have no tālavya sounds nor murdhanya, except for the vowels *i* and *e*, the semivowel *ra* and the hybrids *-ts-* ; *-dz-* and *-ks-* (though on the islands of Crete and Cyprus a sort of palatal श्र सा is common). People have generally become too lazy and consequently produce all kinds of variant, imprecise sounds. This would appear to be the cause of sound changes in language. The words *good*, *water* and *understand*, to take some examples, are spelled alike in all English-speaking countries but each one is pronounced quite differently in different parts of Britain, the USA, Canada, Australia, etc.

11. The difficulty of maintaining clear *r* and *ṛ* was, I think, the reason that these sounds are not so common in Sanskrit and are totally absent in the writing of the other IE languages, when these emerge with literacy in historic times. The long *ṛ* is totally absent even in the *RV*. The long *ṝ*, present in $\sqrt{p}\bar{r}$ ‘filling’ and $\sqrt{s}\bar{r}$ ‘crushing’, does not appear in any of their derivatives. The *Dhātupāṭha* could easily have given them as $\sqrt{p}r$ and $\sqrt{s}r$ (i.e. with short *r*), like *kṛ* ‘making’ or *sr* ‘flowing’. Since it does not, we must assume that radical long *ṝ* was a reality and of significance, even though derivatives having it (if they ever existed) were not preserved.

The NIGT separates *r* and *ṛ* from *a*, *i*, *u*, as is obvious in the *mahesvara-sūtras* (*a-i-u-ṛ* and *ṛ-ṛ-k*), and this seems right. Perhaps their instability, or their different nature at any rate, was recognized. Modern linguists also separate them and call them “syllabic liquids” rather than “vowels” (although they have no “liquidity” in the strict meaning of the word).

12. The vowel gradation or ablaut, which was mentioned earlier in §4 in respect of *r* → *ar* → *-ār*, holds also for *a*, *i*, *u* and *ṛ*⁵. Thus *i* → *e* → *ai*, *u* → *o* → *au* and *ṛ* → *al* → *āl*. As P. Baldi, another indoeuropeanist of note, sums it up: “the guṇa form is made by adding an *a* to the simple vowel; the *vṛddhi* form is made by adding *a* to the guṇa form” (1983: 56). But this “adding” can be misleading; for if we add *a* to *i* we get *i-a* → *ya*. The “adding” is more of an infusion of *a* to *i* (giving *e*) and then into *e* (giving *ai*). There is nothing theoretical about this. As we saw in §9 it is a fairly natural process with *i* → *e* → *ai* and *u* → *o* → *au*. What of *a*?

With the simple *a* the situation is different. An additional input of *a* will simply prolong the short *a* making it long *ā* आ. In the actual Sanskrit language the short *a* is both radical or primary grade and guṇa grade in conjugation and declension: contrast $\sqrt{c}it$ ‘perceiving’ > *cet-ati*, *cet-as* and $\sqrt{j}an$ ‘generating’ > *jan-ati*, *jan-as* (*RV* II, 2, 4). This is clear enough in Pāṇini’s sūtra I, 1, 2, *ad-eṇ guṇaḥ* ‘*a*, *e* and *o* are guṇa’. But it may be that the much discussed final sūtra of Pāṇini’s *Aṣṭādhyāyī* VIII, 4, 68, आ आ refers to this situation suggesting that short *a* remains short *a* in both the simple radical vowel and the guṇa grade; or that the radical *a* was originally what is today termed “schwa”, the [æ] as in *an* or *map*, or an indeterminate short phoneme like the [ə] of *sof-a* – which is what IEL has opted for. The post-Pāṇinean NIGT talks of *saṃvṛta* ‘closed’ and *vivṛta* ‘open’ *a*. It is a great pity that Pāṇini, the great master himself, did not say more.

5 With *r*, my experiments showed the obvious. When I sounded the prolonged *r*, if I added *a*, the result was naturally *ra*. To put the *a* into the *ṛ* I had to obtain *a* first and this meant that the tip of the tongue had to be swiftly lowered back to the flat position, then swiftly again up to the *r* position: this, of course, gave *ar*, and another measure of *a* gave the *vṛddhi* *ār*. Similarly, a measure of *a* into *ṛ* gave *al* and another one gave *āl*.

13. The ablaut is fully accepted by linguists as a regular phenomenon in the “reconstructed” PIE language. Unlike the three grades of Sanskrit, the PIE is said to have five and these appear as changes of quality, that is changes of vowels from one to another family. These are not attested in any regular sequence in any IE branch. However, Szemerényi presents (p 84) one (highly disordered) example from Greek, related to *patēr* ‘father’:

i) *pa-tér-a* (acc sing), where *-ter-* shows **e** (to be distinguished from Sanskrit *e*!) as the basic or full grade.

ii) *eu-pá-tor-a* (acc sing!), where *-tor-* shows the **o** grade (i.e. *omicron*, short *o*). But note that this too is acc sing of *eu-pá-tōr* ‘good father’ (see v), a noun belonging to a different declension, as we shall see below. (Distinguish Gk *o/ō* and S *o*!)

iii) *pa-tr-ós* (gen sing), where *-tr-* shows the zero or nil grade: here there is syncopation or loss of the vowel (*lopa* in NIGT).

iv) *pa-tēr* (nom sing), where *-tēr* shows the long-vowel (i.e. **ē**) grade.

v) *eu-pá-tōr* (nom sing! ‘good father’: see ii), where *-tōr* shows the long **ō** grade (that is **ō**-mega).

I do not know where the eminent linguist would place Gk *eu-pa-teir-a* (nom sing, fem ‘she of a noble father’). It could be another basic one since the example *lei-pō* ‘I quit, depart’ is given as basic (same p 84); or it could be long-vowel grade since the diphthong *ei* is long. Be that as it may (even a sixth grade?), Szemerényi admits that “not all grades are attested for every root” (p 84). He also states “Very often only full grade [i.e. the vowel *e*], o-grade and zero grade are attested” (p 84), i.e. only three grades. For this he gives the following examples:

a) *leíp-ō* (pres) *lé-loíp-a* (perf) *é-líp-on* (aor) ‘leave, depart’;

b) *dérk-omai* (pres) *dé-dork-a* (perf) *é-dra-kon* (aor) ‘perceive’ (cf S *dṛṣ*);

c) *pénth-os* (neut, nom sing) *pé-ponth-a* (perf) *é-path-on* ‘grieve’.

Here we notice that we have quite different vowel sequences, even diphthongs, and in the zero grade we have no loss or syncopation but a vowel (*-líp-*, *-path-*).

In subsequent pages (85-6), Szemerényi gives more examples made up from different words and even languages (Gk *a-melg-ō*, L *mulg-eo* and S *mṛṣ-ṭa*, *māṛṣ-ṭi* ‘milk’). He also gives examples from Gothic and Old High German where all one can see clearly is that there are different sequences of vowels (short, long) and diphthongs without any general ordered pattern.

14. There is something incredibly wrong with Szemerényi’s methodology. First, the five examples are made up from two different stems: *patēr* and *eu-pá-tōr* are inflected quite differently (see §17)! Thus we have two different vowels in each of the pairs of acc sing **-é-** in (i) and **-o-** unaccented in (ii), and in each of the pairs of nom sing, **-é-** in (iv) and **-ō-** unaccented in (v); and if we had the vocative for *eupátōr* we would see that the vowel here also is different **-e-** and **o** (again, see §17). The inflexion of *eu-pá-tōr* is streamlined, taking the short, unaccented **-o-** throughout all cases except nom sing.

Second, there is only one example of each of the other three in Greek. Paradigms (a) and (b) are tenses of verbs but paradigm (c) has a noun and two tenses of the related verb (because, no doubt, this verb has present tense not with this very stem but with the stem *pasch-*)

Third, in all three examples we see a change of vowel-quality from “full” to o-grade but example (a) is a diphthong (*-ei-* and *-oi-*) whereas (b) and (c) have short *-e-* and *-o-*. As for the zero grade, (a) has *-i-*, (b) has complete loss of vowel (i.e. *-dr-*) and (c) has *-a-*, even though examples (b) and (c) have the same vowels in the full grade and o-grade; complete loss of vowel in (c) would be difficult since a conjunct **p-nth* is unpronounceable, but it would not be so with *-lp-* since Greek has *helpis* ‘hope’, and *melpō* ‘praise in song’ etc. **So no operating consistent law is evident.**

Fourth, other verbs with full grade **-ei-** in the present stem have no **-oi-** or **-o-** in the perfect (sometimes nowhere): e.g. *aleíph-ō* ‘anoint’ with perf *al-ē-líph-*; *egeir-ō* ‘wake, get up’ has for perf both *-ger-* and *-gor-*; *klei-ō*: (*klēi-ō*: stem *kleF*, *KlēF*, *klaF*?) ‘close’ with perfect stems *ke-klei-* and

keklēi-; *peith-ō* (weak stem *pith-*) ‘persuade’ with perf *pe-peī-* (GEL) but in the Middle Voice, yes, *pe-poi-* ‘I am confident, persuaded’; *pein-ō* ‘I am hungry’ with perf *pe-pein-* (GEL); *phtheír-ō* ‘destroy, corrupt’ with perf *é-phthar-* (only Aeolic pres *phthérō* > perf part active *e-phthor-*). So here again, **no regular law is operating**. IEL gives no explanation for these differences.

