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Evidence for the Position of Tocharian in the Indo-European Family?

0. The Problem*

Since the early years of this century it has been clear that features shared by various "branches" of the Indo-European (IE) family often reflect their origin as (relatively) proximate geographical dialects of the protolanguage. The original geographical position of some of those ancestor-dialects has been equally clear; for example, hardly anyone doubts that Celtic and Italic originated as the westernmost dialects of Proto-Indo-European (PIE), or at least the westernmost of those that have left descendants. About the original position of Tocharian, however, there continues to be widespread disagreement (Lane 1970: 73–7; Adams 1984: 395–6; Thomas 1985: 129–30).

There are several reasons for this lack of agreement. Though abundant and accurate information on the Tocharian languages is now generally available, and though an increasing number of Indo-Europeanists can reasonably be called Tocharianists, differences of opinion regarding pre-Tocharian sound changes and the PIE antecedents of Tocharian grammatical categories are still commonplace (for examples see below). To a lesser extent scholars also differ in their reconstructions of the PIE grammatical system, and therefore in their judgments of the relative archaism or innovation of particular features of Tocharian grammar.

But in addition to these substantive difficulties there are also methodological problems. Some of the methods that have been used to investigate the question are remarkably unsophisticated; that the results thus obtained are rather confused should therefore come as no surprise. For example, we should expect that raw counts of shared vocabulary (like that briefly reported in Van Windekens 1976: 3) give results that point in several directions at once; the same might be said of the crude statistical investigation whose results are reported (with due diffidence) in Adams

1984: 396. (On more careful uses of shared vocabulary see section 6.0.)
Insufficient attention has also been paid to the chronology of supposedly
shared changes. Thus, though Georgiev (1981: 291) attempts to link the
palatalization of consonants in Tocharian with the roughly similar pheno-
menon in Balto-Slavic (BS)[1], saying in support of his idea that the
Tocharian change occurred "quite early" (at least in part "during the 3rd
century B.C."), he does not seem to be aware that palatalization in Tocha-
rian occurred AFTER at least a dozen sound changes not shared by BS, so
that those two branches of IE must have been very different when the
Tocharian palatalization occurred – in which case the most likely explana-
tion for the similarity is parallel development[2].

[1] I do not think it is reasonable to doubt the erstwhile existence of a PBS
language which exhibited very little dialect diversity (cf. the remarks of Stang
1966: 13–21). Note especially that a long list of important innovations common
only to Baltic and Slavic, including the intricate intonation system, various deriva-
tional processes, and a substantial part of the vocabulary, can be compiled,
whereas the potential divergences of (sub-)PIE date are precisely two, namely the
treatment of PIE palatals and the scope of the "ruki"-rule. (Hock 1986: 453–4
has not succeeded in demonstrating that the lack of unanimity in gen. sg. endings
from subgroup to subgroup of BS resulted from developments in a (sub-)PIE
dialect continuum rather than from later analogical changes.) But the distribution
of the different BS treatments of PIE palatals and *s does not suggest that the
historically attested BS subgroups were already distinct at an early date. All
subgroups of Baltic and Slavic show a few centum-type forms (cf. Stang 1966:
91–3), so that the inconsistent development of PIE palatals cannot be adduced as
evidence that Baltic and Slavic are descended from different dialects of (late) PIE.
It should also be remembered that in all subgroups of BS THREE phonetic entities,
PIE (unshifted) *s, backed *ṣ, and PIE *k̂, have fallen together in different
patterns, and the apparent inconsistency of the "ruki"-rule in BS can be an
artefact of those later mergers, at least in part (as Warren Cowgill pointed out
to me in 1980). It is still not inconceivable that the incompleteness of the BS
fronting of PIE palatals and backing of PIE *s reflects the spread of those changes
across a PIE or post-PIE dialect continuum (as suggested in Hock 1986:
442–4, 451); but it is perhaps just as likely that those changes reflect the prolonged
influence of Iranian languages after the breakup of PIE. Habits of pronunciation
can spread from a dominant language to a socially subordinate one; cf. the reduc-
tion of high vowels in Mari (Cheremis) under the influence of Chuvash and Tatar
mentioned in Bereczki 1988: 337–9. The effects of such influence can be rather
uneven – note that the details of the vowel reduction just referred to are somewhat
different in the different Mari dialects (see the examples cited in Décsy 1965:
109–12) – and it is precisely such inconsistencies that we find in the BS phenomena
under discussion. But however those inconsistencies arose, they are minor – cer-
tainly not important enough to justify abandoning the traditional recognition of
BS as a unitary subgroup of IE.

[2] The statement about the relative chronology of palatalization in Tocharian
is based on research in progress; I expect to publish the results of that research as
a book on the chronology of sound changes in Tocharian. Some of the earlier
Tocharian changes are very distinctive; they include the loss of PIE *d before

It therefore seems advisable to begin an investigation of the position of Tocharian in the IE family by making my methodological postulates explicit.

1. Methodology

We must recognize that a particular feature shared by two related languages is evidence of historical contact after their last common ancestor had begun to diversify only if

a) the feature is indisputably an innovation rather than a possible common retention of inherited material, and

b) it is so peculiar that it is unlikely to have arisen more than once independently[3].

In fact, most of the putative evidence for the position of Tocharian which has been adduced in the past fails to meet one or both of these conditions and thus is not probative (see below for examples). To be sure, the cooccurrence of a large number of UNRELATED natural changes is sometimes easier to explain as a result of common development than of convergence (Sarah Thomason, p.c.), but the strength of such an argument is relative: if the natural changes in question are shared (within the relevant language

consonants, including *y (Winter 1962b: 29–30; Schindler 1966; Ringe 1987a: 117, 129 fn.33(a)), and the change of postvocalic *ti and *thi to *si (Jasanoff 1987: 106–12). Note that the latter change must have been preceded by the devoicing of aspirates, which in turn must have been preceded by Grassmann's Law (Winter 1962b: 24–8) and apparently by the loss of voiced aspirates after nasals (e.g. in TB keme, TA kam 'tooth' < PIE *ǵómbhos 'row of teeth'; TB /stəma-/, TA ṣtämā- 'stand' < *stm̥bhX-, zero-grade of *stembhX- 'prop'; TB pres. /lən-əsk-/, subj. /lən-/ 'go out' < *lu-n-dh- beside pret. /lət-/ < *ludh- < PIE *x̂ludh- 'arrive'), at least if the latter was a reasonably natural change; the actual time that elapsed in the development of Tocharian before palatalization occurred must therefore have been considerable. Moreover, palatalization is one of the commonest of all sound changes and could easily have occurred independently in BS and Tocharian (note that extensive palatalization has also occurred independently in Indo-Iranian, Armenian, and Romance – and, for that matter, in English). – Note that I write the PIE laryngeals as *x̂, *x, and *xʷ respectively, using *X for any laryngeal the identity of which is not determinable (following Cowgill 1973: 271 fn.1). It is well known that the term "laryngeal" is an anachronistic misnomer; these PIE consonants seem to have been nonanterior fricatives of some sort (cf. the discussion in Mayrhofer 1986: 121–3 with references). – Etymologies adduced without citations in this paper were proposed before ca. 1940 and are generally accepted; for references see Van Windekens 1976. References are given for etymologies proposed later, and my own (very infrequent) contributions are also noted.

[3] This is an adaptation of the classic argument for subgrouping two related languages together; it differs in that shared innovations that justify subgrouping must be exclusively shared, while shared innovations that reveal earlier geographical contact need not be.

family) only by the languages under investigation, common development is indeed the simplest hypothesis, but if they are widely scattered throughout the family it is better to recognize a family-wide "drift" phenomenon. Each case must be considered on its own merits.

Moreover, we must recognize that even shared features which meet the above conditions need not reflect INITIAL geographical contiguity; they might reflect the areal spread of changes after considerable divergence between the languages had occurred. Only very early shared changes can be evidence of initial contiguity[4].

Finally, we must demand a high degree of rigor in our comparisons of features from language to language. If we wish to claim that two branches of IE share a sound change, we must be certain that the change in question is in fact identical in the two branches (or as nearly so as the structures of the respective languages will permit); if we work with shared vocabulary, we must eliminate all pairs of words that are not absolutely certain cognates. It is necessary to say this because so much published work on Tocharian is flagrantly lacking in rigor[5], "so daß oft genug der Eindruck entstehen konnte, als seien der Phantasie und Kühnheit des Etymologen im Tocharischen keinerlei Grenzen gesetzt" (K. Schmidt 1980: 397); it is not an exaggeration to say that well over half the proposed Tocharian etymologies are probably mistaken. We can avoid these pitfalls only by insisting on ordered, rigidly regular sound changes based on a minimal number of etymologies in which analogical disturbances are most unlikely, and by rejecting all etymologies which cannot plausibly be made to fit into such a system[6].

In the following sections I shall discuss a number of innovations apparently shared by Tocharian with various other branches of IE in the hope of finding some evidence for the original position of Tocharian in the IE *Sprachraum*. Shared features which in my opinion clearly do not meet the conditions outlined at the beginning of this section will mostly be passed over in silence.

[4] As Sarah Thomason (p.c.) points out, it is also important to consider the nature of the phonological or grammatical feature in question: "unmarked" features seem to spread readily from language to language, whereas "marked" features are borrowed less readily and so are more likely to reflect common genetic development.

[5] Of course there is also much reliable work; the numerous articles of Werner Winter and the work of several younger scholars are particularly valuable.

[6] It should also be pointed out that the uncritical use of Pokorny 1951–69 – a work which makes no distinction between solid etymologies and very dubious speculations, consistently erring on the side of inclusion – has contributed substantially to the confusion of Tocharian etymological studies.

2. Developments of Laryngeals in Tocharian

2.0. It is often possible to show that a sound change occurred early in the history of a branch of IE by exploiting the chronology of crucially ordered changes between the more or less firm termini of ultimate and intermediate protolanguages (here PIE and Proto-Tocharian [PT]). To establish that a change occurred in the first few centuries of the development of Tocharian one must show that the change necessarily occurred at or near the beginning of a relatively long chronological sequence of pre-PT changes; a change which was not demonstrably preceded by many other changes, but also was not demonstrably followed by many, could have occurred substantially later, since it scarcely seems possible that less than two millennia elapsed between the breakup of PIE and that of PT[7]. A large proportion of the earliest Tocharian sound changes (defined according to the above criteria) involve laryngeals.

Several Tocharian developments of laryngeals are shared by so many other branches of PIE that they tell us little or nothing about the original geographical position of Tocharian in the family[8]. For example, Tocharian is a "classic" or "Brugmannian" branch of IE, in which preconsonantal and word-final laryngeals contracted with preceding vowels (after the timbre of the vowels in question had been altered by the laryngeals, apparently a phonetic development of PIE date); so are all other branches of IE except Anatolian[9]. Initial preconsonantal laryngeals were lost in Tocharian (cf. TB *ścirye* 'star' < PT **ścər-* < PIE **xster-*), as in most other branches of IE (cf. Skt. inst. pl. *st$r̥$bhis*, Av. nom. pl. *stārō*, Lat. *stélla*, OIr. *ser*, Goth. *staírno*, etc.); only Anatolian, Armenian, and Greek pre-

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[7] On the probable archaeological identification of speakers of PIE see now Anthony 1986. The Tocharian languages are about as closely related as Old English and Old High German; the time depth of their divergence should therefore not be more than about a millennium, which would place the end of the PT period around 500 B.C. at the earliest. In theory we also have to contend with the possibility that sound changes have become morphophonemic rules and have then been reordered (Hans Hock, p.c.); however, since I do not insist that a change dating from the (sub-)PIE dialect continuum occur first in a sequence, and since there is presumably a practical limit on the scope of rule reordering, it seems safe to discount the possibility of such reordering in determining which changes occurred early. Evidence that the sound changes discussed in this paper did occur early in the history of Tocharian will be presented in the footnotes.

[8] Whether specific changes of laryngeals are too natural (and thus repeatable) to be used as evidence is a difficult question to answer, given that we are more uncertain about the phonetics of laryngeals than of most other PIE segments. A case in which this difficulty affects my argument will be discussed below.

[9] The same type of contraction also occurs in Anatolian in some circumstances, but not in all; see e.g. Melchert 1984: 92, 100 on the fate of **x̌s*, and note also such obviously uncontracted sequences as Hitt. /ah/ in *paḫ̌si* iptv. 2sg. 'protect', root PIE **pex-* 'protect, herd (animals)'.

serve reflexes of laryngeals in that position (cf. Hitt. *ḫašterᵃ*, Arm. *astl*, Gk. ἀστήρ; see Watkins 1974)[10]. Laryngeals which survive as separate segments in Tocharian usually appear in PT as *a (see Winter 1965: 190, Klingenschmitt 1975: 161–2 fn. 21, Normier 1980: 254); the same development is observable in Germanic, Celtic, and Italic, and to a large extent in Armenian (though the pattern of special developments, including loss of laryngeals, is different in each branch). In this section I will discuss only relatively clear developments of laryngeals in Tocharian which are shared with few other branches of IE (and so might provide information about the original position of Tocharian in the family).

   2.1. In at least some cases initial laryngeals have been vocalized before syllabic resonants in Tocharian. A certain example is

   TB *antapi* /antópi/, TA masc. *āmpi* 'both' < PT *antpi ←< PIE *xn̥tbhố (Gk. ἄμφω, gen./dat. ἀμφοῖν, Lat. *ambō*, cf. Skt. *ubhā́* with different first element; see Jasanoff 1976: 125–7)[11];

a further possible example is the Caland adjective[12]

   TB *ārkwi*, TA *ārki* 'white' < PT *arkwi- ← *arkw- < ?*xr̥ĝú- (Gk. ἄργυρος 'silver', ἄργυφος 'silver-white', cf. *xr̥ĝrós in Skt. *r̥jrás*, Gk. ἀργός 'shining'; see Hilmarsson 1986: 100),

though we must also reckon with the possibility that this PT adjective reflects full-grade *xérĝu- (Hilmarsson 1986: 171)[13]. By contrast, syllabic resonants in other positions are usually reflected in PT as *əR[14]:

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   [10] Apparently Phrygian also preserves reflexes of initial preconsonantal laryngeals; cf. *onoman* 'name' (Brixhe and Lejeune 1984: 40), the PIE ancestor of which seems to have exhibited an initial laryngeal (probably *x̂; cf. Hitt. *lāman*, Arm. *anown*, Gk. ὄνομα, ὄνυμα, Lakonian ’Ενυμα-κρατίδᾱς).

   [11] I use "<" and ">" to indicate regular sound changes, "←" and "→" for analogical changes; "←<" and ">→" summarize developments including changes of both types.

   [12] Cf. Wackernagel 1897: 8–9. Zero grade of the root is usually generalized in Tocharian Caland adjectives, but not always (cf. TB *swāre*, TA *swār* 'sweet' < PT *swaré < *swadrós). The suffix of *arkwi is surprising; one normally finds *-ró- rather than *-ú- in Tocharian (cf. TB *ratre* 'red', *tapre* 'high', *pärkare* 'long', *swāre* 'sweet', etc.).

   [13] In the case of 'both' this alternative is at least highly improbable, since the word appears to have been dissociated from its root *xent- 'forehead, front' (Hitt. *ḫānzᵃ*) already in PIE.

   [14] Pace van Brock 1971, whose examples I in part reject and in part handle differently (see immediately below). – For the purposes of this paper I exclude PIE *i and *u from the class of syllabic resonants, since in spite of the large overlap between their morphophonemic behavior and that of *n̥, *r̥, etc. the high vowels develop very differently from the other resonants in most IE languages.

PIE *(d)ḱm̥tóm 'hundred' (Skt. śatám, Lith. šim̃tas, etc.) > PT *kənté
> TB kante, TA känt[15];
PIE *dn̥ǵhwéx- 'tongue' (OLat. dingua, Goth. tuggo, etc.) >→ PT
*kəntwá- > TB kantwo, TA käntu[16];
PIE *bhr̥ǵhrós 'lofty' (cf. Hitt. parkuš, Skt. br̥hánt-, Av. bərəzant-
'high') > PT *pərkré 'long' > TB pärkare, TA pärkär.

In word-initial position it appears that PIE *R̥ also became *əR in the first
instance, but that subsequently initial *ə > PT *ë[17]; thus PIE *n̥- 'un-'
(Gk. ἀ(ν)-, Goth. un-, etc.), the only example of PIE word-initial *R̥ which
certainly survives in Tocharian[18], appears in PT as *ë(n)-:

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[15] In general, PT *ə appears as a under the accent in TB; otherwise it appears
as ä in closed syllables in both languages, but is dropped in open syllables. On the
whole the TB accent reflects that of PT; the most important difference is that the
accent of a PT final syllable has been retracted to the preceding syllable. Since the
morphophonemic alternations created by that retraction are still productive in TB,
I cite TB verb roots (and some other forms) in morphophonemic shape between
slashes. For a fuller discussion see Marggraf 1970: 9–18.

[16] I find the discussions of the problems surrounding 'tongue' in Hilmars-
son 1982 and Winter 1982 ingenious but unconvincing; the tabu deformation
posited in Hock 1986: 303–5 is easier to believe.

[17] This is my own restatement of a sound change accepted by various other
scholars (Jasanoff, p.c.; cf. also Hilmarsson 1986: 171). PT *ë, probably un-
rounded and perhaps a central vowel, is the usual reflex of PIE *o. (I have recently
become convinced that *ë < PIE *o had NOT yet merged with *e < PIE *e in PT;
I hope to demonstrate that in the book referred to in fn. 2. Ringe 1987a: 112–4
is mistaken: PT 'fingernails' was clearly *mëkuwa, the palatalized *m′ of PT
*m′eñ- 'moon' did not induce rounding in TA, and there are at least three different
rounding rules for TA – one affecting PT *e and *o next to nonpalatalized *p and
*m, one affecting PT *ë and *ə next to *(ṅ)kw, and one affecting only PT *ə next
to *(ṅ)kʷ.) The only initial *ə in pre-PT were those that arose from PIE *R̥, since
initial *i and *e gave PT yə, while initial *u gave PT *wə (Normier 1980: 253,
256–63). – An alternative scenario for the history of PT *ë(n)- is proposed by
Adams 1988b: 16–7: *n̥- (> *un-?) > *on- > PT *ën-. There is no way to
exclude such a development in word-initial position; however, Adams' conten-
tion that there was a general pre-PT change *R̥ > *uR > (non-initial) *əR (first
published in Adams 1984: 397–8) is mistaken, as I shall demonstrate in sect.
3.4 below.

[18] Is PT *ëñkwë 'man' < PIE *n̥ḱ-wó-s 'mortal'? See Campanile 1969:
201–4. – Winter 1952 is unconvincing; his Greek examples (virtually the only
support for his prefix *n̥- 'with' outside of Tocharian) are susceptible to other, more
plausible explanations (which Winter 1952: 186 rejects for insufficient reasons).
On the gloss ἀκαρός 'brain' see now Nussbaum 1986: 72–3 (who writes ἄκαρος,
apparently following Chantraine 1968 s.v.; the reason given by the Etymolo-
gicon Magnum for the oxytone accent of the word – καὶ διὰ τὸν χαρακτῆρα ὀξύνεται,
ὡς τὸ μαδαρός – in fact makes no morphological sense).

TB *eṅklyauṣätte* 'unheard' < PT *eṅ-klyéwṣ-, root *klyews- 'hear' (TB
/klyews-/, TA *klyos-*) ←< PIE *k̑lew-;

TB *ekamätte* 'future' (< *'not yet arrived') < PT *ë-kʷóm-, root
*kʷəm- 'come' (TB /kəm-/, TA *kum-* ∼ *km-*) < PIE *gʷm̥-,
zero-grade of *gʷem- 'step';

TB *aknātsa*, TA *āknats* 'ignorant' < PT *ë-knátsa, root *kna- 'know'
< *g̑nō- < PIE *g̑nexʷ- 'recognize'; this example exhibits a-
umlaut (Cowgill 1967: 176–7)[19].

This prefix contrasts clearly with the example(s) of PT *aR- < PIE *xR̥-.
Vocalization of initial laryngeals before syllabic resonants is known as
"Rix's Law"; it occurs also in Greek and to some extent in Latin (for
details see Rix 1969), but apparently not in any other branch of IE[20]. We
must therefore ask whether this constitutes evidence for an early connec-
tion of Tocharian with Greek and/or Italic[21].

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[19] For further examples of this prefix see van Brock 1971: 282–3. The *-n-
of the prefix must have been lost by sound change in some environment, and the
*-n-less form must have spread analogically, but the details of that process are not
now recoverable.

[20] Rix's Law definitely did not occur in Celtic, Germanic, BS, or Indo-Iranian
(IIr.); it is difficult to tell whether it occurred in Osco-Umbrian (Ringe 1988:
429–31). Decisive evidence from the less well attested branches seems to be lacking.
– Rix's Latin examples are convincing precisely because the putative full-grade
preforms which would provide an alternative explanation are either morphologi-
cally implausible or actually impossible; though Beekes 1972b: 73–4 makes a
plausible case for secondary *xʷembh- in the n-stem forms of the 'navel' group, he
does not address Rix's other examples, and his objections to Anttila 1969
reflect a view of PIE ablaut that is too unconstrained. Lat. *ēnsis* 'sword' (= Skt.
asís) would be a counterexample if Palaic *ḫašīram(-pi)* 'dagger' were certainly
cognate, since the Palaic initial *ḫ* seems to reflect PIE *x; but it is far from clear
that the *a* of the Palaic word can reflect PIE *n̥, and its suffix would also remain
unexplained. I agree with Mayrhofer (1987: 104–5) that the apparent "triple
reflex" of initial laryngeals before syllabic nasals in Latin is very surprising, given
that the reflex of all three is zero or *a* in every other environment, but my
astonishment is not great enough to have become outright skepticism. For further
(very judicious) discussion and bibliography see Mayrhofer loc. cit.

[21] Regarding the relative chronology of Rix's Law in Tocharian we can say at
least the following. It is easiest to order vocalization of the initial laryngeal before
the resolution of *R̥ into *əR (whereas loss of laryngeals in the same position – for
which see below – could just as well have occurred after *R̥ > *əR), the vocaliza-
tion of *x apparently automatically entailing desyllabification of *R̥. The change
of *R̥ to *əR clearly preceded the change of initial *ə to *ë, which it feeds, and also
preceded the loss of all original final consonants and clusters except *r (and
possibly *l; a good example of a lost cluster is PIE *tríx (d)k̑ómt 'three tens'
(Schindler 1967a: 240) > *triyakō 'thirty' > PT *təryaka > TB *täryāka*); if
we do not adopt the latter ordering, we cannot explain such cases as PIE *septm̥
'seven' (Skt. *saptá*, Lat. *septem*, etc.) > *septón > *septá > PT *ṣəptá > TB *ṣukt*,
TA *ṣpät*. Loss of final consonants apparently preceded the (sporadic) loss of *-i,

Unfortunately the case is not as clear-cut as the above data suggest. In the first place, it is not known how PIE initial *x̂ and *xʷ before syllabic resonants developed, as no certain examples survive in Tocharian. A Tocharian word that MIGHT contain a reflex of PIE initial *x̂r̥- is

TB *erkent-*, TA *arkant-* 'black' < PT *ĕrkʷént- < *ərgʷént-
< PIE *x̂r̥gʷ-ónt-,

the PIE construct being plausibly the participle of a root-present or -aorist of *x̂regʷ- 'be dark' or 'get dark', a verb which is otherwise known only from the derived noun *x̂régʷos 'darkness' (> Skt. *rájas* 'empty space, atmospheric space', Arm. *erek* 'evening', Gk. Ἔρεβος 'hell', Goth. *riqis* 'darkness'). But it is not completely clear that the PIE root in question exhibited an initial laryngeal (cf. Mayrhofer 1982: 186 fn. 30 with lit.); moreover, even if it did, we cannot state with complete confidence that that laryngeal was *x̂, given the known tendency of Greek to assimilate the vowels of VRV-sequences (as Sara Kimball reminds me). Finally, if TB *erkent-*, TA *arkant-* 'black' do reflect PIE *x̂r̥gʷónt- 'dark', then the initial laryngeal of the latter form clearly was not vocalized according to Rix's Law as established for Greek and Latin. In the Rix's Law phenomenon the three laryngeals are reflected by different vowels, not only in Greek (in which such a "triple reflex" is characteristic of laryngeals in most circumstances) but also in Latin (in which laryngeals otherwise fall together; see Rix 1969: 90–2, 94–6); if the Tocharian developments were part of the same phenomenon, we should expect to find the same triple reflex of laryngeals. But the *x̂ of the PIE form posited above cannot have become

since *nt-clusters that became final by the latter change were not completely lost; cf. PIE *wĩk̂m̥tix̂ 'twenty' (Lat. *uīgintī*, etc.) > *wĩk̥nti (cf. Doric Ϝίκατι) > *wĩkənt > PT *w´íkən > TB *yíkän > *ikäm*, TA *wikəy > *wiki* (Szemerényi 1960: 47–9). The sporadic loss of final *i presumably preceded palatalization (there is no evidence that consonants preceding the *-i were ever palatalized), and in any case it preceded the general pre-PT restructuring of the vowel system in which *i, *e, and *u fell together with *ə (which survived in all positions into PT; note the complete absence of any final vowel in PT 'twenty', and contrast obl. sg. TB *kwem̥*, TA *kom* 'dog' < PT *kwénə < PIE *k̂uónm̥). That restructuring must have preceded the change of *ə to *u before *w; cf. PIE *néwos 'new' (Skt. *návas*, Gk. νέος, etc.) > *n´ə́wë > PT *ñúwë > TB *ñuwe*, TA *ñu*. Finally, the last change must have preceded the pre-PT loss of intervocalic *w with contraction (Þórhallsdóttir 1988), since loss of *w is blocked by a preceding *u (op. cit. p. 190, Ringe 1989: 38 with fn. 16). This is not an exceptionally long sequence of pre-PT changes, but I think it is long enough to entitle Rix's Law to some discussion as a probably very early Tocharian change. A longer chain of changes between the loss of final consonants and the restructuring of the vowel system can be constructed, but the inferences on which it rests are not nearly as secure as those given here.

*e in the first instance, since initial *e of PIE or sub-PIE date appears in
PT as *yə-; cf. TB *yakwe*, TA *yuk* 'horse' < PT *yə́kwë < PIE *éḱwos
(Skt. *áśvas*, Lat. *equos*, etc.) and TB *yasar*, TA *ysār* 'blood' < PT *yə́sar
< *ésar < PIE *ésxr̥ (Hitt. *ēšḫar*, Skt. *ásr̥-k*, etc.) or < PIE collective
*ésxōr (see Schindler 1975: 3–4)[22]. That PIE *x̂ could have become
pre-PT *ə or PT *ë directly seems most unlikely; it is much more natural
to suppose that the laryngeal was dropped, and that the resulting initial
syllabic resonant developed in the manner outlined above. For all these
reasons 'black' provides no clear evidence for Rix's Law in Tocharian[23].

   Nor is the paucity of examples our only problem. Note the following
very plausible etymology:

   TB *eṅk-* 'grasp, seize, take' < PT *ëṅk- < *ənk- < *n̥k̂- < PIE *xn̥k̂-,
   zero-grade of *xne(n)k̂- 'bring' (Skt. aor. *ánat̯* '(s)he has reached
   (it)', Gk. ἐνεγκεῖν 'to bring' but διᾱνεκής 'continuous'; OIr. pret.
   t-ánaic '(s)he came to' = Skt. pf. *ānáṃśa* '(s)he reached' < (sub-)
   PIE pf. *xe-xnónk̂-e (meaning?); cf. Mayrhofer 1982: 191 fn. 51
   with lit.)[24].

Apparently PIE initial *x has been dropped before *n̥ in this form – as it
obviously has not been in 'both' (see above). Of course other solutions are
possible, but all involve further problems. We might consider positing PT
*ëṅk- < *onk- < (post-)PIE *xonk̂- (as suggested tentatively by Jay
Jasanoff, p.c.), comparing the OIr. perfective pres. *t-uici* '(s)he can bring',
'(s)he understands' < Prim. Ir. *to h-uggīt < Proto-Celtic *onkīti; but the
o-grade root of the latter makes morphological sense if the stem is an old
intensive or causative (*onk-ī- < *onk-éye-, formed with secondary o-
grade on the basis of *n̥k- < PIE *xn̥k̂-), whereas no such justification can
be advanced for an o-grade in the Tocharian form. Alternatively, we might
posit PT *eṅk- < *ēnk- < PIE *xēnk̂-, comparing Hitt. *ḫi-(in-)ik-zi*
(/hē(n)ktsi/?) '(s)he distributes'; but the form and meaning of this Hittite

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   [22] The accent of TB pl. *ysāra* /yəsára/ is not clear evidence for a PT accent
*yəsár; see Ringe 1987b: 258–62, 265–6 for the accent shift involved. On the
other hand, a development *ésxōr → *sxór (cf. *udór in Gk. ὕδωρ, Skt. pl. *udá*) →
*esxór (by analogy with a surviving sg.) > PT *yəsár is also perfectly possible.
   [23] Of course if PIE 'dark' actually exhibited initial *xʷr̥- the Tocharian form
WOULD be a good example of Rix's Law; the development would have been
*xʷr̥gʷónt- > *orgʷónt- > *ërkʷënt- etc. (as above). But there is not one shred of
evidence that the initial laryngeal of this PIE root (if any) was *xʷ.
   [24] I do not feel obliged to regard TA *ents-*, the root that translates TB *eṅk-*, as
cognate with it (pace Hilmarsson 1986: 279, 282–3); I believe that the phono-
logical difficulties which Hilmarsson's suggestion involves far outweigh the
putative advantage of finding etymologies (semantically plausible ones, to be sure)
for a few more words.

verb present so many problems that any connection between it and the TB verb must be considered doubtful at best (cf. Oettinger 1979: 171–7, Melchert 1984: 23–4 fn. 46, 74 fn. 141)[25]. Moreover, TB eṅk- has an sk-present and an athematic subjunctive; we would expect to find a zero-grade root throughout the one and in most forms of the other. In the present state of our knowledge we must admit that TB eṅk- 'grasp' and PT *antpi 'both' have an equal claim to represent the regular Tocharian outcome of PIE *xn̥-.

Thus the data are so few and so contradictory that we cannot say how closely the Tocharian developments of PIE *XR̥- approximated Rix's Law. Consequently those developments reveal no clear connection between Tocharian and Greek or Italic in the (sub-)PIE dialect continuum.

2.2. The Tocharian treatment of laryngeals after syllabic resonants is equally disappointing, though for different reasons. Laryngeals in this position are dropped (Schindler 1967a: 239–42; cf. also Winter 1965: 204–6, K. Schmidt 1982: 363–4)[26]; cf. the following:

PIE *pr̥Xwós 'first' (Skt. pū́rvas, cf. Lith. pìrmas) > PT *pərwĕ, the derivational base of TB (y)parwe 'at first', pärweṣṣe 'first', TA pärwat 'eldest';

PIE *gʷr̥xwón- 'millstone' (cf. Lith. gìrnos 'hand-mill' and with full-grade root Skt. grā́van- 'millstone') > PT *kʷərwĕn- > TB kärweñe 'stone' (Van Windekens 1960: 39–40);

PIE *pl̥x̂nós 'full' (Skt. pūrṇás, Lith. pìlnas, etc.) > *pəlnĕ > PT *pəllĕ, the derivational base of TB pällent (obl.) 'full moon' (Winter 1965: 205–6);

PIE *ĝn̥x̂yétor 'is being born' (OIr. ·gainethar, Skt. jā́yate) > *ĝənyétor > PT *kəññətər[27] 'is happening' > TB kantär (this derivation of the pres. stem is my own).

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[25] Craig Melchert (p.c.) suggests that we might be dealing with two roots, *x̂enk- or *x̂enk- 'seize, take' (whence in Hittite *'hold' in *xo-x̂enK- > ḫaink-*'hold out' → 'offer') and *xnek- 'move (to), reach'. That is certainly possible, and it would solve the problem; but the apparent occurrence of both only in Greek, and the possibility of explaining the ἐ- of Gk. ἐνεγκεῖν as a product of assimilation, make me reluctant to accept Melchert's suggestion.