Fifth, many verbs have *-ō* or *-ou-* in the present stem, which, according to examples (b) and (c) should have full grade *-e-*: e.g. *akouí-ō* ‘hear’, *akro-á-* (late) ‘harken’, *aró-ō* ‘plough’, *blōsk-ō* ‘go, come’, *bo-á-ō* ‘shout’, *go-á-ō* ‘groan’, *dok-é-ō* ‘think’, *kopt-ō* ‘cut’, *krouí-ō* (late) ‘strike’, *louí-ō* (*lo-é-ō*) ‘wash’ etc, etc. Many of these have the vowel *-o* (or *-ou-*) in the perf stem as well.

Sixth, many verbs have the same stem-vowel in both present and perfect (and some in all or most tenses): *are-sk-ō* ‘make good’ perf *ar-é-re-ka*; *deík-nu-mi/ -knú-ō* (Ion *dek-*, Cret *dik-*) ‘show forth’ perf *-deich-*; *lú-ō* ‘loose-n’ perf *le-lu-ka*; *pne(i)-ō* (stem *pneF/pneu-*) perf *pe-pneu-*; etc, etc.

From all this mass of data certain forms are selected, are given an arbitrary order and thus presented as ablaut or vowel gradation. The facts show various series of vowel-changes (and sometimes none) in different tenses – that is all. This may be called “ablaut”, but no general and constant laws emerge governing these changes. Unlike the changes in Sanskrit, these are haphazard and confused.

15. Much is made of the change in Greek of the verb-stem (usually called “root”) vowel *-e-* to the noun-stem vowel *-o-*. This may be the basis for the notion of ablaut in Greek, since this, certainly, seems to have greater regularity than the vowel changes in the verb-forms. Undoubtedly, here we see many examples where the stem of masc nouns has *-o-* while the verb-stem has *-e-*: e.g. *del-eázō* ‘entice’ and *dól-os* ‘bait’, *lég-ō* ‘say’ and *lóg-os* ‘speech’, *tréph-ō* ‘feed’ and *troph-ós* ‘feeder’ (masc and fem), *tréch-ō* ‘run’ and *troch-ós* ‘wheel’, *phér-ō* ‘bear’ and *phór-os* ‘tribute’, etc. A similar change occurs with fem nouns in *-ē*: e.g. *mén-ō* ‘stay’ > *mon-ē* ‘abiding’, *ném-ō* ‘allot, graze’ > *nom-ē* ‘distribution, pasturage’ (m *nóm-os* ‘usage, law’), *pné(i)-ō* ‘blow, breathe’ > *pno-ē* ‘blast, breath’, etc.

However, even this situation is not clear-cut. While the feminines are certain (except very few like *phu-gé* ‘flight’ < *pheúg-ō* ‘flee’), several masculines of this class have an *-e-*: *gel-áō* ‘laugh’ > *gel-ōs* ‘laughter’, *dé-ō* ‘bind’ > *de-s-mós*, *xé-ō* ‘plane off, polish’ > *xe-s-mós* ‘abrasion’; then, there are others that do not seem to have a primary cognate verb: e.g. *zél-os* ‘zeal, jealousy’, *nek-r-ós* ‘corpse’, *xén-os* ‘guest, stranger’, etc; with such masculines the cognate verbs *zēl-óō*, *nek-róō*, *xen-óō* are derivatives, though the stem *nek-* has a cognate \sqrt{nas} in Sanskrit. Moreover, most of these verbs with an *e-* stem have neuters ending in *-ma* or *-os* with unaltered stem-vowel: e.g. *déō* ‘bind’ > *de-ma* ‘band, rope’ (also *de-s-ma* ‘bond’, like m *de-s-mós* ‘bond’) *zeúg-nu-mi* ‘yoke’ > *zeüg-os* ‘pair’ (and m/n *zug-ó-* ‘yoke, cross-bar’), *lépō* ‘peel’ > *lép-os* ‘husk’, *pnéō* > *pneũ-ma* ‘air, breath’; etc.

From the point of view of our discussion, one of the more interesting cases is the verb *che-ō* ‘pour out’ (the root being given as **gheu* by IEL). This has for its perfect stem (active and passive) *ké-chu-*. We find the fem *cho-é* ‘drink-offering’ and masc *choós/ choeús/ choūs* ‘a measure of capacity’ (and *choūs* ‘soil’) and neut *cheũ-ma*; but also m. *chu-l-ós* and *chu-m-ós* ‘juice, flavour’, n. *chú-ma* ‘what flows’ and f. *chú-sis* ‘act of pouring’; also f. *chú-tra* and m. *chú-tros* ‘earthen pot’ (Ion *kú-thra*, *kú-thros*). Similar, though not quite so productive, is *rhé-ō* ‘flow’ with perf stem *erh-rhu-ē-ka*, the normal f. *rho-é* ‘flowing, stream’, m. *rhó-os* (Cypriot *rhó-F-os*, Attic *rhoūs*) ‘current’ and n. *rheũ-ma* ‘what flows, stream’; but also m. *rhú-ax* ‘torrent’ and *rhú-as* (adj) ‘fluid’. (Both *che-ō* and *rhe-ō* with the stems *-chu-* and *-rhu-* are cognate with S \sqrt{hu} > *ju-ho-ti* ‘sacrifice, pour butter’ and \sqrt{sru} > *sráva-ti* ‘flow’: see also n11, vii & viii.)

16. All the disparate Greek linguistic elements that have been examined in the preceding sections seem to me to be decays and corruptions. Any semblance of order is the result of innovation through analogy and assimilation. As in all languages, the frequent exceptions to the many “regular” phenomena show precisely that the apparent “order” is not original or genuine. We must not forget that Greek appears in many dialects some of which have left very little early written evidence. The

variants *ch-ú-tra* / *k-ú-thra* are interesting in showing the same vowel but different consonants. Greek is on the whole unreliable.

From all these disparate elements that exhibit no truly ordered pattern in any one organically connected group of words (verbs and nouns), the latest IEL concludes that there must have been five grades of ablaut. This is entirely arbitrary and we are not told what principles govern these changes and what vowel grade should appear in what form of cognate nouns and verbs. So let us explore another aspect.

17. Although Szemerényi hyphenates thus *pa-tér-a*, he obviously takes *pa-te(ē)-r* as the root. So do others, including Watkins, who gives as root IE *pater-* (without asterisk, as though this form is attested) and also the “oldest form **p₂ter*”. But *pater/p₂ter-* is not strictly a “root” since Greek and Sanskrit (and other IE branches) have other similarly formed nouns, i.e. with the suffix *-ter* : thus Gk *mḗ-tēr* ‘mother’, *gas-tēr* ‘belly’ (also *gas-tr-a/ē* ‘paunch’), etc. The morpheme *-ter-* is (or represents an older form of) a suffix which gives agent-/relation- nouns (like the Sanskrit *-tṛ-*). Greek has in addition *dō-tēr* ‘giver’, *zōs-tēr* ‘belt’, *kran-tēr* ‘accomplisher’, etc, but also *dō-tōr* ‘giver’, *eupá-tōr* ‘good father’, etc, all of which are inflected differently from *pa-tēr*. All these nouns are in fact derivatives and the “root” is strictly the initial morpheme *-pa/p₂, mē-, gās-, dō-*, etc. So the ablaut occurs not in the root but in the suffix, which is the termination of the stem (or theme) of the noun(s) formed from the root(s)⁶. The following Table shows the declension in the singular of two Sanskrit nouns and three Greek ones and their similarities and differences:

	S1	S2	Gk1	Gk2	Gk3	
Nom	netá	pitá	patér	dotér	dótōr	strong
Voc	netár	pítar	páter	dotér	dótor	»
Acc	netáram	pítáram	patéra	dotēra	dótora	»
Inst.	netrá	pitrá	—	—	—	weak
Dat	netré	pitré	patrí	dotēri	dótori	»
Abl	netúḥ	pitúḥ	—	—	—	»
Gen	»	»	*patéros	dotēros	dótoros	»
			*(in Epic; <i>patrós</i> in later Attic)			
Loc	netári	pitári	—	—	—	»

i) We ignore the presence in Sanskrit of the three cases absent in Greek. Some traces of these are found in Greek also and many more in the other IE languages – thus confirming that the eight Sanskrit cases are PIE.

ii) In Greek we find two variants (*-tēr* and *-tōr*) corresponding to the one Sanskrit suffix *-tṛ-*.

iii) The Sanskrit nouns show no syncope: the stem in the inst and dat is the weak *pitṛ* where the *-r-* replaces its own vowel *ṛ* before the terminations *-ā* and *-e* of the two cases. So, apart from the locative which shows unexpectedly a strengthened stem *pítar-*, the cases (as in the dual and plural also) exhibit strong (*-tár*) and weak (*-tṛ*) stem very regularly. The abl and gen ending *-uḥ* (= *ur*) is also odd in that it should be **ne-tr-as* (< *netṛ+as*), but we find in Old Norse *fǫður* ‘of father’ and the close

6 IE linguists give **p₂* as the PIE root for Gk and Latin *pa-ter* and S *pi-tar-* : this may be right but cannot be verified and there is no other evidence to corroborate it. S has no dhātu *pa* and the NIGT derives *pi-tṛ* from $\sqrt{pā}$ ‘protecting’. So Sanskrit either had a root *pa* which was lost or the radical vowel of $\sqrt{pā}$ suffered a severe and most irregular change – unlike the nouns *dā-tṛ* from $\sqrt{dā}$, *dhā-tṛ* from $\sqrt{dhā}$, *mā-tṛ* from $\sqrt{mā}$; in any case $\sqrt{pā}$ does generate *pā-tṛ* ‘defender’, *pā-yu* ‘protector’, etc.

variant of Avestan ending *-azāš*.⁷ So this apparent irregularity may have been already established in PIE.

iv) The two Sanskrit nouns show variations only in the one strong case, acc, where the agent-noun has long *-ā-* and the relation-noun short *-a-*. This holds for all agent-nouns (*kartṛ*, *dātṛ*, *dhātṛ* etc) and all relation-nouns (*duhitṛ*, *mātṛ*, *svasṛ*, etc). This vowel difference may be a chance event or may deliberately reflect the difference between the two noun-categories.

v) In Greek there is a third variant termination *-tōr* with yet again different inflexions. (Compare Latin *vic-tor* and *magis-ter*.) Moreover, Greek has many more stems in *-ēr* (not *-tēr*) that are inflected like *patēr*: e.g. *a-ēr* ‘mist, air’, *aithēr* ‘ether’, *an-ēr* ‘man’ without syncopation in the Epics and with syncopation containing *-d-*: gen *an-é-ros* and *an-d-rós*, etc; also nouns in *-ōr* (not *-tōr*) like *ich-ōr* ‘ichor’, *pel-ōr* ‘prodigy, monster’, etc.

vi) The Sanskrit paradigms show greater regularity and reasonableces than the Greek ones – except for the curious strengthened locative.

vii) Paradigms in other languages show complete regularization and loss of the distinction strong-weak: e.g. Latin has *māter* nom and *mātr-* in all other cases and Old Slavic *mati* nom and *mater-* in all other cases. And Szemerényi states “This distribution is ...preserved only in Old Indic and partially in Greek” (p 171).

ix) **The inevitable conclusion** is that, again, Sanskrit is much closer to PIE. Yet IEL holds that Sanskrit, which in so many other respects, even by IEL, preserves PIE elements and forms more faithfully, lost the original vowels *ē* and *ō* (and original diphthongs *ei*, *eu*, *oi*, *ou* and *ai*). This story is long, starting with K.Brugmann (1897-) who proposed that to the three Sanskrit *a*, *i*, *u* vowels should be added those found in Greek also. Baldi sums up the situation: “in the history of Sanskrit there occurred a change in the vowel system that had a monumental effect on the overall structure of that system: in Sanskrit the Indo-European vowels * *ē*, * *ō*, * *ǎ* all merged together as *ǎ*”. This description is so entirely hypothetical as to be (in an impartial court of Law) valueless. First, the history of Sanskrit prior to the *RV* is totally unknown. Second, in the *RV* and subsequent texts there is no trace of *ē* or *ō* as there are traces of other elements in other IE branches that are fully evident in Sanskrit, like *ṛ* and *ᷠ*, roots and terminations, accent, strong-weak persons and cases, etc. Finally, the existence of *ē* and *ō* etc in PIE is asserted only on the evidence of Greek and other IE branches which are on the whole far more distanced from PIE than Sanskrit and show too many losses and corruptions in all other aspects; consequently their evidence is unreliable and the PIE “reconstructed” system is, in any case, based on tiers of conjectures. It could well be that *ē*, *ō* etc are not original but devolutes or corruptions of an original *ǎ*.

S.S.Misra pertinently pointed out that until now “no evidence... is available that Proto-Indo-European *a*, *e*, *o* (as reconstructed by Brugmann etc) have merged [into *a*] in India” (1992: 81). What Misra meant is that the IEL “evidences” are assertions of faith based on reconstructions. On the contrary, he took examples from the Gypsy language which is IE and came out of India (Hock 1996; Fraser 1995: chs 1-2) showing how original *a* became *e* and *o*. For *a* > *o* he cites but few examples: S *smasru* ‘beard’ > Gyp *šosǎ*; S *sasa* ‘hare’ > Gyp *sosoi*; S *mardati* ‘opress, overcome’ > Gyp *morel* ‘rule’. Many more are cited for *a* > *e*: S *khara* ‘donkey’, *jana* ‘person, people’, *dasa* ‘ten’, *divasa* ‘day’, *dhar-ati* ‘holds’, *nava* ‘new’ became in Gyp *kher*, *jenol* (cf GK *genos*), *des* (cf Gk *deka*, L *decem*), *dives*, *nevo* (cf Gk *neFo-*), etc. He might have cited also a similar process of *ǎ* > *e/o* from Old English to New(noting the current pronunciation rather than the spelling): *bald*->*bold*; *baþian*->to bathe; *faran*->to fare; *fram*->from; *hāl*->hail; *hām*->home; *hat*->hot; etc. Such changes in English may well have been produced by the heavy infusion of the Norman language after the Conquest in 1066 but, nonetheless, we see that it is not easy to maintain a simple *a* and *ā* in speech, despite (widespread)

⁷ It is very difficult to see how the termination *-tras* could be corrupted into *-tur*. The IE linguists’ supposed original **-ros* for gen sing is entirely conjectural and as such valueless.

literacy.

Let us now turn to the consonants. We shall examine the so-called labio-velars which IEL postulates for PIE and the retroflex or cerebral stops which are present in Sanskrit but are not at all recognised as PIE by IEL and are regarded as intrusions from non-IE languages. (The AIT of course ascribes them to “natives” whose speech converged with Indoaryan – so Hock 1996 - and gave the cerebrals to Sanskrit.)

18. The Sanskrit phonological system has unique regularity. The five places of articulation engender not only vowels but also various types of consonants combining the sound of breath and of voice. (I shall not examine the nasals because this issue would take us too far.) Thus this highly ordered phonology has five vowels and five sequences or families of consonants each corresponding to a vowel. The velar/ guttural *kaṅṭhya* family(corresponding to अ *a*) has क *ka*, ख *kha*, ग *ga* घ *gha*, where the first is a mute sound, the second mute aspirate, the third voiced and the fourth voiced aspirate (the second and fourth being called *mahāprāṇa*). Similarly the tālavya ‘palatal’ family(vowel *i*) has च *ca*, छ *cha*, ज *ja* and झ *jha*. Similar too is the third family(vowel *ṛ*) *murdhanya* ‘retroflex/cerebral’: ढ *ṭa*, ढ *ṭha*, ढ *ḍa* and ढ *ḍha*. We find similar families for dentals(*ta*, *tha*, *da*, *dha*) and labials(*pa*, *pha*, *ba*, *bha*).