[26] Of the examples adduced for a change of PIE *RX to PT *Ra, PT *ëknátsa 'ignorant' (TB aknātsa, TA āknats) can reflect *ĝnō- < *ĝnexʷ- rather than *ĝn̥xʷ- (Winter 1965: 191, fn. 6), while TB krāmär 'burden' (whose ablaut was questioned already in Schindler 1972: 149) can reflect *gʷrox-m(V)r- (for the o-grade of the root cf. *ĝhod-m(V)r- in TB kenmer 'dung' and Hittite kammarš- 'defecate', K. Schmidt 1980: 409); other examples are of doubtful etymology.

[27] The accent of thematic presents in TB (which is our only evidence for the PT accent) is puzzling; see Marggraf 1970: 18–22.

This looks like a remarkable agreement with Germanic (cf. OE *forma* 'first', *full* 'full', etc.)[28]; but in fact the developments of laryngeals in Germanic and Tocharian seem to have been quite different, though in the case of *R̥X sequences they gave the same eventual result. In Germanic, laryngeals that survived as separate segments usually became syllabic nuclei, presumably *ə; these new syllabic nuclei then developed differently according to their position in the word (Bennett 1978). In medial syllables *ə was dropped. Since *R̥ was always resolved into *uR in Germanic, laryngeals which originally followed syllabic resonants automatically wound up in medial syllables, and so were dropped[29]. Thus in Germanic the loss of laryngeals after syllabic resonants is (or at least can be) a special case of a more general sound change. That is not the case in Tocharian. Examples such as TB /ana-sk-/ 'breathe in' < PT *ana- < PIE *xenx̂- 'breathe' (Skt. *ániti* 'breathes', Gk. ἄνεμος 'wind', etc.; Couvreur 1949: 33–4) and the middle participial ending TB *-mane*, TA *-māṃ* < PT *-manë < PIE *-mx̂nos (Av. *-mnō*, Gk. -μενος, etc.; Klingenschmitt 1975: 159–63) show that Tocharian did not otherwise drop laryngeals in medial syllables after resonants[30]; indeed, ablaut phenomena of the sort exemplified by TA *kälkā-* 'go' (nonpres. stem) : TB /kalaka-/ 'follow' (< PT *këlaka- by a-umlaut) are intelligible only on the assumption that they reflect an original ablaut *R̥X : *oRX, though unfortunately no such root has an indisputable PIE pedigree. For Tocharian, then, we must posit a specific sound change *R̥X > *R̥, which was not (necessarily) shared with Germanic and thus reveals nothing about possible connections between the two branches.

2.3. The treatment of laryngeals after *i and *u presents a more complex problem. The sequence *ix definitely became *ya ~ *iya (cf. Winter 1965: 190):

[28] The acute accent in the BS forms shows that *R̥X sequences in that branch passed through a stage in which the syllable was distinctively long. Plausible alternatives (using 'full' as an illustration) are: *pl̥x̂nós > *pilənás > *pīlnás > *pílnas (so Warren Cowgill, p.c. 1980, and Jay Jasanoff, p.c., modulo minor details) and *pl̥x̂nós > *pl̥nós > *pīlnás > *pílnas (Jasanoff, p.c., again modulo minor details).

[29] In theory it would be possible for such a laryngeal to wind up in a final syllable, but I know of no examples.

[30] It follows that laryngeals after syllabic resonants must have been dropped while syllabic resonants were still separate phonological entities. In fn. 21 above I noted that PIE *R̥ were resolved into *əR in pre-PT; whatever the phonemic status of those sequences when they first arose, they must have become */əR/ when the fall of final consonants created new final *-ə (ibid.), and it should follow that the laryngeals of original *R̥X sequences had been dropped by that time. The rest of the relevant pre-PT chronology is identical with that given in fn. 21. Note that in this case the sequence of changes is shorter by one, which makes a very early date for the loss of *X after *R̥ that much less certain.

PIE *dhixg^w- 'stab' (Lat. *fīgere*, OLat. *fīvere* 'to fix (something in something else)', Lith. *dýgti* 'to sprout') > *dhyag^w- > PT *tsak^w-(a-) > TB /tsaka-/ 'bite, sting', e.g. in subj. 3sg. *tsākaṃ* (the etymology is my own);

PIE *trix neut. 'three' (Gk. τρία, Skt. *trî*) > *tríya > PT *təryá 'three' (fem.)[31] > TB *tarya*, TA *təry > *tərəy > *trəy > *tri* (for the sound change *CriyV > *CəryV, *CruwV > *CərwV see Schindler 1967a: 239–42, Normier 1980: 257–8, Ringe forthcoming section 6; *1 also participates in the change);

PIE *k^{w}rix- 'buy' (Gk. aor. 3sg. ἐπρίατο '(s)he bought', Skt. ptc. *krītás* 'bought') > *k^{w}riya- > PT *k^{w}ərya- > TB /kərya-/, e.g. in *kāryāmte* 'we bought'; derived noun *k^{w}rix-wr̥ > *k^{w}əryawər > PT *k^{w}əryor 'trade' > TB *karyor*, TA *kuryar* (Þórhallsdóttir 1988: 193–5);

PIE fem. suffix *-ix (Gk. -ια ~ *-i̯α, Skt. -*ī*) > → *-ya ~ *-iya, e.g. in

PIE *pănt-ix fem. 'all' (Gk. πᾶσα) > → *pántya > PT *póntsa[32] > TA obl. *pontsā-ṃ*;

PIE *x̂rudhrós 'red' (Gk. ἐρυθρός) > PT *rətré > TB *ratre*, TA *rtär*; new fem. *rudhr-ia > *rətriya > PT *rətərya > TB *rtarya*, TA gen. sg. *rtärye*;

PIE *ladrós 'beloved' (Lyc. *lada* 'wife'; Winter 1965: 191) > PT *laré > TB *lāre*; new fem. PT *lariya > TB *lariya*[33].

It is possible that the sequence *ix^w also became PT *ya, but the two potential examples are uncertain:

PIE *g^{w}ix^{w}w- 'live', pres. 3sg. *g^{w}íx^{w}weti (Skt. *jīvati*, Lat. *uīuit*) > *g^{w}yaw-, *g^{w}yawet > PT *śaw-, *śaw'ə > TB /śaw-/, *śai-ṃ*, TA *śo-*, *śo-ṣ* (Winter 1965: 192, Normier 1980: 254)? – or rather secondary *g^{w}yōw-, *g^{w}yóweti (cf. Gk. ζώει, Schindler 1972: 149) > PT *śaw-, *śaw'ə, etc. (Winter 1965: 197)?

PIE *prótix^{w}k^{w}om 'face' (Skt. *prátīkam* 'surface, face') > *prótyak^w- > PT *prétsak^w-a- 'chest' > TB *pratsāko*, TA *pratsak* (Normier 1980: 254)?[34] – or rather *prótyōk^{w}om with secondary Wacker-

[31] In Tocharian the neuter gender merged morphologically with the masculine in the singular and with the feminine in the plural; many Tocharian fem. pl. forms reflect PIE neuter plurals.

[32] On the sound change *ty > PT *ts see Winter 1962b: 20–2. Note that the distribution of *-ya and *-iya in Tocharian no more follows the classical formulation of Sievers' Law than that of *-i̯a and -ια in Greek.

[33] Some further examples of this fem. suffix can be found in Krause and Thomas 1960: 121 (PT *lantsa 'queen'), 149, 152–3, 155–6.

[34] The TB form exhibits a-umlaut in the initial syllable, whereas the TA form does not because that syllable was accented; see Cowgill 1967: 176–7, Ringe 1987b: 262.

nagel lengthening (cf. Gk. πρόσωπον 'face') > *prótyak^w- etc. (Adams 1984: 400)?

Preconsonantal *ix̂ apparently became *ī, whence PT *i; cf. the following:

PIE *wix̂rós 'young (man), warrior' (Skt. *vīrás* 'hero', Lith. *výras* 'man') > *wīrós > PT *w'iré > TA *wir* 'young'[35];
PIE (zero-grade athematic) optative *-ix̂- > *-ī- > PT *-i- > TB, TA -*i*-, e.g. in (athematic) opt. 1sg. PT *yam-i-m'ə 'I would do' > TB *yamīm*, TA *yāmim*[36].

The development of PIE word-final *-ix̂ in Tocharian is a problem that admits of several solutions; which solution we adopt will depend on our judgments of several etymologically ambiguous Tocharian dual endings (e.g. in PT *antpi 'both' above; see also Winter 1962a: 115, 129, 1962b: 30–1, Klingenschmitt 1975: 162 fn. 21), discussion of which is beyond the scope of this article[37]. In any case there is no obviously correct solution, so that inferences about the position of Tocharian ultimately based on those dual endings will be notably insecure[38].

[35] It seems possible that the laryngeal in this word was *x^w rather than *x̂; it cannot have been *x (see above).

[36] I think it less likely that PT *-i- reflects PIE thematic *-o-y(x̂)- for the following reason. It seems clear that PIE word-final *-oy and *-oyx̂ (except in monosyllables) gave a palatalizing vowel PT *-ę, which became TB -*i*, TA -*e*; cf. nom. pl. masc. *tritós 'third' → *tritóy (cf. Gk. τρίτοι) > PT *tr'əcé > TB *trici*, TA *trice* and thematic nom./acc. du. neut. *-oyx̂ > PT *-ę introduced analogically in TB *keni, keni-ne* (Winter 1962a: 117–9), TA *kanwe-ṃ* '(two) knees'. It is not clear what happened to those PIE sequences otherwise in noninitial syllables – there are no certain examples (pace Winter 1962a: 126, K. Schmidt 1975: 289–90, Adams 1984: 398, 1988b: 140–1) – but PT *ę does recur in medial syllables in loanwords; a clear example is PT *santkęnawə 'physician' > TB *saṃtkinau*, > → TA *sāṃtkenu* (-*u* for -*o* analogically as in participles; cf. TA *pāpeku* ≈ TB *papaikau* 'painted, written'). That by no means makes it impossible that PIE *oy(x̂) became PT *i, not *ę, when nonfinal in noninitial syllables – e.g. in the optative; but the balance of probability seems to favor a derivation of PT opt. *-i- from PIE athematic *-ix̂-. On PT *-ay- (*-ëy-?) in dual forms see section 5.9.

[37] I hope to discuss the matter fully in the book referred to in fn. 2. Note that the Tocharian reflex of PIE *wīk̂ṃtix̂ 'twenty' (see fn. 21) seems to have lost its final laryngeal in sandhi already in PIE (cf. Kuiper 1947: 210–2, Mayrhofer 1986: 149).

[38] Early dates are less easy to demonstrate for developments of *iX than for the sound changes previously discussed. PIE *ix seems to give *iya after *CR-clusters, but *ya elsewhere (cf. the examples cited above). TB *lariya* seems to show that this repartition of reflexes was settled before the loss of preconsonantal *d (see fn. 2), but the latter cannot be shown to be a particularly early change. In any case TA *pontsāṃ* and TB /tsaka-/ show that *ix became *ya before the change of *t(h)y > *ts (see fn. 32); and if the last change occurred at the same time as the change

Clear examples of the development of *uX are much harder to find. There is a reasonably clear example of pre-PT *ū from PIE word-final *-ux[39]:

PIE collective *dák̑ru-x 'tears' → *ák̑rux (see section 6.4) > *ákrū > PT pl. *ákru > TB akrū-na, TA ākru-nt (Adams 1988b: 19, 32).

Though TA ākrunt ← *ākru < PT *akruwa is a perfectly plausible development (as Jörundur Hilmarsson has pointed out to me), it seems rather unlikely that PT *-uwa would have been remodelled to -una in TB, where it usually remains unchanged; the development posited above seems more likely. It follows that the PT ending *-uwa of *wostuwa 'houses' (TB ostuwa, TA waṣtu), *mëkuwa 'fingernails' (TB mekwa, TA maku), etc. reflects the analogical addition of the productive neut. pl. ending *-a to older *-u < *-ū not long before the PT stage; thus these PT *-uwa do not directly reflect PIE *-ux[40]. At least one other example of *uX (the identity of the laryngeal is unknown) likewise became *ū in the first instance:

PIE *suX- 'beget, bear (a child)' > *sū- > PT *su- in TB s̯äsuwa 'sons' (Krause 1956: 196); the word is a fossilized neut. pl. pret. ptc., originally *'issue' (Winter 1985: 260)[41].

of postvocalic *-t(h)i to *-si (as seems plausible), then we can say that the whole sequence occurred before palatalization, since the last-mentioned change clearly did (Jasanoff 1987: 109). Palatalization in turn occurred before the restructuring of the vowel system, since in that restructuring PIE *i and *e, which did palatalize preceding consonants, merged with PIE *u and the vocalic part of *R̥, which did not palatalize; and the rest of the relevant chronology is as in fn. 21. This is a respectably long sequence of changes, but some of the links in the chain are rather uncertain. For the change *ix̂ > *ī we cannot say even so much; clearly that contraction occurred before the restructuring of the vowel system (in which the distinctive feature of vowel length was lost), but no other chronological relations can be determined. I include the change in the discussion here only because it completes the picture of the development of *iX in Tocharian.

[39] The discoverable chronological relations of this change are the same as for pre-PT *ī < PIE *ix̂; see the end of the preceding footnote.

[40] See also Ringe forthcoming section 2. Note that the difference between PT final *-CwV and *-CuwV accounts neatly for the difference in development between two groups of words: TA yuk 'horse' = TB yakwe < PT *yə́kwë, TA oṅk 'man' = TB eṅkwe < PT *ëṅkwë, TA psuk 'crown' = TB pässakw 'garland' < PT *pəssəkwə, etc. on the one hand, and TA maku 'fingernails' = TB mekwa < PT *mëkuwa, TA saku 'pus' = TB sekwe < PT *sëkuwë, etc. on the other. Note further that BOTH *kuw and *kw contrast with the PT *kʷ that reflects PIE labiovelars; cf. TA wak 'voice' = TB wek < PT *wék̑ʷə < *wók̑ʷən < PIE acc. sg. *wók̑ʷm̥, etc., and see section 3.1 below on evidence for the survival of *kʷ as a separate phoneme in PT.

[41] A PT root *suwa- (*/səwa-/) ought to have had a pret. ptc. in *-owə (> TB

It is not clear that other instances of pre-PT *ū actually reflect *uX, and we must reckon with the possibility that some unanalyzable *ū occurred even in PIE (cf. Mayrhofer 1986: 171); a possible instance is PIE *sū- 'rain' (Gk. ὕειν, Alb. noun *shi*) > PT *su- > TA *su-* in pres. 3pl. *swiñc*, ptc. *sūmāṃ*[42]. Whether any (pre-)PT *uwa (or *wa) can reflect PIE *uX is even more uncertain, since in all putative cases the PT *a can be explained as a later addition. The following examples are typical:

PIE *xʷbhruX- 'eyebrow' (Skt. *bhrúṣ*, Gk. ὀφρύς, etc.) > *bhruwa- > PT *pərwa- in dual *pərwa-ne > TB *pärwāne*, TA *pärwāṃ* (Winter 1965: 192)? – or is the PT *-a- an additional stem vowel, the old root-noun having been replaced by (e.g.) an ā-stem (cf. Schindler 1967a: 241)?

PIE *mluX- 'speak' (vel sim.; Skt. pres. 3sg. *brávīti, brūté*, Av. *mraoiti*) > *mluwa- > *bluwa- > PT *pəlwa- 'lament' > TB /pəlwa-/ in pres. 3sg. *palwaṃ* (K. Schmidt 1982: 365)? – or is the /-a-/ an addition on the analogy of old seṭ roots?

PIE *suX- 'pig' (Gk. ὕς, Lat. *sūs*, etc.) > PT *suwa- in TB *suwo*, adj. *swāññe* (Winter 1965: 192)? – or is the *-a- an addition? Should we even reconstruct PIE *sū- (see above)?

The most we can say is that at least some *uX, probably including word-final *ux, became *ū in the first instance.

In its pattern of developments of PIE *iX and *uX Tocharian is strongly reminiscent of Greek. PIE *ix appears to give Greek ια ~ *ι̯α, e.g. in τρία neut. 'three' = Skt. *trí*, 3sg. ἐπρίατο '(s)he bought' (cf. Skt. ptc. *krītás*), fem. -ια ~ *-ι̯α in πότνια 'lady' = Skt. *pátnī*, πίειρα 'rich (soil, etc.)' = Skt. *pívarī* fem. 'fat'[43]. PIE *ix̂ before a consonant gives Greek ῑ in ῑ̄ησι

-ο͡ᴜ, -*au*), fem./neut. pl. *-owa (> TB -*auwa*), pace Winter loc. cit.; cf. the following examples:
lypauwa neut. pl., *lwoṣ* masc. pl. '(having) sent', root /luwa-/ (cf. a-root subj. TB 3sg. *lāwaṃ*, TA 1sg. *lawam* < PT *léwa-) ←< PIE *lewX- ~ *luX- 'undo (/cut/break) a rope, release' (Van Windekens 1941: 54);
tsuauwa fem. pl. 'fitted together', root /tsuwa-/ (cf. TB pres. 3sg. *tswetär*, TA pres. or subj. 3sg. *tswātär*, both clearly a-root types), possibly < PIE *dewX- ~ *duX- 'fit together', found also in the Germanic family of Goth. *taujan* 'to make' (Krause 1961: 265–6; add Gk. δύνασθαι 'to be able'?); on PT *ts < PIE *d see section 7.2.
The pret. ptc. TB *ś[e]śu* 'having eaten', vbl. noun *śeśuwer* '(a) meal' to PT *śuwa- 'eat' is an isolated aberration, and cannot be used (as Winter uses it loc. cit.) to justify positing a PT root *suwa- 'beget'. – Note that PT *uwV = */əwV/, *iyV = */əyV/, and that that morphophonemic relation survives unchanged in TB.
    [42] The /-a-/ of TB /səwa-/ (pres. 3sg. *suwaṃ* etc.) is probably an analogical addition; see immediately below for other similar examples.
    [43] It is not clear that the repartition of monosyllabic and disyllabic reflexes is the result of sound change alone; cf. the very detailed discussion of Peters

'throws, sends' ← *t̄ησι < PIE *x̂i-x̂yex̂-ti (Peters 1976) and probably in ἴς 'sinew, muscle' < *wix̂- (but fn. 35 applies to this word as well); *ixʷ also seems to give ῑ in ὀπῑπεύειν 'stare at, ogle' < *(x̂)opi-xʷkʷ-, lit. 'look (*-xʷkʷ-) upon' (cf. Mycenaean o-pi = alphabetic Greek ἐπί 'on'; Rix 1976: 71). (On the Greek reflex of final *ix̂ see fn. 45 below.) The only indisputable Greek reflex of PIE *uX is ῡ (pace Francis 1970: 276–84, Normier 1977: 182 fn. 26). This similarity between Tocharian and Greek would seem to reveal a very early historical connection.

However, further reflection casts considerable doubt on such a conclusion. All the relevant Tocharian changes probably occurred very early, but it is not easy to prove that they did (see fnn. 38 and 39); it also seems fairly clear that the Greek development of *ix (at least) reflects not a simple sound change, but a complex of phonological and analogical changes (see fn. 43). The clearly shared changes *ix̂ > *ῑ/ῑ, *uX > *ū/ῡ are also shared by many other branches of IE[44]. In both Greek and Tocharian the really distinctive change is the development of PIE *x to *a/α after *i, and we must therefore ask how natural (and thus repeatable) such a change is. The exact phonetic nature of PIE *x is not recoverable, but it does seem to have been a voiceless unrounded back fricative of some sort (cf. the opinions reported in Mayrhofer 1986: 121 fn. 101, 122 fn. 103), and the development of a low back unrounded vowel next to or out of such a fricative seems very natural indeed – especially when a high front vowel precedes. Consequently I think it would be rash to posit an early connection between Greek and Tocharian on the basis of the similarities outlined above. Those agreements between the two branches could be important if Tocharian and Greek also shared a large number of other natural but unrelated early innovations (see section 1); but as the remainder of this paper will show, they do not[45].

1980: 127–205, who concludes (pp. 204–5) that the "regular" outcome in final position (at least) was *-i̯α. The distribution of the PT reflexes *ya and *iya is likewise problematic, though it might be the result of sound change (see Ringe forthcoming section 11). There is too much uncertainty all around to permit a conclusion that the Greek and Tocharian developments of *ix were "the same", though it is possible that they were. – Note that ἐπρίατο can also be interpreted as thematic *é-kʷrix-e-to (Beekes 1969: 247), or as analogical on 3pl. ἐπρίαντο < *é-kʷrix-ento (Rix 1976: 215) if *-ento was a possible athematic mediopassive ending at any stage in the development of Greek.

[44] Even Hittite shares the contraction to ū, at least in word-final position, to judge from the neuter nom./acc. plurals in -ū < *-ux. I am grateful to Sara Kimball for pointing this out to me.

[45] I.e., in the present state of our knowledge it cannot be shown that they do. It seems possible that further study of the Tocharian development of word-final *-ix̂ will establish beyond doubt that that sequence became *-ye > PT *-'ə (so Winter 1962b:. 30–1), and that would represent a further agreement with Greek (cf. *-ix̂ > -i̯ε in ὄσσε '(two) eyes'; see Forssman 1969: 44–7); but a

2.4. I therefore find in developments of laryngeals no evidence that conclusively links Tocharian to any other branch of IE. However, the fact that the Greek and Tocharian developments of *iX are at least partly parallel remains intriguing and clearly deserves further study.

3. Other Early Sound Changes

3.1. Tocharian is a classic "centum" branch of IE. All PIE palatals and velars appear as PT *ś when palatalized, otherwise as PT *k (for examples see Krause and Thomas 1960: 64–6). PIE labiovelars usually exhibit the same development. But in addition to the TB : TA correspondences that support the reconstruction of PT *kə (e.g. TB *kante*, TA *känt* < PT *kənté 'hundred') and those that support PT *ku (e.g. TB, TA *kutk-* < PT *kutək- 'embody') we find also two examples in which the TB form exhibits morphophonemic /kə/ while TA has *ku*:

TB *karyor*, TA *kuryar* 'trade';
TB /kəm-/, TA *kum-* 'come', e.g. in 3sg. pres. TB *känmaṣṣäṃ*, TA *kumnäṣ*,

as well as a cognate pair of which the TB member can only be explained on the assumption that its first vowel occurred between two labial(ized) consonants in PT (Normier 1980: 263):

TB *kokale*, TA *kukäl* 'chariot'[46].

All three examples have obvious PIE etymologies involving labiovelars, viz. *kʷrix- 'buy', *gʷem- ~ *gʷm̥- 'come, go' and *kʷékʷlos 'wheel' respectively; in all three one would expect the labiovelar to have been followed by *ə in PT (PIE *e > PT *ə; PIE *N̥ > PT *əN; *ə develops regularly in *CriyV sequences, see section 2.3; on the second vowel of TB *kokale* see Ringe 1987b: 258–62)[47]. We are practically forced to reconstruct PT *kʷə in these words, and to recognize that labiovelars remained

number of objections need to be dealt with before such a conclusion can be considered certain. I hope to return to this problem in the book mentioned in fn. 2.

   [46] These data were first assembled in Lane 1960: 72–3, along with other relevant material.

   [47] The lack of palatalization in PT *kʷə́kʷlë 'chariot' is the result of an early morphophonemic rule that depalatalized the initial consonants of reduplicating syllables when the consonant following the reduplicating syllable was not palatalized. Another fossilized example is TB /tətta-/ 'put' (e.g. in subj. 3sg. *tattaṃ*, pret. ptc. *tättā́ꞟ*) < PT *tətta- ← *cətta- < PIE pres. (zero-grade) *dhe-dhx̄-. Reduplicating syllables which are still synchronically analyzable in Tocharian likewise reflect this change, though they have undergone extensive further developments of other kinds.

distinct from the other dorsals in Tocharian at least as late as the PT stage[48]. It is even possible that a preconsonantal labiovelar survives unchanged in

TB nom. pl. masc. *läṅk̑u̯ci* 'light, trivial' Berlin 245a3 beside nom. sg. *laṅtse* 561a1 etc. < PT *ləṅkʷtsë < PIE *x̑lngʷh- (Gk. ἐλαφρός 'light, nimble', ἐλαχύς 'little', Skt. *raghús* 'swift').

It might reasonably be asked whether this pattern of development reveals an early connection between Tocharian and the western branches of IE (the traditional centum branches)[49].

To be sure, the geolinguistic importance of the centum/satem isogloss has been doubted for decades (cf. Benveniste 1936: 229), though cogent arguments on either side have been lacking. But we now have good reason to discount the isogloss altogether, maintaining that the centum development of PIE dorsals is meaningless for early IE dialect geography. Melchert 1987 has conclusively demonstrated that Luvian in part maintains the PIE three-way distinction between palatals, velars, and labiovelars; it follows that Proto-Anatolian (PA) did so as well. Yet Hittite, another descendant of PA, is a classic centum language (cf. the cognates cited in Melchert 1987). It is most unlikely that Hittite underwent the centum development of dorsals because of contact with other branches of IE, both because the geographical distribution of the Anatolian languages strongly suggests that they differentiated within Anatolia (at a date when no other IE languages can be shown to have been in that region) and because PA was already so different from PIE that a sharp language boundary must have existed between it (or, a fortiori, any of its descendants) and other IE languages. It follows that the centum development of dorsals occurred independently at least twice – once in Hittite and at least once in the other centum languages[50]. But in that case we must consider it a natural, easily

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[48] Pace Georgiev 1981: 283–9, most of whose etymologies seem far too unconvincing to stand against the clear pattern of those cited above, in spite of his long and elaborate argument against the point of view adopted here.

[49] This depends in part on how early the PIE palatals and velars merged in Tocharian. I can find no clear evidence that the merger was one of the earliest changes; we can only say that it must have occurred before palatalization (unless we are willing to accept a phonetic distinction between palatalized palatals, "plain" palatals, palatalized velars, and "plain" velars, such that the first and third groups later merge, while the second and fourth do the same – a scenario which I find wildly implausible).

[50] One could propose that the subgroups of Anatolian originally belonged to different dialect areas of PIE, but were drawn together in a pre-PA *Dialektbund* by subsequent innovations cutting across the original isoglosses; this was suggested as a theoretically possible alternative by Hans Hock (p.c.). But that would be a

repeatable change, and its occurrence in Tocharian thereby loses all significance.

3.2. The same is true of Grassmann's Law (GL; Winter 1962b: 29–30), the devoicing of aspirates (cf. Jasanoff 1987: 111–2), and the change of postvocalic *-t(h)i to *-si (ibid. pp. 108–9). Those three sound changes must have occurred in Tocharian in that order, since the deaspiration of PIE *dh yields pre-PT *d (the basis of Winter's demonstration that GL occurred in Tocharian; see section 7.2 for further discussion) and since the devoicing of aspirates feeds the assibiliation of *t(h)[51]. GL demonstrably occurred independently in Greek and Indic[52]; it can have occurred independently in Tocharian as well. Aspirate devoicing can also have occurred independently in Tocharian, as it is a natural and easily repeatable change; note that it is almost the only sound change shared by Greek and Italic, two branches of IE which apparently were never in close contact before the Greek colonization of Italy[53]. Finally, though assibiliation of *t(h) before

much less highly valued hypothesis, since it increases the complexity and decreases the rigor of our reconstructions without accounting for any additional data.

[51] The last change clearly occurred before palatalization, since the PT outcome is *ṣə (Jasanoff 1987: 109). Palatalization in turn seems to have preceded the restructuring of the vowel system (see fn. 36), and the remainder of the relative chronology is as in fn. 21. Thus the chain of ordered changes beginning with GL and ending with PT is respectably long. However, note that devoicing of aspirates was preceded not only by GL but also (probably) by the loss of aspirates after nasals (see fn. 2). Aspirate devoicing and assibilation are the only changes so far discussed that do not stand at the beginning of a chronologically ordered sequence.

[52] Schindler 1976: 626 and Normier 1977: 178 adduce Skt. *kumbhás* 'pot' = Avestan *xumbō* < PIIr. *khumbhás as evidence that GL occurred in Indic but not Iranian, therefore after the PIIr. stage; this apparently invalidates the efforts of Kiparsky 1973: 126–33 to link the Indic and Greek phenomena historically. (However, Mayrhofer 1986: 114 fn. 66 notes that the further etymology of this word is far from certain, and that the example is thus "nur mit Reserve verwendbar".) Note also that of the Greek etymologies cited by Kiparsky on pp. 131–3 the two most secure, πῆχυς 'forearm' and κεφαλή 'head', are the two that are counterexamples to his hypothesis; D. Gary Miller (1977: 132–7) has shown that the list of such words can be greatly extended, while the etymologies that appear to support Kiparsky's hypothesis are uniformly very doubtful. The suggestion of Wyatt 1976: 9–10 that "the PIE aspirated consonants were not distinctively voiced in all areas in which PIE was spoken", if it does not deny a consequence of the comparative method (viz. the reconstruction of unitary protolanguages), seems to suggest that the pre-Greek devoicing of aspirates could have occurred already in the post-PIE dialectal stage, when pre-Greek and pre-IIr. were still in contact. But this is scarcely necessary, given the naturalness of GL (Mayrhofer 1986: 113); moreover, it is a less highly valued hypothesis (for the reasons noted at the end of fn. 50).

[53] The reader should be aware that I completely reject the "glottalic" theory of the PIE stop system. General reasons for rejecting it are well expounded in Vine 1988; Hock 1986: 625–6 (with references p. 670) shows that the typological generalizations on which it is based are incorrect. It is true (as Henry Hoe-

*i is known only from Tocharian and Greek within the IE family, it is a natural change well attested elsewhere; for example Proto-Polynesian *ti developed into *si* in Tongan, though other Proto-Polynesian *t remain unchanged in that language[54]. I conclude that no arguments about the position of Tocharian in the IE family can be based on these sound changes.

3.3. In word-final position PIE *ō became pre-PT *ū, which appears in PT as *u (Normier 1980: 255 fn. 14; cf. already Pedersen 1941: 229). The change took place even in monosyllables – a rather unusual pattern of conditioning. Note the following examples:

PIE *duṓ masc. 'two' > *dwṓ > *wṓ > *wū́ > PT *wū́ > TA *wu*;
PIE *k̑uṓ 'dog' (Skt. *ś(u)vā́*, Gk. κύων) > *kwṓ > *kwū́ > PT *kú > TB, TA *ku*;

nigswald reminds me) that the glottalic theory is not strictly verifiable nor falsifiable by the comparative method, which deals only with phonemic oppositions; however, careful consideration of the probable phonetics of several borrowings between branches of IE suggests overwhelmingly that a glottalic-type reconstruction of PIE stops is incorrect. Meid 1986: 209–10 fn. 55 and 1987: 10–1 has shown that the shape of the Celtic loanwords *rīk- 'king', *rīkija- 'kingdom' in Germanic is difficult to account for without the traditional formulation of Grimm's Law; as Meid 1987: 10 makes clear, that is equally true of PG *hanapiz 'hemp' (Old English *hænep*, etc.), apparently a non-IE word (cf. its structure) borrowed into Germanic through a more southerly IE language (cf. Herodotos 4.74–5). The most striking counterargument to the glottalic theory, however, is the shape of Armenian *partēz* 'garden', an early Iranian loanword (Meid 1987: 9). This is extremely difficult to account for under the glottalic theory for the following reasons. According to the traditional reconstruction of PIE consonants, the *d of Iranian *paridaiza- has undergone the Armenian sound change *d > *t, part of the Armenian consonant shift, because the word was borrowed before that change had occurred. Using the glottalic theory, according to which the Armenian consonants underwent no such shift, one could account for the *t of the Armenian form only by claiming that (a) Iranian *d was borrowed into Armenian as *t, in spite of the fact that Armenian had a *d of its own, or (b) the consonant in question was still (glottalized) *t' in Iranian when the word was borrowed. But this word should not originally have contained *t' under any theory, since its root is *dheyĝh- (glottalic "*deyĝ-"); cf. Gk. τεῖχος and τοῖχος 'wall' (τ < *ϑ by GL) and especially Oscan acc. pl. *feihúss* 'walls' (*f* < *dh, as in Latin)! Positing an Iranian *t' therefore entails assuming extraordinarily improbable developments in Iranian (viz. preservation of "*d" and "*t'" as such in PIIr. and merger of those two phonemes – but not of "*th", which in any case would still have to be different from the PIIr. reflex of "*th" plus laryngeal – in Proto-Iranian "*t'"). Other similar Armenian examples exist; Jochem Schindler (p.c. 1985) adduces *arcat'* 'silver', another early Iranian loan. I conclude that the glottalic theory is simply mistaken; hard evidence always outweighs any conceivable amount of typological theorizing.