In adding an -a to every consonant I follow the NIGT and not the modern IEL which persists in presenting these phonemes without the -a. The reason is very simple and is contained both in experience and in the very terms “consonant” and “stop”, used to denote these sounds. Unlike vowels which sound by themselves, without need of support other than desire and supply of air in the outgoing breath, a consonant cannot sound by itself, without the aid of an immediately following vowel. The term ‘stop’, on the other hand implies that it stops the preceding sound (of a vowel, as in *book*, *eat*, *hitch*, *lock*, *up* and the like). We have grown so used to our speech habits that we think stops like *k*, *j*, *t*, *dh*, *b*, etc are independent and distinct sounds. They are not: they cannot be pronounced on their own! Our misconception is based on three things: (a) We have grown used to seeing the different symbols in writing. (b) Our vocal instruments take a distinct (though not always correct) position for their articulation. (c) We often add an indistinct vowel or breath-sound at the end or turn a voiced stop into a fricative: thus *back* becomes in speech *back-ə* or *back-h* and *lag* becomes *lag-ə* or *laʃ* – and so on. Every one of these stops acquires in addition other qualities (and thus changes) according to the sound environment in which it is articulated: thus *wind-jacket* sounds as *wiñ-j-jacket* or else *wind-ə jacket* or *wind-h jacket*. Hence the addition of *a* (> *ka*, *ja* etc) is strictly necessary.

19. The consonants are independent and distinct sounds but only if they are articulated with an immediately following vowel.⁸ In every other case, before a pause (i.e. at the end of a speech unit), they are unpronounceable and we know what is intended by virtue of the context, when others speak, or by the position of the vocal instruments when we ourselves speak. One has only to experiment for a short period.

20. Another important aspect is that some consonants in Sanskrit were most probably pronounced in ancient times quite differently from what we are accustomed today. An obvious example is व *va*, which was originally given as a labial but is now pronounced as a labio-dental (and is so found in many modern languages like E ‘vivid, rove’ etc). Very different were, probably, the ūsman (=sibilant) श *śa*, ष *ṣa* and स *śa*. First of all, if one experiments, one will undoubtedly discover that these are not strictly stops (= *sparsa*) but can go on sounding like nasals and vowels. Then one finds that the so-

⁸ Here, throughout, I refer only to the sounds contained in the *pratyāhara jhay* of the *mahesvarasūtras*. H. H. Hock rightly calls them “nonsyllabic” but includes other sounds, like nasals, which can be pronounced without an immediately following vowel (1991: 23).

called modern dental *s*, as in E ‘ass, sustain’ etc, is not dental at all (like *ta* or *da*) but is pronounced with the back of the front-part of the tongue curved upward and almost touching the upper gum while the tip of the tongue touches the lower front teeth! The sound in E ‘she, shoe, wash’ etc, again, has little to do with S *śa*: the mode of articulation of the modern sound *sh* differs very little with regard to place and effort from that of the modern *s*. The S *śa* was called *ūṣman* not for nothing: for, if pronounced on the basis of *i*, it is a hot and spirant sound. Please experiment.

Actually, the Sanskrit palatal stops could not have been the sounds used today – in India or elsewhere. S च *ca* is often said to be like the sound in Italian *citta* ‘city’ or E ‘chop, each’ etc; then another *h* is added at the end to give the S छ *cha*. These modern sounds are pronounced much like the sibilant *sh* the difference being that with the stops there is contact. All palatal stops *ca*, *cha*, *ja*, *ja* when pronounced on the basis of *i* are quite different sounds from those we ordinarily use. When speaking mechanically without really attending, as most of us usually do, it is very easy to utilize only a small segment of our vocal machinery so as to move the jaws, lips and tongue as little as possible. I feel certain that the original Vedic speech and the earlier PIE sounds were quite different.

Today, we have projected back our own rather lazy sounds resting content in our delusory confidence. The IEL gives the palatals with the symbols *k'*, *k'h*, *g'*, *g'h* thus showing the variety of sounds that approximate the velars or gutturals; but this is theoretical without a good description of practical pronunciation or, at best, another easy and lazy variety. With some attention and on the basis of *i*, a different variety for S *ca* (and the rest) arises that is intermediate between the IEL *k'* and the modern English *ch* (as in ‘itch’ or ‘chop’). If we really want to investigate ancient pronunciation (=phonetics) we must not be content with symbols on paper but first must learn to put aside our own mechanical speech habits.

21. The modern IEL postulates, among other questionable entities, a series of stops called “labio-velars” (Watkins, p xvii; Szemerényi, p 69; etc). These are indicated by the letter-symbols *g^w*, *k^w*, *g^{wh}*, *k^{wh}*⁹. These conjectural consonants seem totally unnecessary for several reasons, one of which is most fundamental: they are simply unpronounceable. (Note also that the series has no corresponding vowel.) Let us see.

A “labio-velar” consonant implies the simultaneous use of the back of the tongue (and mouth as for *a* and *aka*) and of the lips (as for *u* or *upu*). Is this a unitary sound like *gh(-a)* or something else?... The very notation *g^w* or *k^w* etc indicates (to me) two immediately consecutive but quite distinct sounds, a consonant proper and a vowel-glide. Indeed this is what one hears when attempting to pronounce any one of them. What is, for example, the sound of **g^wā* (or **g^wem-*) ‘to go, come’ (Watkins, 33: no asterisk)?... Whatever twists and tricks I use, and however swiftly, holding the mouth open and pursing the lips, I get a good variety of *g-u/-vā*, *gō/gō* or plain *gā* but not a unitary consonant *g^w* (different from velar *ga*) and the vowel *ā*. Or take **k^wi* (‘who’: Watkins 46: no asterisk): again I obtain *kū/-v-i u-k-v-i*, *kū* and so on. Please experiment. (The fact is that no IEL book says how exactly these sounds are pronounced.)

22. Another very curious example (not from the labio-velar series) is *dhghem* (Watkins, 20): this means ‘earthling, man’ and the like and is a cognate (indeed, the origin) of Gk *chthōn* ‘earth’ (>autochthon ‘indigenous’), L *homo* ‘man’ (and ‘humus, humility’ etc) and S *kṣām-* ‘earth’ (also *kṣam*, *kṣamā* ‘endurance’). How does one pronounce *dhghe*? ... The first sound I got is *dghe*, with the *d-* slightly muted. Then I got *dhāghe* or *δghe* (affricate with *-ghe*) or an infinitesimal but audible pause after *dh-* and before *-ghe* – but not *dhghe* in the way I get other initial or medial conjunct consonants. The aspiration in the consonant *dh* requires, in speech, immediate release with a vowel or semivowel nasal and vowel. Even Szemerényi acknowledges the difficulty of this initial conjunct.

Watkins gives also a conjunct with a labio-velar consonant, *dhg^whei-* ‘to perish’. This is the

⁹ So Szemerényi, p 69. Baldi gives the series as *k^w* *g^w*, *g^{wh}*, *k^{wh}* (p 17).

distant origin of “phthisis ‘consumption’ (<Gk *phthi-*) and S *kṣī* > *kṣīyate* (*kṣināti*). Here one meets insuperable difficulties. Don’t bother to try this. Even attempts to pronounce *phthisis* will produce at least an affricate, *fthi-* or *pthi-* or *pθi-*.

23. It is possible that the speakers of PIE in very ancient times had extra-ordinary abilities and could pronounce labio-velars as unitary consonants or conjuncts of the type *phth* or even *dhg^{wh}* – but no more I think than that, in some very distant epoch, some trees had a vagina and could get impregnated by men, whence arose the myths that humans emerged from trees. In theory, on paper, such sounds look fine, but in reality they are unpronounceable.

Sanskrit has of course dhātus ending in aspirates *indh*, *īnkh*, *math*, *stubh*, etc, but these are theoretical or mental concepts rather than words used in speech and in the *Dhātupāṭha* are invariably given with a following vowel *-indhī*, *īnkī*, *mantha*, etc. In actual speech, we find *anuṣṭu-p*, or *stubdha* ‘hymned’ (where the aspiration is transferred onto the next unvoiced consonant *-ta* and this appears now as the voiced *-dha*) or *anu-ṣṭhubh-yām* ‘with two anuṣṭubhs’ (where a semivowel follows). These and similar combinations are pronounceable¹⁰ For this reason, Sanskrit preserved them when the other IE branches lost them completely except for the *tha*, *pha*, *cha* (=kha=χα) preserved in Greek.