[54] See Walsh and Biggs 1966: vi, with examples passim, esp. pp. 103–22; on the pronunciation of the sibilant see Churchward 1953: 1.

PIE subj. and thematic pres. 1sg. act. *-ō (Gk. -ω, Lat. -ō) > *-ū > PT
*-u > TB athematic subj. (and probably pres.) 1sg. -u, e.g. in āyu
'I will give', yāmu 'I will do';

PIE *oḱtṓ(w) 'eight' (Skt. aṣṭáu, Gk. ὀκτώ) > *oktú̄ > *ëktú̄ >
*ǫktú̄[55] > *ǫktú → PT *ǫktə́ by analogy with *septə́ 'seven' and
*ñə́wə 'nine' (Pedersen 1941: 220–1, Penney 1976: 89 fn. 50) >
TB okt, TA okät; pre-PT *-u is preserved in TA oktuk 'eighty'.

This is strongly reminiscent of the Proto-Celtic (PC) shift of *ō to *ū in
final syllables, which likewise occurred in monosyllables; some of the same
examples can even be adduced:

PIE *ḱuṓ 'dog' > PC *kū > OIr. cú 'hound';
PIE *bhérō 'I'm carrying' (Gk. φέρω, Lat. ferō) > PC *berū > Prim.
Ir. *birū > OIr. ·biur, e.g. in do·biur 'I'm bringing'.

It is reasonable to ask whether this reveals an early connection between
Tocharian and Celtic[56] – until one remembers that an identical (or very
similar) change occurred also in North and West Germanic centuries after
the breakup of the (post-)PIE dialect continuum (cf. OE nom./acc. pl.
neut. scipu 'ships' < PGmc. *skipō and especially ON fem. sú 'that' =
Goth. so)[57]. However strange it may seem, we must conclude that this

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[55] The change of the initial vowel is u-umlaut, a regular sound change by which
pre-PT *ë became PT *ǫ (an o-vowel distinct from *o of other sources) when
followed in the next syllable by *u or *ū (Normier 1980: 255; cf. already Pe-
dersen 1941: 220–1). This change clearly occurred after the shift of word-final
*ō to *ū and after the change of *o to *ë (unless its effect was actually to prevent
the change of *o to *ë); that it occurred before the vowel system was restructured
(see fnn. 21 and 38) is clear from the fact that PIE *dóru 'wood' appears in PT as
*ǫrə (> TB, TA or), not as "*érə".

[56] The Tocharian change of word-final *-ō to *-ū was clearly early, but it is
difficult to show that it was among the earliest changes. The best that can be said
is that it must have preceded u-umlaut, which in turn must have preceded the
restructuring of the vowel system (see the preceding footnote), and the remaining
chronology is as in fn. 21. On the other hand, it seems extremely likely that the loss
of *d before consonants (see fn. 2) occurred before the shift of *-ō to *-ū, since *duṓ
> *dwṓ > *wṓ > *wú can plausibly result in a PT form with initial *w- (see
immediately above in the text), whereas one would expect a sequence *duṓ > *duú
to result in *dú̄ rather than *wú. It therefore appears that the change of *-ō to *-ū
cannot stand quite at the beginning of a chronological sequence of changes.

[57] I am grateful to Jay Jasanoff for reminding me of this, and to Hans
Hock for helpful criticism of the (much longer) original version of this para-
graph. A change that occurred after the breakup of PGmc. must necessarily be
much later than any dialectal PIE change; estimates of the amount of time that
may have elapsed between the two are superfluous. It should also be noted that
while the Tocharian and NWGmc. changes are more or less identical – only final

sound change and its conditioning are natural and repeatable, at least within the context of a relatively archaic IE vowel system.

3.4. Douglas Adams (1984: 397–8, 1988b: 16–7) has suggested that PIE syllabic resonants became in the first instance *uR (as in Germanic), and that those *uR subsequently underwent the general pre-PT change of *u to *ə, whence the PT reflex *əR; as evidence he adduces a number of putative examples of PIE *K̂R̥(X)/*KR̥(X) > *KuR > PT *kʷəR, notably TA *kulmämts-* 'reed' < PIE *k̂l̥Xm-; TB /kwər-/, TA *kur-* 'grow old' < PIE *ĝr̥X-; TB *kwarsär*, TA *kursär* 'mile' < PIE *kr̥s-* 'run'. (For Adams' explanation of the development of initial syllabic resonants see fn. 17 above.) Observing that there are also examples that do not exhibit labialization of the velar, and that at least one (namely TB *kante*, TA *känt* 'hundred' < PIE *(d)k̂m̥tóm) cannot possibly have lost such labialization by analogy, he concludes that "the presence or absence of a PTch *w after an initial *k is not predictable" (Adams 1984: 397). I disagree; my own view of the situation can be stated briefly as follows.

The PT reflex of PIE R̥ is indeed *əR; in addition to the examples of PIE *R̥X cited in section 2.2, cf. also the following:

PIE *(d)k̂m̥tóm 'hundred' (Skt. *śatám*, Lith. *šim̃tas*) > PT *kənté > TB *kante*, TA *känt*;

PIE *wîk̂m̥tix̂ 'twenty' (Lat. *uīgintī*) > *wîkənti (cf. Doric Fίϰατι) > *wîkənt > PT *wîkən > TB *ikäm*, TA *wiki* (Szemerényi 1960: 47–9; see also fn. 21 above);

PIE *dék̂m̥t 'ten' (Lat. *decem*, Goth. *taíhun*) > *dékənt > PT *śəkə > TB *śak*, TA *śäk*;

PIE *dn̥ĝhwéx- 'tongue' (OLat. *dingua*, Goth. *tuggo*) > → PT *kəntwá- > TB *kantwo*, pl. *käntwāñ*, TA *käntu*;

PIE *bhr̥ĝhrós 'high' (cf. Hitt. *parkuš*, Skt. *br̥hánt-*, Av. *bərəzant-*) > PT *pərkré 'long' > TB *pärkare*, TA *pärkär*;

PIE pres. *tl̥-né-x- 'be lifting' > *tl̥-ná- (Lat. *tollit* '(s)he lifts, removes', OIr. *tlenaid* '(s)he steals') > PT pres. *təllá- 'be enduring' > TB /təllá-/, e.g. in 3sg. *tallam*.

I also agree that PT distinguished between *k and *kʷ (cf. the discussion in section 3.1), and that pre-PT velars did become PT *kʷ when next to *u (before the restructuring of the vowel system); examples of the latter change include the following:

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*-ō is affected – the Celtic change was broader, including preconsonantal *ō in final syllables; cf. PIE *swésōr 'sister' > PC *swesūr > Primitive Irish *swiūr > OIr. *s̈iur*.

PIE *uksén 'ox' (Skt. ukṣā́, etc.) → *uksṓ > PT *wək^wsó > TB *wokso
> okso (Normier 1980: 263);
PIE zero grade *luk- 'light' (Skt. ruc-, etc.) > PT *lək^w- in *lək^wtsé
'shining' > TB laktse, derived noun läktsauña 'light, lamp', perla-
tive läk͡u̯tsauwñaiysa Berlin 214a2 (Krause and Thomas 1960: 50);
PIE (*k^wéy →) *k^wís 'who', *k^wíd 'what' (Lat. quis, quid, etc.) > *k^wí
> *kú[58] > PT *k^wə- in nom. *k^wəsé, obl. *k^wəcé (compounds
with the unmarked demonstrative) > TB k͡u̯se, k͡u̯ce, TA kus, kuc.

But since we have several absolutely certain examples of PT *kəR from
PIE *K̂R̥(X) and *KR̥(X) (to the above list add TB kantär 'is happening'
from section 2.2), and since it is equally clear that PIE *K^wR̥(X) became
PT *k^wəR (see the beginning of this section), it is not methodologically
sound to adduce apparent examples of PT *k^wəR < PIE *K̂R̥(X)/*KR̥(X)
and to conclude on that basis that the sound laws don't work without first
trying to account for the last class of examples in other ways. In fact two
of Adams' examples MUST be accounted for in some other way in any case,
because they do not even reflect PT *k^w. The /w/ of TB /kwər-/ 'grow old'
(pres. 3pl. kwremntär, pret. ptc. kuro, aberrantly spelled) and kwarsär
'mile' show that the PT initial of these words was the cluster *kw, not the
phoneme *k^w (Pedersen 1941: 235, Campanile 1969: 198)[59]; note that PT
*k^w lost its labialization in TB except before obstruents (where a loss of
labialization seems to be still in progress)[60]. A contention that any PIE
palatal or velar could become PT *k or *k^w or *kw ignores the basic
assumption of the comparative method – the regularity of sound change
– too completely to be acceptable under any circumstances; we must
remove the examples with PT *kw from consideration as Gleichklangsety-

[58] The sound change *k^wi > *ku is parallel to the change *wi > *u, e.g. in
PIE pres. *swid-yé- 'be sweating' (Skt. svídyate) > *sud-yé- > *suyé- > PT
*səy-(a-) 'sweat' > TB /sya-/, e.g. in gerundive syälle.
The latter change was originally suggested to me by Warren Cowgill in 1980
as a means of accounting for the lack of palatalization of *w in the following
examples:
PIE *dwitós 'second' (cf. Skt. dvitíyas 'second', dvitā́ 'doubly') > *witós
    (see fn. 2) > *utós > PT *wəté > TB wate, TA wät;
PIE *wisó- 'poison' (Skt. viṣám) > *usó- > PT *wəsé > TB wase, TA wäs.
[59] A contrast between these two, and of both with velar *k, is by no means
implausible; note that unless we posit such a three-way contrast for an earlier stage
of Osco-Umbrian we cannot explain why the Oscan word for 'tongue' is (acc.)
fangvam rather than "fambam".
[60] Cf. such examples as TB kmem 'we came' < PT *k^wəm-émə < PIE *g^wm̥-,
krāmär 'burden' < PT *k^wramər < PIE *g^wroxmVr- (see fn. 26), kele 'navel' < PT
*k^wëlë < PIE *k^wolo- 'hub' vs. länk͡u̯ci (see section 3.1), k͡u̯se (see immediately
above).

mologien. But in that case our only example of PT $*k^w \partial R$ < $*kuR$ < PIE $*\hat{K}\underset{.}{R}(X)/*K\underset{.}{R}(X)$ is TA *kulmämts-* 'reed', a hapax legomenon (see Poucha 1955 s.v.) of uncertain morphological analysis (what is *-ämts-* ?); and such an example carries no weight at all against the clear examples of PT $*k\partial R$ cited above. I conclude that there is no evidence that PIE $*\underset{.}{R}$ became $*uR$ in the first instance in Tocharian; consequently no connection with Germanic can be posited on such grounds.

3.5. Other distinctive early Tocharian sound changes do not seem to be shared by any other branch of IE; on the contrary, the phonological evidence suggests that Tocharian went its own way from a very early date.

In sum, I find in Tocharian sound changes no clear evidence of any early contact with another branch of IE.

4. Morphological Changes: Stative Presents and ā-Preterites

4.0. Among the morphological innovations that Tocharian has undergone (or appears to have undergone), two seem particularly promising as indicators of connections with other branches of IE[61]. These are the creation of class III and class IV presents[62], which seem to reflect some PIE category of stative presents, and of class I preterites, which can (in part) be traced back to a preterite category characterized by a suffix $*-\bar{a}-$. Both cases are complex; they will be discussed at length in this section.

4.1. Tocharian presents of classes III and IV are virtually media tantum[63]. They are made to set-roots[64], and the two classes are distributed complementarily over the range of such roots: class IV presents are made to roots with medial $*a$[65], and in the present stem both that vowel

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[61] I will discuss below my reasons for believing that these two features of Tocharian are innovations. – It is far more difficult to estimate the relative dates of morphological changes than of sound changes. To the extent that evidence exists, it will be presented in the text; otherwise I shall tacitly assume that the morphological changes discussed here COULD have occurred early, even if that cannot strictly be demonstrated.

[62] The numbers identifying classes of verb stems are those of Krause and Thomas 1960.

[63] Isolated active forms occur, mostly in TA; these can be analogical innovations. For the data see Sieg, Siegling and Schulze 1931: 352–3, Krause 1952: 66–8, Krause and Thomas 1960: 200–2.

[64] I.e., roots ending in PT $*-a-$. The majority of these have acquired their root-final vowel by analogy; an obvious example is PT $*m\partial sk-a-$ 'be (in a place)' $\leftarrow *m\partial sk-$ < $*m\partial n-sk- \leftarrow < *m\underset{.}{n}-s\hat{k}\acute{e}/\acute{o}-$, innovative pres. to PIE $*men-$ 'stay' (Gk. μένειν, etc.).

[65] A number of roots with medial $*a$ < $*\ddot{e}$ by a-umlaut (Cowgill 1967: 176–7) have also been attracted into this class; an apparent example is $*klawa-$ 'proclaim' (pres. 3sg. $*klow\acute{o}t\ddot{a}r$ > TB *klowoträ*, TA *klawatär*) < $*kl\ddot{e}wa-$, which would seem to represent a (secondary) o-grade form of a set derivative of PIE $*\hat{k}lew-$ 'hear'. (A secondary ē-grade form with depalatalization of the initial cluster,

and the suffixal vowel appear as PT *o; class III presents are made to roots
with other medial vowels (which appear unchanged in the present stem),
and the suffixal vowel of the present is PT *e[66]. Both present stem vowels
are invariant; neither palatalizes a preceding consonant. An overwhelming
majority of these presents are intransitive.

Since a number of Tocharian presents of these classes seem to be
cognate with PIE stative presents in *-éx̂- (Jasanoff 1978: 27–8, with list
of examples), the obvious source for the PT class III present suffix *-e- is
*-ë̄- < PIE *-éx̂- (Watkins 1962: 70–1, Schmid 1963: 99–100). But any
pre-PT *ē should have palatalized the preceding consonant, while the
consonants preceding the Tocharian stem vowel are almost never palata-
lized[67]; if class III *-e- reflects PIE *-éx̂-, we must explain the non-palata-
lization of the preceding consonant by analogy for that whole class of
presents, and that is hard to believe (Jasanoff 1978: 28–9)[68]. Moreover,
deriving class III *-e- from *-ē- makes it impossible to account for class IV
*-o-, as I shall show immediately below.

An alternative solution sees in the class III and IV stem vowels the
reflex of PIE (non-ablauting) *-o- (Krause and Thomas 1960: 200–1, Van
Windekens 1982: 53–4, Jasanoff 1978: 29–36, Adams 1978b: 280, 1988b:
70–2)[69], which clearly did not palatalize preceding consonants; the class

as TB pres. 3pl. *klyowontră* suggests, would perhaps be more believable, but it is
not clear that PT *e, the regular reflex of *ē, ever underwent a-umlaut. I hope to
discuss these problems further in the book referred to in fn. 2.)

[66] I posit PT *e rather than *ë for the following reason. It is very likely that
the stem vowel of class III presents and that of class III subjunctives is identical
in origin. But in the isolated TA noun *cmol* 'birth' (TB *camel*), which is surely
derived from the subj. III stem *cma-* (TB /cəme-/), that stem vowel has been
rounded by the adjacent labial; and whereas PT *e and *o were so rounded in TA,
PT *ë was not (see fn. 17). The finite forms, TA 3sg. *cmatär* 'will be born' etc., can
owe their unrounded *a* to analogy with *wlatär* 'will die', *nkatär* 'will perish', and
knatär 'will come into being'. Therefore I reconstruct PT *cəmél* 'birth' and subj.
III *-e-, hence also pres. III *-e-. But it should be remembered that the subj. III
and pres. III stem vowels have not been proven to be identical; hence pres. III *-ë-
remains a real possibility (at least in terms of this argument), and I will take it
seriously below.

[67] TA *sparcwatră* 'it turns', the only apparent exception, can owe its *-c-* to the
analogy of the active s-present *sparcwṣ-äṃ* 'it is (in place) for him'; the correspond-
ing TB form is *sporttotär*, without palatalization.

[68] To be sure, the lack of palatalization in the present has spread to the
imperfect in TB, though the imperfect suffix *-i-* always palatalizes the root-final
consonant otherwise (cf. Krause 1952: 104–6); but a spread of non-palataliza-
tion from present to imperfect (within the paradigm of the same stem) seems easier
than from subjunctive or preterite to present (i.e. between stems).

[69] Couvreur 1947: 60 sees a reflex of PIE *-o- only in the class III stem
vowel; cf. Hilmarsson 1986: 204 fn. 13, who suggests that the class IV stem
vowel reflects PIE *-ā-. But it is unlikely that present classes III and IV are of

III stem vowel would then be PT *ë (see fn. 66). But this hypothesis is also untenable for phonological reasons. As I have tried to show (Ringe 1987a: 114–8), the stem vowel of these present classes underwent a sound change in which the reflex of PIE *o – and, for that matter, the reflex of PIE *ē – did NOT participate. Note the following examples, in which I designate the present class III/IV stem vowel "*e_2". The pre-PT sequence *a ... ē gives PT *a ... e in at least two cases:

PIE *pxtér 'father' (Skt. *pitā́*, Gk. πατήρ, etc.) > *patér > PT *pacér > TB *pācer*, TA *pācar*;
PIE *dhugxtér 'daughter' (Skt. *duhitā́*, Gk. θυγάτηρ, etc.) > PT *təka-cér > TB *tkācer*, TA *ckācar*.

The pre-PT sequence *a ... o gives PT *a ... ë in

PIE *swadrós 'sweet' (Stang 1974; cf. *swādús in Gk. ἡδύς, *sudi- in Goth. *sutis*, etc.) > PT *swaré > TB *swāre*, TA *swār*;
PIE pres. ptc. *xéĝomx̃nos 'being driven' (Klingenschmitt 1975: 161–3; Gk. ἀγόμενος, etc.) > *ágomanos > PT *ákëmanë 'being led' > TB *akemane*, TA *ākmāṃ*;
PIE *xéḱos 'sharp point' (Caland s-stem, cf. Gk. ἄκρος 'topmost, uttermost') > PT *ákë 'end' > TB *āke*, TA *āk*;
PIE *bhágos 'share' (Skt. *bhágas* 'good fortune') > PT *pákë 'part' > TB *pāke*, TA *pāk*;
PIE *px-sḱó-ntor pres. 3pl. mid. 'they are guarding (their own)' > PT *paskéntər 'they keep' > TB *paskenträ*, > → TA *pāsantär* (the loss of *k is analogical)[70]

and in other examples[71]. However, pre-PT *a ... e_2 gives PT *o ... o in at least three clear cases:

PIE *wexg- 'break' (Kimball 1988: 245; Gk. passive aor. ἀγῆναι, etc.) > *wāg-; zero grade *uxg- accordingly → *wag- > *wak- in pres.

different origin, given the clear distribution of root shapes between the two classes referred to above.
[70] In this example, and in the two presents cited immediately below, one would expect to find the zero grade of the root for morphological reasons.
[71] These examples make untenable the rule of "mutual rounding" formulated by Adams (1978b: 280, 1988a: 14–5, 1988b: 21; cf. the earlier suggestion in 1978a: 448, where he assumes *ē rather than *o as the ancestor of the stem-vowel). They also invalidate the inverse change suggested by Jasanoff (1978: 31–5), whereby PIE *o failed to be unrounded in a sequence *a ... o. The pre-PT processes of vowel rounding and unrounding were more complex and more regular than the presentations in Jasanoff 1978: 32 and Adams 1988b: 21–2 suggest.

*wake₂- > PT *woko- 'be splitting' (intrans.) in TB 3pl. *wokonträ*
(etymology first in Pedersen 1941: 197);
PIE *xes- 'dry' > *as- (Gk. ἄζεσθαι 'dry out', Goth. *azgo* 'ashes', etc.;
cf. Lat. *ārēre* 'be dry' with analogical *ā*); since the zero grade *xs-
would have become *s-, full-grade *as- is generalized in pres.
*ase₂- > PT *oso- in TB 3pl. *osonträ*, TA 3sg. *asatrā*;
PIE *xenx̃- ~ *xn̥x̃- 'breathe' (Skt. pres. 3sg. *ániti*, Gk. ἄνεμος 'wind',
etc.) > *ana- in *ane₂lmë 'living being' > PT *onolmë > TB
onolme (Duchesne-Guillemin 1940: 160, Jasanoff 1978: 32).

If "*e₂" is a reflex of PIE *o or *ē, it obviously did not arise under
conditioning of the surrounding segments. Jens Rasmussen (1988: 179–80
fn. 4a) suggests that "*e₂" is PIE *o after all, and that pre-PT *a ... ó gave
PT *o ... o while *á ... o gave *a ... e, as in TB *swāre* /swáre/ 'sweet'[72];
a difference in accent would thus account for the difference in the outcome
of the vowels. But it is easy to show that Rasmussen's view of PT accent
is not supported by the facts. The accent on the initial syllable of TB *swāre*
is the result of a well-known TB accent retraction rule (Marggraf 1970:
15–8); the underlying form of the stem even in TB is /swaré/, not
"/swáre/", as is demonstrated by masc. pl. obl. *swareno* Berlin 18b7, abl.
swareṃmeṃ 24b6, fem. pl. *swarona* 2× in Yogaśataka 3b6 (Filliozat 1948:
37), etc., all from central-dialect texts. Of course, this underlying accent
could in turn be the result of a still earlier shift from the initial syllable
(Ringe 1987b: 258–62); but since adjectives in *-ró- are known to have
been oxytone in PIE, and since there was no regular retraction of accent
in Tocharian before the PT stage (loc. cit. pp. 257, 262), by far the most
highly valued hypothesis would posit PT *swaré – and in that case no
conceivable manipulation of accent will explain "*e₂" as a reflex of PIE
*o[73]. It seems clear that pre-PT "*e₂" cannot be PIE *ē or *o; we must
posit some other source for it. This is not particularly surprising, given that
"*e₂" occurs ONLY as the pres. class III/IV stem vowel and in the noun-
forming suffix *-e₂lmë > PT *-e/olmë. Moreover, since *ē and *o are the
only two PIE vowels that could regularly give the class III stem vowel TB
e, TA *a*, "*e₂" must have arisen from some other source within the
prehistory of Tocharian.

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[72] The relevant part of Rasmussen's note is more condensed and elliptical
than this exposition of it, but I believe that I have reported him correctly.
[73] Least of all the suggestion of Van Windekens 1982: 58, according to
which PIE *o remained rounded before *ly ("a *lucus a non lucendo* argument",
Winter apud Adams 1988b: 22), thus in the gerundive, and spread thence to
the whole paradigm in some verbs of this type – conveniently, just the ones that
had old *a in the middle of the root!

In 1980 Warren Cowgill pointed out to me that the pres. class III/IV stem vowel can most easily be accounted for as a product of contraction, and that the most likely scenario for its origin would involve the loss of intervocalic *y in a class of *-ye/o-presents followed by vowel contraction. Basing my work on Cowgill's observation, I proposed in Ringe 1987a: 117 a hypothesis of the origin of these Tocharian presents which, while not without problems, can now be corrected and substantially augmented as follows.

Both in Germanic and in BS the PIE stative presents in *-éx̂- have been violently remodelled. For example, Goth. *þahan*, ON *þegja*, OHG *dagēn* 'be silent' are obviously cognate with Lat. *tacēre*, but none exhibits a suffix that directly reflects PIE *-éx̂- (whereas Lat. -*ē*- does); in fact we must posit substantial remodelling within the history of Germanic, since the stative suffixes in the various languages do not correspond phonologically. Similarly, Lat. *rubēre* 'be red' finds an obvious cognate in OCS *rŭděti sę* 'blush', but the present of the latter is (3sg.) *rŭditŭ sę*; moreover, comparison of OCS *mĭněti* 'think', pres. 3sg. *mĭnitŭ*, with its Lithuanian cognate *minéti* 'remember', pres. 3sg. *mini*, reveals a lack of phonological correspondence between the present suffixes (OCS -*i*- < PBS *-ī- but Lith. -*i*- < PBS *-i-). In both cases the only solution to the problem that might make morphological sense[74] AND can be made to work phonologically[75]

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[74] Perhaps the most common alternative to this view is the recognition of a "half-thematic" inflection in *-i- ~ *-yo- and *-ī- ~ *-iyo- for PIE (Meillet 1931: 198). I do not see how such a hypothesis can possibly be correct. It does not accord with what we know of the PIE thematic vowel from older and more conservative IE languages; Meillet's assertion to the contrary (1931: 197) is an astonishing overgeneralization from specific facts of nominal morphology (connected with the phenomena discussed in Nussbaum 1975) to the whole range of verb formation. Note that both types of Latin verbs in -*iō* and the corresponding types in Osco-Umbrian and Celtic can be explained as regular developments of *-ye/o- presents, given Sievers' Law, unobjectionable sound laws, and reasonable analogical changes (Seebold 1972: 110–21 with bibliography, pace Collinge 1985: 283–6, see Ringe 1986: 110–1; a possible connection with nominal *-ī- does not change the situation, cf. Nussbaum 1975: 147–50); Proto-Germanic *ī can of course reflect *iye and *eye; Lat. *ferō, fert* can result from partial thematization of an athematic stem within Latin, or (more likely) from syncope of the short vowel following the *r*; and in similar fashion one can easily find a plausible alternative explanation for every one of Meillet's pieces of evidence for this supposed PIE type of stem. See also the criticisms of this and other alternative hypotheses in Watkins 1971: 54 and Jasanoff 1978: 19–23, 96–7. I would add that any solution that cannot reasonably be reconciled with the classical "Brugmannian" reconstruction of the PIE verb is not likely to be correct; see Eichner 1975: 71–4.

[75] The phonological objections of Jasanoff 1978: 64–5 are not cogent; in particular, note that 'daughter' seems already to have lost its medial laryngeal in some forms within the PIE period (cf. the discussion in G. Schmidt 1973), so

posits a replacement of stative *-ḗ- < PIE *-éx̂- by an innovative suffix
*-ǝyé/ó- (vel sim.) in the present; this is the solution proposed for Germanic
by Bennett 1962 (cf. also Cowgill 1959: 13–4, 1963: 265–6, Hock 1973:
332–3, Dishington 1976: 858–9, 863–4) and briefly suggested for BS by
Cowgill 1963: 266.

To this hypothesis three substantial objections can be raised (cf. Jasa-
noff 1978: 65–7, 100):

1) it seems clear that laryngeals were lost before *y in Germanic and BS
   (cf. especially PIE pres. *xérx̂ʷ-ye/o- 'plow' > Goth. arjan etc.,
   Lith. pres. 1sg. ariù – not "áriu" – beside inf. árti)[76];
2) it seems equally clear that the PIE stative present suffix *-éx̂- did
   not ablaut;
3) it is NOT clear why *-éx̂- should have been replaced in any case.

But all these objections can be met by a single hypothesis, which for that
reason appears plausible: at a date when various deverbal nominals (adjec-
tives in *-tó- and *-nó-, nouns in *-ti-, etc.) had been attracted into verb
paradigms, but zero grade could still be induced by relevant derivational
processes, nonfinite forms were made to statives in *-éx̂- using the zero
grade of that suffix (especially participles in *-x̂-tó-, which actually survive
as such in Germanic). Then, after contraction of tautosyllabic laryngeals
with preceding vowels, merger of laryngeals in *ǝ (vel sim.)[77], and the loss
of laryngeals before *y, the *-ḗ- of the present stem was replaced by
*-ǝ-yé/ó- on the analogy of *-yé/ó-presents and their participles (the
proportion being *-tó- (etc.) : *-yé/ó- :: *-ǝ-tó- : X, X = *-ǝ-yé/ó-)[78]. Full-

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that Jasanoff's objection to positing widespread consequences of the survival
of *ǝ for some time in Germanic has no force. The more substantial phonological
and morphological objections of Jasanoff 1978: 65–7 will be met below.

[76] The apparent attempt of Pinault 1982 to establish a general loss of la-
ryngeals before *y in (late?) PIE is not convincing; to take the isolated presents Gk.
ἀροῦν, Lat. arāre 'plow' as anything other than regular reflexes of *xérx̂ʷ-ye/o- is
not believable. The Greek counterexamples to retention of laryngeals before *y
cited by Pinault (op. cit. p. 270) can be accounted for in two ways: some have
zero-grade resonant-medial roots, and it is clear that laryngeals WERE dropped in
Greek between *R̥ and *y (Cowgill, p.c. 1980; cf. ὑφαίνειν 'weave' ≈ Skt. ubh-
nắti, τετραίνειν 'bore' to root *terx̂-, etc.); the rest need not have contained laryn-
geals (e.g. with εἴρειν 'declare' cf. Palaic wērti 'says'). In any case, the example of
'plow' seems clearer and more straightforward than any of the counterexamples.

[77] From the fact that interconsonantal laryngeals in internal syllables were
lost in many branches of IE it does not follow that the loss was a very early shared
change; *X > *ǝ > Ø appears to be a natural, and therefore repeatable, sequence
of changes.

[78] Such a chronology – regular loss of laryngeals before *y, followed by analogi-
cal reintroduction in the (new) stative presents – is considered and rejected by

grade *-ē- survived only in the derived aorist in *-ē-s-, apparently an
earlier innovation; that is the (eventual) analogical source of the *-ē- in the
BS infinitive (Lith. -ěti, OCS -ěti), which in turn is the analogical source of
the long e-vowels in the present types Lith. -ěja, OCS -ějetŭ. Probably not
all scholars will find this scenario credible, but I can discover no cogent
argument against it; I accept it because it is clearly POSSIBLE, and I do not
think that any of the alternatives are. The same can be said of the sound
change *-əye- > *-ī- which this hypothesis requires for BS. For obvious
reasons there are no exact parallels, but no counterexamples either. More-
over, it is very hard to see how we can dispense with a similar sound change
*-eye- > *-ī- for BS. Such a change can be reflected in Lith. i-stem nom.
pl. -ys, OCS fem. i-stem nom. pl. -i, and must be reflected in Lith. prašýti
'ask', OCS prositi, pres. 3sg. prositŭ (cf. Vaillant 1966:436–7), while appa-
rent counterexamples (such as OCS masc. trĭje 'three', pǫtĭje 'paths'; simi-
lar Lithuanian examples are cited in Stang 1966: 211–2) can all be the
result of obvious analogies. Note further that the short -i- of the Baltic
stative presents can be explained easily by the following additional chan-
ges within Baltic:

1) postconsonantal *-ye- > *-i- (again there are no counterexamples,
   since the invariant *-ja- of the simple *-ye/o-presents clearly reflects
   generalized *-yo-; however, -i- < *-ye- can survive in Lith. fut. 2pl.
   bū́site etc.[79]);
2) since the *o-forms of both the *i-presents and the *ī-presents con-
   tained a sequence *-ja- (1sg. *-jō), the latter type was eliminated in
   favor of the former (cf. the interchange between the two types of
   "verbs in -iō" in Latin).