24. Just as the other IE branches lost the voiced aspirates completely, it is possible that they lost the murdhanya consonants also. It is possible of course, that these sounds came into Sanskrit from non-IE languages. The usual view is found in MacDonell: “The cerebrals are entirely secondary, being a specifically Indian product and unknown in the Indo-Iranian period. They are probably due to aboriginal, especially Dravidian influences” (p8). If so, this must have happened at a very distant past since the *RV* has many words with these sounds, though *ṭa*, *ṭha*, *ḍa*, *ḍha* are not initial. However, I doubt this because no “Indo-Iranian” period is attested but is only a conjecture and because there are other considerations.

To begin with, as Hock points out, “retroflexion is found in many European forms of speech... but is limited to local and regional dialects” (1991: 78). So there is nothing very exotic or South Indian about this vocal phenomenon. Since it has not been borrowed by modern Europeans from “aboriginal natives”, we need not assume that the ancient Indoaryans borrowed it from non-IE speakers (whose existence is assumed only on the “evidence” of such “borrowed” vocables). At most, what may be said is that the Indoaryans developed themselves these sounds. Since PIE had the retroflex *ṛ* and *ra*, there is no reason, theoretically at least, why it should not have had the consonants belonging to this family. Sanskritists are quite habituated to the sight of retroflex *ṇ* or *ṣ* following the vowel *ṛ* : *prāṇa*, *vṛnoti*, *ḍṛṣṭi* (where the influence reaches even *-ṭ-*), *vṛṣṇi* (loc sing of *vṛṣan*), etc. Common phenomenon is also the cerebral *-ṣ* after an *i*, or *u* as in the loc pl *nadīṣu*, *manuṣu*, etc. However, we find many situations where the phenomenon does not occur. Thus we have *nṛṇām*, *pitṛṇām* etc but *nṛn* and *pitṛn* (acc pl) where, in the latter case, one would want to keep one’s tongue in the same position (**nṛṇ*) rather than flick it forward for the dental nasal. True, such examples are limited and there are the rules of grammar – but why have this rule?... The form **pitṛṇ* could be recognized just as easily as *pitṛn*. Then, in contrast to *ḍṛṣṭi* we have *ḍṛṣṭya* and in contrast to *vṛṣṇi* we find *prṣṇi*. Also we find *bṛṣaya*, the dark demon, and *bṛṣi* ‘pad of grass’; also *pusta-ka* ‘manuscript’ without the *-ṣṭ-*, which one expects after *u-* (as in *manu-ṣu*, above, and *pu-ṣṭ-i* ‘growth’). Are we to suppose that such cases were forgotten somehow or retained for specific purposes? ...I do not think so.

Misra informs us that an intervening *ṛ* prevents cerebralization in *hiṃsā* ‘injury’, *pumṣām* ‘of men’, and explains that forms like *havīṃṣī* ‘oblations’ (neut, pl) are innovations analogical to *bharanti*

¹⁰ IEL says that some at least sandhi processes in Sanskrit are due either to losses or innovations. This may be true to some degree, but long experimentation with Sanskrit sandhis shows that, on the whole (barring some cases of hiatus), they are very natural. However, a discussion of this topic too must be put aside at present.

'those bearing' (neut, pl) (1975: 76), but in view of so many other anomalies one wonders whether these explanations suffice.

25. Then, there is another strange phenomenon. The \sqrt{muh} 'be stupefied' has for its ppp *mugdha* in the *RV* and *mūḍha* in the *AV*. Here, it can be argued, we see the process of $\dot{d}h$ appearing and establishing itself in Vedic since the *RV* is generally older than the *AV*. This may be true but the argument is not very convincing. In general, yes, large portions of the *AV* are younger than the *RV* just as Bks VIII, IX and X of the *RV* are younger than other Maṇḍalas. But, in general, variations of forms may be due to differences in regional and dialectal variations in pronunciation and not necessarily to a time differential. Second, and more important, there is $\sqrt{ruh} > rōhati$ 'grows, ascends' (given in Mayrhofer as *ródhati*), which has only ppp *rūḍha* (*roḍhum* and *rūḍhvā*) in Vedic. Here again, it may be argued that other, earlier forms (**ruddha* / **rūgdha*?) disappeared. Perhaps. But we find also $\sqrt{mih} > méhati$ 'urinate, emit semen' with ppp *mīḍha* and ppa *mīḍhvas* only in the *RV*. Moreover we find $\sqrt{rih} > reḍhi$ and its allomorph $\sqrt{lih} > leḍhi$ 'licks' with ppp *rīḍha* and *līḍha*. And *mih* and *rih* are roots of indubitable IE pedigree: for S *mih*- Av *-maeza'ti*, Gk *omich-*, L *meiere*, Gmc *migere*, etc; for S *r-/l-ih*- Av *road-*, Gk *e-leuth-* 'free' and *leichō* 'lick', Gmc *liud-* and *liut*, etc.

Thus we find perfectly IE roots with derivatives that have the retroflex consonant $\dot{d}h$ (or $\dot{l}h$). How come?... (MacDonell gives conjectural reconstructions by way of explanation in §8 and §15i, pp 8, 18, but the plain truth is that we do not know).

26. There is a principle of IEL, more or less tacitly accepted, that linguistic change is fairly general and regular. In the example of $\dot{d}ha$ we see that \sqrt{muh} has both *mugdha* and *mūḍha* and that it can be claimed that here is proof or indication of the change (whether native internal development or borrowing from non-IE languages). We also find roots that do not have ppp with *-gdha* (e.g. *mīḍha*, *rīḍha/līḍha* and *rūḍha*). Here it may be claimed that the older forms with *-gdha* went out of use. However, if this change was fairly general and regular, then we should find ppp with $\dot{d}ha$ for many other roots of similar form, i.e. ending in *-h*. We have certainly $\sqrt{t(n)h}$ 'crushing' > ppp $\sqrt{t(n)h}$ 'crushed' and $\sqrt{d(n)h}$ 'be/make firm' > $\sqrt{d(n)h}$ 'made firm', etc. But we also have *dih* 'smearing', *duh* 'extracting', *snih* 'be moist, fond of' etc: these have ppp in *-gdha*. Obviously these latter were not affected in the least by the "general and regular change".

I think we should forget the "general change". In our examples, some roots have derivatives with *-gdha*- and others with $\dot{d}ha$ ($\dot{l}ha$). Some roots that have no apparent IE cognates, like *dah* 'burning', have ppp in *-gdha*: if these were of non-IE origin, they, I would expect, should be among the first to exhibit the change to $\dot{d}ha$ (but they don't). Then some roots with obvious IE cognations like *mih* and *rih/lih* have ppp in $\dot{d}ha$.

Another case is interesting. MacDonell cites *dū-ḍhī* 'ill-disposed' and derives it from **duz-dhī* (=dur-dhī). This may have been so. But then we find so many rigvedic words that do not show such a change: *dur-dhita* 'untidy', *dur-dṛṣṭka* 'looking bad', *dur-dhara* 'difficult to carry' etc. MacDonell cites also *nī-ḍa* 'nest' (< **niz-da*) but again we find in the *RV* *nir-dī* 'fly away' *nir-duh-* 'extract', etc. So, finally, here we have $\dot{d}a$.

To me at any rate, these evidences suggest that Vedic had from the earliest times the retroflex consonants $\dot{d}a$ and $\dot{d}ha$ and it is unnecessary to speculate that it borrowed them from elsewhere or that they resulted from a change of dental *da* and *dha* (or whatever). (I do not, however, rule out that there were other, non IE languages and that these probably influenced Vedic; but this is another matter.)

27. We now have retroflex sounds *ṛ*, *ra*, *ṣa*, *ṭa*, *ḍa*, *dḥa*. Given the regularity of Sanskrit phonetics, we should expect to find the retroflex consonant *ṭha* also. The aspirate *ṭha* is admittedly comparatively rare and it need not detain us longer. But we must note that *ḍa* is found also in situations other than those which MacDonell cites: e.g. words like *daṇḍā* ‘stick, staff’ (and its cognates), *naḍā* ‘reed’ *√pīḍ* ‘pressing’ (and its cognates) all three in the *RV*. For the root *pīḍ* Mayrhofer gives an IE cognate in Gk *piéz-ō* ‘I press’.