I propose to extend this hypothesis to Tocharian in order to account for
the class III/IV presents. The pre-PT present stem vowel "*e_2" will then
reflect the contraction of *-əyé- and/or *-əyó-; the original nominals
formed with zero-grade *-x̂- > *-ə- have disappeared in Tocharian, but
their *-ə- survives as the root-final *-a- of the PT set roots from which
these presents are formed. Note that to account for all the Tocharian facts
the hypothesis must be adopted in its entirety, including the analogical
spread of *ə to position before *y; that original *-Xy- (*-CXi- by Sievers'

Jasanoff 1978: 66 fn. 15 on the grounds that it complicates the hypothesis. So
it does; but in my opinion the lexical connections of the Germanic and BS presents
in question with the PIE *-éx̂-statives are so clear (cf. Watkins 1971: 53–4),
and it is so obvious that the innovative suffix contains *-ye/o- but cannot contain
*-ē-, that I am willing to pay the price of the complication.

[79] I cannot credit the alternative explanation of Jasanoff 1978: 103–7; I
hope to argue against it at length in a future publication.

Law) developed differently in Tocharian is demonstrated by TB *skiyo* 'shadow' < PT *skiya- < PIE *sk̑xiéx-. (Cf. Gk. σκιά, but Skt. *chāyä* remodelled from *sk̑éxi-x, and *sk̑exi- also in OCS *sě-ni*; the original inflection must have been proterokinetic *sk̑éxi-x ~ *sk̑xi-éx-, cf. Nussbaum 1986: 46, 106–9 on *k̑ér-x 'head-bone'.)

If this hypothesis can be validated for Tocharian, it constitutes extremely powerful evidence for an early connection between Germanic, BS, and Tocharian, almost certainly in the northeastern corner of the known IE *Sprachraum*. Because the proposed common innovation involves an induced zero grade of the stative suffix *-éx̂-, the beginning of the association between the three branches cannot well postdate the late (or immediately post-)PIE dialect period; because an ordered sequence of changes is involved, the three-branch *Sprachbund* must have persisted for a substantial period of time.

Unfortunately, too many questions remain to be answered. Though no other origin so far proposed for the class III/IV presents strikes me as possible (for the phonological reasons stated above), I cannot prove conclusively that the developments that occurred in Germanic and BS also occurred in Tocharian. Clear independent cases of loss of intervocalic *y in Tocharian do not seem to exist; for every possible case there is a possible alternative explanation. (For example, PT masc. 'three' can be *tr'éy, reflecting *trés < *trées < PIE *tréyes, Cowgill apud Ringe 1987a: 130 fn. 33 (c); but it might conceivably also be *tréyə < *tróyes ← PIE *tréyes by analogy with PIE *k^wetwóres masc. 'four', Normier 1980: 254 fn. 6.)[80] Moreover, a long period of unobservable development separates the proposed contraction of vowels and the eventual emergence of "*e₂" as a recognizable entity in the pre-PT period; in addition, reconstructing the probable phonetics of the contraction, and of the sound change resulting in PT class IV *o . . . o, is a matter of sheer guesswork. Under the circum-

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[80] A further problem is the existence of nominative plural forms in -*i* in TA. In TB this ending could reflect PIE *-oy or *-ewes, but in TA the former appears as -*e* (see fn. 36) and the latter would appear as -*u* (though it is not clear that any of the TA nom. pls. in -*u* actually reflect PIE *-ewes; those with clear etymologies reflect PT *-uwa ← *-ū < PIE *-ux, see sect. 2.3). Presumably TA -*i* reflects an i-stem ending, and the most obvious candidate is PIE *-eyes – in which ending the *y would seem to have survived, the development conceivably being *-eyes > *-əyə > PT *-iyə > TA -*i*. To be sure, there are very few TA nom. pls. in -*i* with TB cognates in -*i*, so that the reconstructable PT class of such forms is marginal at best (see Krause and Thomas 1960: 112); moreover, none of the relevant nouns clearly reflect PIE i-stems. Note also that an analogical replacement of *-eyes by *-ies could have occurred early in the prehistory of Tocharian, and that would account for TA -*i* without calling into question a putative loss of intervocalic *y. But these difficulties, though not insurmountable, add to the uncertainty of the proposal outlined above.

stances I cannot even hope to give the hypothesis sketched above any greater plausibility than it already has.

I therefore think that in the present state of our knowledge it would be rash to base arguments regarding the position of Tocharian on the above explanation of the class III/IV presents.

4.2. In many respects the Tocharian class I preterite, which is characterized by a PT suffix *-a-, is a similar case. Jay Jasanoff has discussed this formation at length in the wider context of IE preterite formations (Jasanoff 1983: 54–71), and his complex argument is worth summarizing in some detail.

Jasanoff observes that there is a nonproductive subclass of Tocharian class I preterites which is characterized by ablaut and (in the active sg.) initial palatalization in PT. A typical example[81] is 'stood',

> 3sg. TB *śama, ścmā-c*, TA *śäm* < PT *ścəma,
> 3du. TB *stāmais* < PT *stəmaysə (?),
> 3pl. TA *ṣtamar* < PT *stəmarë;

to illustrate the ablaut of the middle forms we can cite, e.g., 'knew',

> act. 3sg. TB *śarsa*, TA *särs* < PT *śərsa,
> mid. 3sg. TA *kärsāt* < PT *kərsatë.

Jasanoff points out that this type must be old; that its inflection matches that of Sanskrit root-aorists to seṭ roots remarkably well (e-grade in the act. sg., zero grade in the mid., the o-grade of the nonsg. act. being evidently secondary); and that the Tocharian verbs in question are indeed made to seṭ roots (Jasanoff 1983: 55–61). The conclusion that those Tocharian preterites reflect PIE root-aorists would seem to follow automatically. But Jasanoff questions the status of the apparently root-final laryngeal in the majority of these roots, on the grounds that "roots of the structure *T(R)E(R)TH-* (where *T* = any obstruent, *R* = resonant, *H* = laryngeal) are exceedingly rare in Indo-European" (p. 61) and that several of the roots in question have aniṭ forms even in Vedic Sanskrit (ibid.; an example is later Vedic pret. ptc. *stabdhás* 'supported' beside pres. *stabhnāti*, aor. inj. *stámbhīt*, etc.). He therefore suggests that the final laryngeal (which he shows is *x)[82] was originally an aorist suffix (pp. 61–2) and undertakes to adduce further evidence in support of that hypothesis. Finding such evi-

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[81] The examples that follow are partly Jasanoff's and partly mine; my only significant contribution is the recognition of TB *stāmais* as a relic of the PT ablaut of this class.

[82] I have transcribed Jasanoff's statements in my own symbols; he uses the more usual *h₁, *h₂, *h₃ for the laryngeals.

dence in the Proto-Baltic preterite and pre-Proto-Slavic aorist – therefore
PBS aorist – in *-ā- < *-ex-, of which the most archaic type seems to have
had a zero-grade root (type OCS *bĭra-* in inf. *bĭrati* 'carry' beside pres.
beretŭ, pp. 62–4), he asks how this pre-PBS *-ex- should be analyzed. An
ablauting suffix *-ex- ∼ *-x- "is without comparative support" (pp. 64–5)
and non-ablauting *-ex- is unlikely ("non-alternating full-grades are ex-
ceptional in athematic active paradigms", p. 65; see below on the analysis
of stative *-éx̂-, the obvious exception); therefore Jasanoff analyzes the
pre-PBS *-ā-aorist stems as *tudáti*-type presents (i.e. zero-grade root plus
thematic vowel *-e-) plus aorist *-x-, citing as a parallel the PIE factitive
type *newe-x- 'renew' (Lat. *nouāre*, Hitt. *newaḫḫ-*) ← *newe/o- 'new'
(pp. 65–6). He cites actual examples of zero-grade thematic presents with
(original) zero-grade aorists in *-ex- from Slavic (pp. 69–70) and Baltic
(p. 70); he finds the same type of paradigm in Tocharian (pp. 66–8), especi-
ally in the class III presents (which he believes are simple thematics, see
above), which all have non-ablauting class I preterites with zero-grade
roots. Jasanoff even adduces a single BS-Tocharian lexical equation,

TA pres. (III) 3pl. *sikaṃtä(r)* 'they are flooded' : pret. ptc. *siko*
≈ Proto-Slavic pres. 3sg. *sĭčitŭ* 'urinates' : inf. *sĭcati*.

The above argument (summarized pp. 70–1) may be called the argument
from direct evidence for a PIE *-x-aorist; the remainder of Jasanoff's
paper (pp. 71–83) adduces more indirect support, which presumably will
stand or fall with the principal argument.

If Jasanoff is correct, the non-ablauting Tocharian class I preterites
constitute an important shared innovation with BS, since the *tudáti-type
presents from which they are formed (according to Jasanoff's hypothesis)
are clearly an innovative category in IE. Unfortunately, many of the
individual points of Jasanoff's argument are questionable at best. I hope
to have shown above that the Tocharian class III presents cannot possibly
reflect simple thematic stems. Consequently the Tocharian paradigm

class III present : class I preterite

is not directly comparable to the BS zero-grade paradigm

thematic present : *-ā-aorist.

Though in Jasanoff's lone lexical equation (cited in the preceding para-
graph) the Slavic and Tocharian paradigms are parallel even in my terms
(stative *-éx̂-present: *-ex-aorist), they have nothing at all to do with
zero-grade thematic presents; the apparent parallel could be fortuitous,

especially since only a single example can be cited. Moreover, Jasanoff's analysis of the (apparent) aorist suffix *-ex- as thematic *-e- plus aorist *-x- is also extremely doubtful because of the way he arrives at it. He begins by eliminating ablauting *-ex- ~ *-x- and invariant *-ex- as possibilities, in effect leaving *-e-x- as the only contender; but if it can be shown that either of the rejected possibilities is plausible, the analysis *-e-x- loses much of its support. In fact Jasanoff rejects invariant *-ex- on the grounds that such an athematic suffix would be rare and unparalleled; since the invariant stative present suffix *-éx̂- is an obvious parallel, his rejection of *-ex- depends on being able to explain away stative *-éx̂-, which he attempts to do in Jasanoff 1978: 120–5 as follows.

According to Jasanoff, the morpheme *-ę̇- (*-éx̂-), "unlike other IE verbal stem-formatives, ... not only functions as the basis of a regular finite conjugation, but also serves in isolation to derive a nominal form with a variety of periphrastic uses" (p. 121). Jasanoff sees numerous examples of this form in Latin, viz. the type *rubē recoverable from the imperfects and futures of such statives as rubēre 'be red' (rubē-bam, rubē-bō, originally phrases according to Jasanoff, who considers rubēre denominative) and primary tacēre 'be silent', and even of simple thematic verbs such as dūcere 'lead' (dūcē-bam, etc.), as well as from compounds such as calefacere 'heat' (cale- < *calē- by iambic shortening, which is not controversial; pp. 121–2). He identifies this pre-Latin type of word with the formation of the Vedic Sanskrit adverb gúhā 'hidden' (pp. 122–3), which is evidently an instrumental in *-éx̂ to a root-noun (pp. 123–4; the shifted accent is not a problem in an adverb). Jasanoff conjectures that such instrumentals, used predicatively, were reinterpreted as unmarked 3sg. verb forms, whence the creation of a stative present paradigm in *-éx̂- (pp. 124–5). This is "admittedly speculative" (p. 125); it is far too speculative for me, and I cannot accept it. That an apparently endingless form in *-éx̂ should be reinterpreted as the 3sg. of an active verb stem (NOT an endingless category in PIE) is not credible; even less so is the contention that formations including Lat. rubē(-), etc. represent an inheritance rather than an innovation[83]. (To be sure, such ā-stem parallels as putābam, putābō can be analogical on the ē-stems, but what are we to do with Oscan fufans and Faliscan pipafo?!) But note that Jasanoff's analysis of stative *-éx̂-, EVEN IF IT IS CORRECT, offers no support for his analysis of aorist *-ex- as *-e-x-,

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[83] In any case it seems questionable to equate formations of the type rubēbam, etc., which (whatever their origin) are Proto-Italic, with compounds like calefacere, etc., which appear to be very recent formations; on the latter see Leumann 1977: 566 with references. The Old Latin tmesis in Cato's ferue bene facitō, etc., cited as support by Jasanoff 1978: 121, could be secondary; see Leumann op. cit. pp. 271, 562–3, and note that clearly secondary tmesis occurs not only in verse but also in the prose of the XII tables.

for the following reason. Examples such as *x̂rudh-éx̂- 'be red', the most securely reconstructable PIE stative, show that stative *-éx̂- was already part of the Caland system in PIE (Jasanoff 1978: 125; this was demonstrated by Watkins 1971: 62–6). It seems at least possible that the whole Caland system was built by suffixation to zero-grade forms of root-nouns (Schindler apud Jasanoff loc. cit.); but if that is what happened, IT HAPPENED IN PRE-PIE, since the entire Caland system (including the stative presents) was already firmly entrenched by the PIE period. But the BS-Tocharian aorists in *-ā- < *-ex- (if they existed) must represent a post-PIE (or at least a sub-PIE, i.e. dialectal) innovation, since nothing comparable appears anywhere else in IE[84]. By that time there certainly was at least one invariant athematic verbal stem-suffix in the language, viz. the well-established Caland stative *-éx̂-. Consequently there is no reason to reject invariant aorist *-ex-, and that calls Jasanoff's analysis *-e-x- into question.

Finally, I do not think that Jasanoff's uneasiness about root-final laryngeals after obstruents is justified. The aniṭ forms made to some of the roots in question in Vedic Sanskrit can be secondary; indeed, the perfect equation

> Rigvedic injunctive 3sg. *stámbhīt* 'he established'
> = PT *ścəma '(s)he stood' (TB *śama, ścmā-c*, TA *śäm*; see fn. 2 on
>   PT *m < PIE *mbh)
> < PIE aor. inj. 3sg. *stémbhx-t '(s)he propped'

shows that the lack of laryngeal in later Vedic ptc. *stabdhás* must be secondary. Moreover, I am not convinced that roots of the shape

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[84] Jasanoff 1983: 75–7 argues (very reasonably) against a direct connection between the Italic and Celtic ā-preterite and the BS-Tocharian formation. I am unable to believe in the deeper connection between the two formations which he posits (with some diffidence) pp. 77–82 – namely that the *-ex-optative of Italic and Celtic (which clearly underlies the ā-preterite of those languages, see Benveniste 1951) represents a still older "conditional", ultimately an *-x-preterite formation – because I do not think that such a formation is at all likely to have arisen at any stage of the PIE or sub-PIE verb system. The Romance conditionals, as well as the Germanic type which employs the preterite of the future modal verb (English *would*, German *wurde*), arose in verb systems dominated by tense; but the PIE system was dominated by aspect, and the partial survival of aspect as a category even in Latin (e.g. in the syntagm *nē crēderīs* 'don't believe (it)!') makes it unlikely that the early Italic verb had become enough like its much later Romance descendant to permit the development of a conditional category. (Note that the "perfect" tenses of modern west European languages are "relative past" tenses and do not primarily express perfective aspect; see Comrie 1976: 1–6, 12, 52–3.) I agree that the BS and Tocharian preterites (aorists) cannot reflect an older *-ā-optative, since no such optative occurs in BS or Tocharian. (See section 5.1 below on the Tocharian a-subjunctive.)

*T(R)E(R)TX- were as rare as they seem to have to been, since the final laryngeal of such roots could have become lost by various analogical processes and hence could become unreconstructable.

In short, the only part of Jasanoff 1983 that seems clearly correct is the identification of ablauting Tocharian class I preterites as root-aorists to old seṭ roots. It is reasonable to suppose that secondary seṭ roots (like those abstracted from the class III/IV presents, if my analysis of them is correct) adopted the same inflection, though not necessarily the old ablaut pattern; that would have established suffixless preterites to seṭ roots as a major paradigm class. Finally, root-final *-a- has spread widely by analogy among Tocharian verbs (and is still spreading in our attested TB), but it has not spread evenly; subjunctive and imperative stems, for example, often seem to have acquired *-a- before the present stems in the same paradigm did. Thus to the Tocharian verb 'paint, write' we find aniṭ pres. (3sg.) TB piṅkäṃ, TA pikäṣ, but seṭ subj. TB (inf.) paikatsi, TA (3sg. mid.) pekaträ. A similarly preponderant spread of *-a- from seṭ to aniṭ roots in the preterite would have created preterites with an overt suffix *-a-, and that alone could account for the creation of the class I preterite as a distinct category. (In fact the preterite of the verb just quoted is class I TB (3sg.) paiyka, TA (3pl.) p(e)kar, with seṭ ptc. TB papaikau, TA pāpeku ←< PT *pĕpáykawə ← pre-PT *pĕpéykawə.)