All these evidences suggests not only that that the cerebral phonemes were well-established in Vedic but also that they probably were PIE. That Vedic borrowed from non-IE languages is a distinct possibility. But unless we find early attestation for non-IE languages of approximately the same period as the *RV* (i.e. sometime in the fourth millennium BC), or unless we find pre-rigvedic Indoaryan texts free of cerebrals (e.g. **danda*, **mīdha*, **ledhum* etc), it is utterly useless to speculate about this matter. There are words with cerebrals appearing in post-vedic texts and these may be intrusions into Sanskrit from non-IE languages (i.e. Munda and Dravidian) but even in these cases there are strong reasons for caution. Just because a word does not appear in the *RV* or the *AV* it does not mean that the word was not in the early language: it is very doubtful that these Saṃhītās contain all the words then available. But if a word (that has no IE cognates at all and cannot be reduced to a Sanskrit dhātu) appears in late classical texts, that is after the sūtras and the epics, then it is fairly certain that it is a loan. Another reason for uncertainty is the chronology. Under the distorting influence of the AIT the chronologies given for the Saṃhītās, the Brāhmaṇas, the Sūtras, the Epics etc, are far too recent. Such dates should no longer be tenable. A third difficulty is that the Epics and a work like the *Manusmṛti* may in their finished form belong to c 100 BC or 100 CE, but they most certainly contain much material that goes back a very long time. So the hunt for foreign words in Sanskrit is at present no profitable pursuit – as was indeed shown by R. P. Das (1995).

28. The latest IEL does not give, I think, importance to the principle of the inner organic coherence of a language. The basis of this is the root or dhātu (“seed-” or “elemental form” might be a better term). This principle is observable even in non-inflected modern languages like English. The English morpheme *act*, comes from French *acte* and Latin *actum*, and so goes back to cognates of L and Gk *ag-*, OIr *aig* S *aj* etc. This can be taken as a root generating numerous verbal and nominal forms like *act-s/-ed/-ing*, *act-ion/-ive-ly* *act-iv-ate/-ity*, etc. Thus all these words can be said to derive from the “root” *act*.

Early sanskritists stressed the importance of the dhātu in Sanskrit. This is evident in (Sir) Monier Williams’ *A Practical Grammar of the Sanskrit Language* (4th ed, 1876: 51-5, §§ 74-6). In this *Grammar*, Monier-Williams devotes many pages in showing how, in the line of the NIGT, the roots engender primary (*kṛt*) and secondary (*taddhita*) derivatives with various suffixes and with the corresponding ablaut of the radical vowel (pp 57-75, §§ 80-7). The same scholar arranged, as best he could with the limited resources and means of his time, his *Sanskrit-English Dictionary* (1899) on the basis of the dhātu, giving it in bold letters, then giving derivatives and cognates under the dhātu – but not always as fully and successfully as might be done. Then W.D. Whitney presented the roots and derivatives under them in his own publication of 1885. Instead of continuing and perfecting this practice, subsequent sanskritists barely mention the root or the process of word-formation. M. Mayrhofer’s *Wörterbuch...* (=Dictionary) is excellent in concentrating the results of two centuries of research in the Sanskrit language by numerous (mainly Western) scholars. But here verbs are given in the third person sing (= *prathama puruṣa* in the NIGT) : e.g. *ṛṇóti*, *degdhi*, etc without mention of the root; and although he gives cross-references, the nouns, adjectives, etc are also given without any mention of the root.

29. T. Burrow, whose *The Sanskrit Language* is still the authority in this field, wrote: “Chiefly owing to its antiquity the Sanskrit Language is more readily analysable, and its roots more easily separable

from accretionary elements than is the case with any other IE language” (1973: 289). The NIGT of course recognized the significance of the roots and early on collected them in “root-lists” *Dhātupaṭha* (Palsule 1961). Indeed, no other IE language can be analysed to the same degree and disclose roots, nor show a regular operation of principles whereby nouns and verbs are formed – at least not as in Sanskrit. Suffice it to say that in Greek, which has, more than any other early IE stock, many common features with Sanskrit (despite their *kentum-satəm* difference), it is very difficult, if not impossible, to extract clear and definite roots or see constant principles in the formation of nouns and verbs: a hint of this is to be found in §§ 12-14 above. Sanskrit also must have suffered attrition and losses of words and roots, while many nouns and indeclinables cannot be assigned to a root at all. Nonetheless, the roots, affixes, suffixes and terminations are clearly separable in most cases.

An important aspect is that many roots, particularly those (but not all) of class II *ad-ādi-gaṇa*, function as stems of both verbs and nouns. Thus √*dviṣ* ‘hating’ can take immediately the terminations of noun and verb: e.g. *dviṣ+s* (nom sing) > *dviṣ* ‘foe, hatred’; *dviṣ+mas* > *dviṣmas* ‘we hate’. Of course, for the strong persons the stem undergoes the ablaut of the radical vowel into the guṇa grade: thus, *dviṣ+mi* > *dveṣ-mi* ‘I hate’. The operation of sandhi brings about other changes as well: e.g. *dviṣ+si* > *dveṣi*.

Then we have √*viś* ‘setting, entering’ (class VI *tud-ādi-gaṇa*). This gives us fem *viṣ* (nom sing) ‘clan, settlement’. This same root takes the suffix *-a*, which necessitates the guṇa (or vṛddhi) grade of the radical vowel, and gives the primary derivative noun *veśa* (masc) ‘settler, settlement’; with the addition of the affix *-ya*, which necessitates the vṛddhi (sometimes the guṇa) grade, the stem *veśa* gives now the secondary derivative (masc) *vai-śya* ‘settler, producer/trader’. Thus Sanskrit has three levels of nominal (and adjectival) stems – radical (no change in root-vowel), primary and secondary

derivatives (with necessary changes in the root-vowel).¹¹

Similar principles regulate the formation of the verbal stem according to the class in which the root belongs. This \sqrt{vis} , which is class VI, has its vowel unchanged but takes the affix *-a-* and then the terminations: thus $vis+a+ti > visati$ ‘one settles’; it has a strong stem with guṇa grade *ves-* (perf *vi-ves-a* ‘one has settled’) but not in the present tense and the imperfect. A root of class I *bhv-ādi-gaṇa* like \sqrt{cit} takes the affix *-a-* too, but also guṇa grade in the stem of the present and imperfect: $cit+a+ti > cet-a-ti$ ‘one perceives, is conscious of’. Apart from the usual tenses, moods and voices (active, middle and passive), found in Greek and Latin, the Sanskrit verb-system has causative (*cet-āya-ti* ‘makes someone else conscious of’), desiderative (*cí-kit-sa-ti* ‘wants to be conscious’) and intensive (*cé-kit-e* ‘highly/repeatedly conscious’). Although some traces of the one or other of these aspects are found in the other IE branches (e.g. Gk *potaomai* frequentative or intensive of *petomai* ‘I fly’ and *gen-ná-ō*, ‘beget’ causal of *gi-gno-mai* ‘be born, become’), these languages seem that much poorer for not having them in the full measure of Sanskrit.

30. The concept of the root and of the organic coherence of a language implies, of course, as has been evident in the preceding discussion, the presence of terminations for nouns and verbs, of suffixes, prefixes and affixes of various kinds. It is obvious, for example, that different terminations for the verb signify active or middle voice (*parasmai-* and *ātmane-pada*), different moods and different

¹¹ The \sqrt{v} -grade forms are far less common in the *RV* than the guṇa-grade but they increase in the later language. Apart from *-ya* other suffixes that (may and often do) necessitate \sqrt{v} -grade are *-a-* for the formation of abstract nouns, patronymics etc (e.g. *manu > mānava*, *suc-i > sauc-a*; *visva- > vaista-*), *-aka* (e.g. $\sqrt{tap} > tāp-aka$ ‘heat-producing’; $\sqrt{nī}$ ‘leading’ $> nāy-aka$ ‘one who leads’), *-eya* for adjectives (e.g. *āgn-eya* ‘of agni’; *pauruṣ-eya* ‘of man’), etc.

Now look at nominal formations in Greek from verbs with apparently very similar stems, given alphabetically. Some like *bdeō*, *xeō* etc have been left out. Observe that some show no grade change and others show totally unexpected changes.

i) *dé-ō* (and redupl *didē-mi*) ‘bind’ (=S $\sqrt{dā} > dyati$): **dé-ma** ‘band, rope’; *de-s-is* ‘the binding together’, *de-s-ma*, *-s-mós* ‘bond’; (*dia-*)*dē-ma* ‘band around hair’; *de-téo/ -tó-* ‘what should be bound’. (No *do-smós* masc here, as we might expect from the rule in §15, above.)

ii) *zé-ō* ‘boil’ (=S *yas-yati*): **zé-ma** ‘fermentation, decoction’; *zé-s-is* ‘the boiling’; *ze-s-tó-* ‘boiled, hot’.

iii) *ké-ō* / *kei-ō* (thought to be desiderative of *kēi-mai* ‘lie down’ =S *sī > sete/sayate*): **koi-t-ázō** ‘put to bed’, *koi-t-ē/-t-os* ‘bed’, *koi-t-ōn* ‘bed-chamber’.

iv) **né-ō** (*ná-ō* ‘flow’) ‘swim, float’ (?= S $\sqrt{nu} > navate/nauti$ ‘move’): **naūs** ‘ship’ (= S *nau-s*) and deriv(ative)s from stems *nā-/ne-/nē-/nau-*; *nau-t-eía* ‘naval matters’, *-t-ēs* ‘sailor’, *-t-i-* derivs pertaining to ‘naval’; *neū-s-is* ‘swimming’.

v) **plé-ō** (*pleí-/pló-ō*) ‘sail’ (=S $\sqrt{plu} > plavate$): **pleū-s-is** (very late) ‘sailing’; **plo-ízō** ‘sail on sea’; **plō-ás** ‘what is floating about’; *plō-ízō* ‘sail’, *-(s)i-mo-* ‘fit for sailing’; *plō-t-ēr* ‘sailor, floater’, *-t-archos* ‘shipmaster’, *-t-is* ‘life-belt’, etc.

vi) **pné-ō** (*pnē-ō-*) ‘blow, breathe’: **pneū-ma** ‘blast, air’ and derivs; *pneū-s-is* and derivs from *pneus-*; **pno-é**, **pnoi-á** ‘blast, breeze, breath’.

vii) **rhé-ō** (*rhei-ō*) ‘flow’ (=S $\sqrt{sru} > sravati/si-sar-ti$): **rheu-ma** ‘current’ and derivs (cf ‘rheumatism!’); *rheū-s-is* ‘flowing’ (very late); *rho-é*, *-os* (Cypriot *rho-F-os*, Attic *rhous*) ‘stream’; **rhū-ax** ‘stream, torrent’, *-as* (adj) ‘fluid’.

viii) **ché-ō** ‘pour’ (=S *hū > juhōti*): **cheū-ma** ‘stream, flow’; **cho-é** ‘pouring, libation’ and compounds; *cho-eús*, *-ós*, **choū-s** ‘soil, earth’; *cho-á-nē*, *chó-nē* ‘melting pot’; **chú-dēn** ‘in floods’, *-dāio-* ‘poured in floods, vulgar’; *chu-lós* ‘juice’ (> ‘chyle, chylific!’); **chu-ma** ‘the fluid’, *-meia* ‘melting alloys’, *-mós* ‘juice’; *chú-(n)nō* ‘pour’ (late); *chū-s-is* ‘shedding’; *chú-t-ēs* ‘metal-caster’; *chu-t-lázō* ‘anoint, *-lon* ‘liquid’; *chu-t-ó-* ‘poured, flowing’; *chutra/-tros* (also **kú-thra**) ‘earthen pot’; *chutréus* potter. Also *ko-chu/-déō/-zō* ‘stream forth’ (?intensive with redupl).

persons; or that the prefix *a-* (augment) signifies past tense (*á-cet-* ‘did, was-doing, perceiving’). It is also obvious that affixes for noun-stems signify the nature of the noun – whether it denotes an agent (*bhar-tṛ* ‘bearer’), an abstraction (*bhṛti* ‘the notion of bearing’), an action (*bharaṇa* ‘bearing’), etc. These are well known aspects.

31. The concepts of root and of the organic coherence illuminate another aspect of comparative studies, one little noticed in the numerous publications. There are many words in the IE languages that have no obvious derivation from and cannot be linked to a root. I take two very common examples the cognate stems of which are to be found in all IE stocks, except Hittite and Celtic: ‘daughter’ and ‘son’. The two are, in a sense, orphaned, without parentage, as it were, in all the branches, except Sanskrit.

Thus ‘daughter’ appears in Arm *dustr*, Gk *thugatēr*, Oltal *futir*, Goth *dáuhtar*, etc. But, despite intensive searches, in no language is found a root or verb-stem to connect with this word. Only Sanskrit has the root *duh* from which not only *duh-i-tṛ* ‘daughter (milk-maid)’ but also several other nouns (*dugha* ‘cow’, *duh* ‘milking, granting’, *doha* ‘the milking, milk’, etc) and a fully conjugated verb (*dogdhi* ‘milks’, *duhīyāt* ‘may one milk’, *du-doha* ‘one has milked’ etc). Similar formations are found with *vas* ‘eat’ > *aṣ-i-tṛ* ‘eater’, *√grah* ‘seize’, *grah-ī-tṛ* ‘seizer’, *√pū* ‘purify’ > *pav-ī-tṛ* ‘purifier’, etc. (Two more feminines, *mātr* ‘mother’ and *svasṛ* ‘sister’ are inflected like the masculines *pitṛ*, *bhrātr* ‘brother’.) Some remotely possible cognates in other IE stocks have been proposed, like Gk *tugh-ánō* ‘occur’, OIr *dūal* ‘suitable’, Goth *dáng* ‘useful’, etc but all are uncertain (Mayrhofer, under *dogdhi*).

The noun *sav-i-tṛ* ‘impeller, begetter, sun’ is another such formation from *√sū* (in *Dhātupāṭha*: *prasavaivaryayoḥ* ‘generation and dominion’). But *√sū* gives also *sūnu* ‘son’. This stem too is common to most IE stocks: Av *hunu*, OSl *syn-*, Lith *sūnus*, Gmc *sun-* and Gk *hu-iós* and TochB *soy-*. Here too Sanskrit has a fully developed verb *suvaṭi/sūte* ‘vivifies, begets’ and numerous other derivative nouns apart from *savitṛ*: *sava* ‘stimulator, impulse’, *sūti* ‘production, etc. The noun *sū-nu* is a normal formation with *-nu* as *√grdh* ‘be greedy’ > *grdh-nu* ‘eager’, *√bhā* ‘shine’ > *bhā-nu* ‘shiner, sun’, *viṣ-ṇu* etc. Some IE branches have a cognate verb but with different meaning: Av *hunāīti* ‘seeks to obtain, prompts’; Hitt *šūuāi* ‘push, press’ (perhaps cognate with S *√su* ‘pressing’), Lith *su-k-ti* ‘turn’. Old Irish has the verb *so(a)id* ‘turn, twist’ and the noun *suth* ‘birth’ but not a cognate for ‘son’. Greek, again, has no other cognate and although it has the corresponding suffix *-nu-s*, as in *thrē-nus* ‘foot-stool’, *lig-nus* ‘murky fire’ (>lignite), it has only the decayed form *hu-i-os*.

One could cite more examples. The common stem for ‘foot’ is in Sanskrit *pād-* (=that which falls down) and is linked with *√pad* > *padyate* ‘falls (down), goes’. But while some IE branches have the cognate stem for the noun (Gk *pous/pod-*, L *pēs/ped-*, Goth *fōt-us* and Hitt *pata-*) but not the verb, only three have something of the verb (OE *ge-fetan* ‘fallen’, OSl *padǫ/pasti* ‘fall’ and Toch B *pāt-k*). We find a similar situation with S *√man* > *man-u* ‘man, thinker’, *√mūṣ* > *mūṣ-aka* ‘mouse, stealer’, etc.

32. From these last considerations apart from anything else, we must conclude that Sanskrit is older and closer to PIE than any other branch.

In a paper published in the *Journal of Indo-European Studies* where I examined the cognate names of deities and some mythological themes in IE languages, I wrote: “no major mythological (or religious) feature appears in two or more branches to the exclusion of the Vedic. On the contrary, feature after feature appears in the RV in common with one or two other branches to the exclusion of the others – sometimes with the Greek and the Roman, sometimes with the Roman and the Celtic and so on... I do not consider [IE] traditions other than the Vedic as very reliable and would not draw definite conclusions from them unless the issue is attested in the Veda... I would concur with... ideas for the PIE period only if they were present in the Veda too” (2001: 285, 288). Meillet (1908, and many another subsequently) gave as PIE several words in Latin, Germanic etc, but not in Vedic; but many of those can be linked with Vedic words and those that cannot, should be held suspect as coming from non-IE languages.

I hold the same for linguistic matters and add that, since the Vedic tradition has preserved so much more in comparison with the others, a feature present in Sanskrit only (and absent in the other IE branches) does not automatically and necessarily mean that it must be rejected or held suspect as a loan from other, non-IE stocks (e.g. the cerebrals; lexical items in Burrow 1973).

33. In the end the method of Linguistics, just as of any other discipline or science, entails collection and interpretation of data and the whole process is supported or coloured by assumptions, mostly taken for granted. One of the assumptions is that “my method” is right. But this “right method”, which is right in a well defined area, does not take into account a larger area containing the first and an even larger area containing the second and so on: our method is coloured by our belief that we are dealing with the whole, when, in fact, we are not, and therefore cannot arrive at sound knowledge, since sound knowledge can only be knowledge of the whole. For example the study of an ear separated from the whole organism of which it is a member will doubtless reveal much about the structure and composition of the ear but not much about its true nature which involves its function in the whole organism. Another assumption is that the measurable and ever-changing material world is the only reality and that anything not amenable to measurement by our senses cannot be the subject of objective or “scientific” inquiry. But, in fact, the ultimate observer, the ultimate consciousness/awareness which observes or has cognizance of all bodily and mental movements, including the measuring, evaluating and concluding, is itself not subject to scientific enquiry since it is the ultimate observer and is in no way observable or measurable by the senses or any of the most advanced instruments.

The study of Language cannot be divorced from that of the ultimate or essential nature of Man. The assumptions about the latter will inevitably colour the study of the former. The general view today, the “scientific view”, is that Man, *homo sapiens sapiens*, has “evolved” from some ape-like creature by the processes of natural selection and that consciousness and language arose more or less accidentally. This is no more than a belief based on the interpretation of certain data consisting of very few fragments of fossils and bones: it is not something “scientifically observable/demonstrable”. The molecular biology and biotechnology which are supposed to be “scientifically observable” are in fact just as insecure (Gibbons 2001: 1052; also Brooks 2001: 410-411). Another “belief” holds that Man issued from the substance of the Supreme Being (=God, Absolute) but lost his initial perfection descending gradually to a lower state¹²: this is termed the “creationist view” by the adherents of the “scientific view”. Following certain religious, mythological and philosophical traditions, the “creationist view”, putting spirit above matter, says that this creation-process repeats itself in cycles. The “scientific view” adopts the rectilinear view of Judaeo-Christian theology (but without the theology itself, i.e. without God) that the world appeared once and has been “evolving” ever since and that man emerged at one point in time – once only, at a date which changes every few decades according to the palaeontological finds, i.e. about 40000, 80000, 100000 and now about 150000 BP. In this view Language itself “evolved” out of animal grunts and bird twitterings after the vocal machinery and brain structure became sufficiently and fittingly developed (Hawkins and Gell-Mann 1992: 21-83).

34. Personally, I know nothing of Man’s origin – how and when he appeared on this planet; and I do not think palaeontologists and kindred scientists know either. I incline towards the Vedic Tradition which holds that man is engendered from the Supreme Being and has for his real Self the substance or spirit of that very Being (*ayam ātmā brahma*); also that the process of creation and “evolution” (“devolution” I would say) is cyclical in very long periods called *yugas* and *mahāyugas*; and that human language reflects divine Speech by which all things come to be in the material world. This

¹² The bibliography has increased enormously in recent years. For a recent overview of evolution see Gribbin and Cherfas 2003 (who at one point express doubts about the Darwinian theory. For the creationist view see Cremona 2003).

inclination is not a capricious blind belief. For, quite apart from the ancient mythological statements, in our brief embodiment in this world we can observe many small and large cyclical phenomena like the day and the year, the seasons with their accompanying flowering, fruition and fall, the succession of seed and plant and seed, the development and degeneration of nations and cultures and so on; consequently it is not unreasonable to assume recurrence on the larger scale of solar systems and galaxies – projected and withdrawn in the rhythmic breathing of the Primal Cause termed *tad-ekam* in *RVX*, 129. As for the immense power of language one has only to consider a common gross example: the President or Prime-minister of a country gives an order and, upon that, hundreds of thousands of people (vehicles, ships and airplanes) move here and there, killing and being killed, destroying and creating. Finally, since the world displays order at every level, since different types of creatures on our planet have different degrees of intelligence, with human beings at the top rung, and since something cannot come out of nothing, it is not unreasonable to assume that a Supreme Intelligence (=Being) has been at work from the very start and at all stages – just as a poet conceives and generates a finished poem.

35. The Vedic Tradition regards Speech as a divinity, *Vāk*, from its very beginning, in that remarkable document, the *Ṛgveda*. This goddess *Vāk* is identified with the holy-power *brāhman* which has four states, the highest being the most silent and most potent. Simple observation shows that, indeed, all forms of spoken or written language come from thoughts, these from some kind of unformulated, perhaps emotional, knowledge and that again from a silence that is full of potency (= roughly *vaikhari*, *madhyamā*, *pasyantī* and *parā*). It is curious that no other IE branch had any linguistic studies (except Plato's *Kratulos* and the subsequent grammatical formulations of the Stoics) and a divinity of Speech.

When Sanskrit appeared in the hymns of the *RV*, it was already a fully developed and highly complex language – but one already suffering attritions and changes (i.e. devolving to simpler forms). Ancient Egyptian too appeared more or less suddenly c3000 BC as a fully developed language – it too having recognizable roots (Gardiner 1957; Watterson 1993). In fact, all the earliest recorded languages were highly developed – Chinese, Mesopotamian, Greek etc. But subsequently they all changed to simpler systems, streamlining and regularizing declensions and conjugations. Sanskrit itself came in later periods to use more and more complex compounds and much less the inflexions leaving unused the rich verbal forms of the *rigvedic* language – which had already suffered losses. English, again, started as an inflected language but, by about 1500 CE became uninflected and genderless.

It is therefore difficult to see how or why languages started with animal hisses, grunts and warbles, then became very complex media of thought and communication and then, despite literacy which should have preserved the older forms more easily, they devolved into much simpler forms.

The historical beginnings of Man and Language are unknown. However, taking the Vedic *yugas* as framework, I propose this hypothesis. In the *Sat-* or *Kṛta-yuga*, when human beings lived in (near) perfection being of one mind (as the ancient accounts tell us), they had no language such as we know. When that unity was lost in a subsequent age, then arose Language in full panoply, as it were, much like goddess Athena springing out of the temple of her father Zeus. “And the whole earth was of one language and of one speech”, as the Judaic *Old Testament* has it (*Genesis* 11, 1): with the root as its basis, with all three genders and many more verbal aspects than we know, that language could express every possible nuance of human knowledge and experience. Subsequently that unitary language devolved into different dialects losing some or many of its subtle nuances. One of these branches was what we now term Proto-Indo-European, others being perhaps Semitic (or Afro-Asiatic), Austric etc. These languages again devolved into more branches and so on, down to all modern vernaculars.

Today we have specialized “languages” (=idioms) or “jargons” within any one “official” language. When I read books on Genetics and Biology some time ago, I had to proceed very slowly reading and rereading passages and consulting relevant dictionaries, almost as in learning a foreign language. The same holds for Linguistics, Law, Physics, etc. Each “discipline” or field of knowledge

becomes more and more specialized and “foreign” to the common language. This presumably is inevitable, but one wonders at times if we are not living in a new Tower of Babel.

36. As indicated in previous pages, several aspects of Sanskrit and PIE have not been examined: e.g. sandhi or euphony, which in fact arises naturally from the realities of pronunciation; the musical accent; the nasals; the laryngeals, which have not been mentioned at all; etc. However, the examination of all such phenomena would not furnish much more evidence to help us decide the main issues discussed. Much depends, as was said earlier, on one’s basic and total view of human nature and of the world - whether it all is of divine origin and inconceivable intelligence or the result of inexplicable particles and accident and mechanical evolution.

One may ask finally whether it is possible to reconstruct the PIE language, but this seems to be a wrong question. For even if scholars managed this (which I doubt) there are no possible means of verification. Even if tablets with genuine PIE texts were discovered, scholars would compare it with their own latest reconstructions and would accept it as PIE only if it agreed; otherwise they would look upon it as yet another stock of PIE and perhaps would proceed to revise (some of) their reconstructions.

A more pertinent question might be – “Is there some practical purpose for reconstructing PIE”? I do not know. I would learn another language only if I thought it desirable to communicate with people who speak it or to read the literature written in it. Personally, I think this and other reconstructions of Proto-languages are signs of the Tower of Babel. But, on the other hand, human beings are very different and have different values, feelings and desires.

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