Nevertheless there is at least some possibility that the Tocharian class I preterite IN PART reflects an older preterite category with a suffix *-ā-. Jasanoff (p.c.) points out that a large class of seṭ preterite participles exhibit apparently root-final PT *-o- in place of the expected *-a-; a typical example is PT *tərkowə 'released' (TB tärkau, tärkō͡u, TA tärko; cf. n-infixed seṭ pres. (3sg.) TB tärkanaṃ, TA tärnāṣ, etc.). He notes that this *-o- clearly contrasts with PT *-a- in the same position (cf. PT *pĕpáy-kawə above, also adj. TB tallā͡u, TA tālo 'wretched' < *tallawə < PT *tĕlláwə) and observes that by far the simplest explanation is that the *-o- reflects pre-PT *-ā- (see Marggraf 1975: 199, Normier 1980: 254). Since the preterite participle ought to have been formed to a preterite stem, and since a Tocharian preterite can only reflect a (post-)PIE perfect or aorist, and since stems in *-ā- without reduplication clearly were not perfects, these participles constitute reasonable evidence for aorists in *-ā- in pre-PT. It is not clear how this *-ā- would appear in the other forms of the PT paradigm; the regular PT reflex of *-ā- before final consonants (such as 3sg. *-t) is most uncertain, since all available examples are suspect of having undergone analogical change (cf. the discussion of *-ām in Marggraf 1975: 199–201). Still, it is reasonable to suppose that *-ā- in 3sg. *-āt, etc. would have given PT *-a-. Thus we appear to have fairly good evidence for the *-ā-aorist as a shared BS-Tocharian innovation after all.

Once again, however, we cannot exclude the possibility of independent

innovation. Marggraf 1975: 201–2 notes that the PT ablaut alternation
*a : *o (or its preform *a : *ā) seems to have been productive in nominal
inflection; if the same alternation enjoyed some productivity in verb
paradigms, it might have given rise to the *-o- of the participles in *-owə,
though the details of the process are no longer recoverable. The PBS aorist
in *-ā- need not have arisen by the same process, though again the details
of its origin are obscure. Unless and until we can discover more about the
origins of these two formations, we cannot conclude with confidence that
they represent a common innovation.

4.3. In sum, our most promising cases of apparently shared morpholo-
gical innovation prove to be disappointing; neither one reveals an indispu-
table connection between Tocharian and any other branch of IE.

5. Other Morphological Changes

5.0. Many other Tocharian morphological changes have been adduced
as evidence for connections between Tocharian and other branches of IE.
Not all of those proposals will stand closer scrutiny; for example, several
items in Georgiev's list of morphological features supposedly shared by
Tocharian and BS (Georgiev 1981: 292–3) reflect mistaken analyses of the
data[85]. In this section I shall discuss only those morphological innovati-
ons which seem to me to merit attention.

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[85] On Georgiev's point 2 (the Tocharian a-preterite) see section 4.2; his
points 4 (the gerundives), 7 (the imperative prefix), 8 (verbal nouns in TB -ñe, TA
-(u)ne), and the larger part of 10 (TB diminutives in -ske) will be discussed below.
The following comments address his other points in order. (1) The TB, TA infinitive
ending -tsi almost certainly reflects earlier *ty followed by an i-diphthong, and so
is approximately cognate to the BS infinitive endings. (A connection with the IIr.
ending *-dhyāi seems less likely, but possible; on the archaism of the latter cf.
Benveniste 1935: 72–5. That the formation seems originally to have been spe-
cifically mediopassive, and to have been peculiar in other ways (op. cit. pp. 75–100)
is not necessarily a great difficulty from the Tocharian point of view, since such
forms can have had a long and complex history in Tocharian.) But both the
Tocharian and the BS endings are oblique case forms of verbal nouns in *-ti-, which
still survive as independent nouns in IIr. and Greek; the innovation lies in their use
as infinitives, and that can easily be a late parallel development. (3) Most of the
forms of the BS active participles do reflect an extended suffix *-ntyo-. But the TB
pres. active participial ending -ñca cannot reflect *-nty-, as *ty gave PT *ts; rather,
it reflects the spread of palatalization as a morphological marker. The fact that the
TA ending is -nt shows that this innovation was TB only; cf. also isolated nouns
such as TB kauṣenta 'bane' vs. ptc. kauṣeñca 'killing' (Krause and Thomas
1960: 261!). Thus there are no innovations common to BS and Tocharian in the
nt-participles. (5) Tocharian verb roots in PT *-w- and *-wa-, which do not in any
case form a coherent class, seem to have nothing to do with the Slavic imperfectives
in -va-, which appear to reflect a late innovation entirely confined to Slavic (indeed
motivated by the peculiar Slavic aspect system, which is certainly innovative; see
Vaillant 1966: 462–3). (6) Tocharian verb roots in -tk- seem to have been ab-

5.1. To begin with, it should be noted that the Tocharian a-subjunctive (class V) has nothing to do with the ā-subjunctive of Italic and Celtic (pace Marggraf 1975: 199 and many earlier scholars). The latter is in origin a thematic optative (Trubetzkoy 1926, cf. also Benveniste 1951; pace Lane 1962 and others), while the PT *-a- of the Tocharian a-subjunctive is apparently the final segment of the verb root, a-subjunctives being simply athematic subjunctives to roots in *-a- (Cowgill 1967: 179; Winter apud Cowgill 1967: 180 fn. 1).

5.2. Much has been made of the Tocharian gerundives in TB *-lye/-lle*, TA *-l*, which have been compared with the Slavic and Armenian participles in *-lo- (e.g. by Meillet 1914: 17 and Benveniste 1936: 231–2). Though this is certainly an innovation in all three branches, it can easily be the result of parallel development. We can be reasonably sure that verbal adjectives in *-lo- existed in PIE (Brugmann 1906: 373–5); a good example from a western language is Lat. *figulus* 'potter' (root *fi(n)g-* 'fashion (out of clay), mold', PIE *dheyĝh- 'knead'). This formation became productive for varying periods of time in various branches of the family (cf. e.g. Lat. *uinculum* 'bond', root *uinc-* 'tie'; the fossilized nasal infix of this root is Latin only); moreover, verbal adjectives tend to become participles in IE languages (cf. e.g. the Latin and Sanskrit preterite participles in *-tó- reflecting PIE verbal adjectives, preserved as adjectives in Greek). These are exactly the conditions that would make parallel development likely. (Note also that the Tocharian forms exhibit further suffixation of *-yo-[86] and a unique shift in meaning, and thus actually have little in common with the Slavic and Armenian participles.)

5.3. The peculiar PT imperative prefix *pə- has been connected with the BS perfectivizing prefix *pa- < PIE *po- (Meillet in Lévi and Meillet 1914: 18, Benveniste 1936: 232). This is impossible for phonological reasons: PIE *o would have given PT *ë, not *ə (Normier 1980: 252–4)[87]. The complete skepticism of Penney (1989: 61–2) regarding this and all other

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stracted from old sk-presents in which the *-s- had been lost between consonants (Melchert 1977); they have nothing to do with the (late and isolated) Slavic verbs in *-k-*. (I find the alternative explanation of K. Schmidt 1988 hard to believe.) (9, 10) The derivational suffixes which Georgiev lists here are based on material inherited from PIE with innovations which mostly do NOT recur outside Tocharian; to the extent that suffixes in other branches of IE resemble them other than by common inheritance from PIE, separate parallel innovations cannot be excluded. Cf. the reservations of Benveniste 1936: 233 on the adjectival suffix TB *-ṣṣe*, TA *-ṣi*.

[86] TB *-ly-* ~ *-ll-* might be an attempt to write /l'l'/ (long or double palatalized /l/), at least in part; on depalatalization in the TA forms cf. the discussion in Hilmarsson 1986: 316–24 with references. Not all the problems have been solved.

[87] For further discussion see Penney 1989: 61–2 with references.

explanations of the imperative prefix (summary in Van Windekens 1982: 233–4) is entirely justified; there is nothing comparable in any IE language.

5.4. The attempt to link Tocharian abstract nouns in TB *-ñe*, TA *-une*, *-one*, (rarely) *-ñe* with BS formations in Lith. *-ūnė*, OCS *-ynja* (Meillet 1911: 461, Benveniste 1936: 232–3) likewise founders on phonological objections, this time within Tocharian: though the correspondence TB *-ñ-* : TA *-ñ-* is regular, no other segment of these suffixes corresponds to any segment of the other language's suffix(es) by the regular "sound laws"[88]. The morphological difficulties are even more severe: whereas the BS nouns are feminine and clearly reflect old yā-stems, the Tocharian nouns are neuter and have the nt-plurals (TB *-e-nta*, TA *-ey-äntu*) which seem to be normal for old neuter s-stems (cf. Van Windekens 1979: 74–5, 205).

5.5. Perhaps the most widely known characteristic of the Tocharian verb system is its primary mediopassive endings in *-r*, e.g. TB, TA 3sg. *-tär*, 3pl. *-ntär*, which closely resemble the corresponding endings of Anatolian, Phrygian, Italic, and Celtic (cf. Benveniste 1936: 230, Porzig 1954: 83–6, both with bibliography). The fact that *-r* is excluded from the preterite both in Hittite and in Tocharian can only mean that *-r* was the PIE primary ending marker for the mediopassive (Cowgill 1968: 25–7, cf. Pedersen 1938: 103–4), preserved in peripheral branches of IE but replaced by *-y*, the active primary ending marker, in Greek (e.g. -ται, -νται, Arkadian -τοι, -ντοι), IIr. (Skt. *-te*, *-nte* with *e* < *oy*), Germanic (Goth. *-da*, *-nda* with final *a* < PG *ai* < *oy*), and possibly in BS, though the complete elimination of the mediopassive in that branch robs us of clear evidence[89]. Since these branches seem to be less peripheral (geographically) than those that preserve *-r*, it might be supposed that *-r* was replaced by *-y* in the immediate post-PIE period in a contiguous central group of dialects (Cowgill 1968: 26), no doubt including not only the ones named but also geographically intervening ones that have disappeared with little or no trace (Thracian, Dacian, Illyrian, etc.). In that case would be clear that pre-Tocharian was not part of this central area, though it could have been adjacent to it. However, Jasanoff (p.c.) points out that in this case, as in so many others, we cannot exclude the possibility of independent innovation in IIr., Greek, and Germanic (the only three branches for which the

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[88] TB *-e* corresponds to TA *-Ø*, and conversely TA *-e* corresponds to TB final i-diphthongs (and *-i* < PT *ę*); TA *-n-* ought to be matched by *-n-* in TB. The initial vowels of the TA suffixes are less of a problem, since they clearly arose by resegmentation; but that should mean that the *-u-* of TA *-une* is incommensurable with the PBS *ū* of Lith. *-ūnė*, OCS *-ynja*, and unfortunately that is the comparison that is initially the most appealing.

[89] For a possible survival (Baltic athematic 2sg. *-sai*, OCS athematic 2sg. *-si* < mediopassive *-soy*?) see Cowgill 1985b: 106–7.

change is certainly attested), since the replacement of a hic-et-nunc com-
plex *-r ~ *-i by unitary *-i (~ *-y purely phonologically) is surely a
natural and repeatable change. Consequently we cannot claim with assur-
ance that Tocharian was originally a "peripheral" IE language on the
strength of this isogloss.

5.6. One of the most striking innovations in the Tocharian verb system
concerns the shape of the 1sg. mediopassive endings (Cowgill 1968: 26–7).
Since the vowel of these endings in PIE has been a matter of controversy,
it will be convenient to discuss it first; I will then consider the consonant
preceding that vowel.

Comparison with the third person PIE middle endings, primary sg.
*-o-r ~ *-to-r, pl. *-ro-r ~ *-nto-r, secondary sg. *-o ~ *-to, 3pl. *-ro ~
*-nto, might lead us to expect that the 1sg. endings were primary *-xo-r,
secondary *-xo (Cowgill, loc. cit.); however, what little evidence there is
points to *-xe-r, *-xe instead (with *e > *[a] next to the laryngeal, as
usual). The situation can be summarized as follows[90]. The evidence of IIr.,
in which all nonhigh short vowels merged[91], is ambiguous; so is the Italic
and Celtic evidence, because in those branches the only old endings are
thematic (Lat. -or, OIr. -ur), and the *-ōr which is their immediate preform
could reflect either *-o-xor or *-o-xer. Gothic pres. 1sg. -da is of course just
the old 3sg. form in transferred function. Most of the Anatolian evidence
is also unhelpful; Hittite -ḫḫa(ri) etc. could equally well reflect PIE *-xo(-)
or *-xe(-). But Craig Melchert's recent discovery of Lycian 1sg. pret. mid.
a-xagã 'I became' (lit. 'I was made, factus sum'; Melchert 1989b, cf. also
1989a: 1) has at last provided us with unambiguous Anatolian evidence,
since the final vowel of Lyc. -xagã (= Hitt. -ḫḫaḫat plus a particle) can
reflect Proto-Anatolian *a < PIE *e next to *x, but NOT Proto-Anatolian
and PIE *o (Melchert forthcoming). This clear evidence for PIE *-xe, *-xer
is supported by the α of Greek primary -μαι, secondary -μᾶν (Attic-Ionic
-μην), which is therefore an archaism, not an innovation. (It cannot reflect
*-xo, *-xor; cf. the discussion in Beekes 1972a.) The same seems to be true
of the *a in PT primary *-mar (TB -mar, TA -mār), secondary *-ay (TA
-e, → also -we; TB → -mai); thus these *a definitely do not reflect a
common Greco-Tocharian innovation (pace Cowgill loc. cit.). (In fact it is
even possible to doubt that the PT *-a- reflects PIE *-xe(-). A plausible
alternative explanation of these *-a- has been advanced by Van Winde-
kens (1982: 273 with bibliography)[92]: PIE thematic 1sg. primary medio-

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[90] I am grateful to Jay Jasanoff and especially to Craig Melchert for
helpful discussion of this problem.
[91] Except for Brugmann's Law, which of course does not apply in this case.
[92] Van Windekens first published the idea discussed here in 1939 in Re-
vue des Études Indo-européennes 2, a volume which is not available to me.

passive *-o-xer > *-ōr > *-ar → PT *-mar; evidently 2sg. *-tar can be
analogical to 1sg. *-mar (Watkins 1969: 191)[93], and the *-a- of the second-
ary endings 1sg. *-ay, 2sg. *-tay can be due to analogy with the primary
endings[94]. The generalization of a thematic 1sg. ending is not surprising;
cf. the later TB generalization of active thematic -u (< PIE *-ō) to
athematic presents and subjunctives.)[95]

The -m- of the Greek and Tocharian 1sg. middle endings, however, is
clearly an innovation (Cowgill loc. cit., Watkins 1969: 129–30, 190–1 with
bibliography), and it is tempting to see in it a common innovation (Cowgill
loc. cit. and 1986: 64–5). Unfortunately the probable relative chronology
of the Tocharian changes makes it most unlikely that the two languages
innovated together in this point. It seems obvious that the introduction of
-μ- in Greek resulted from the analogical pressure of athematic active -μι,
*-hι, -τι, -ντι on the corresponding middle paradigm, thenceforth -μαι, *-hοι,
-τοι, -ντοι; the secondary endings can also have played a direct role in the
change if it took place before the loss of final *-τ. The same analogical
pressure must have operated in Tocharian, and the change might be
datable for the following reason. Not only secondary *-s, *-t, and *-nt (and
most other originally final consonants and clusters) but also primary *-si
and *-ti were lost in pre-PT[96]; but the survival of PIE *-nti as PT *-n (see
fn. 21) shows that the endings were lost in two stages: first the secondary
endings without *-i, then the primary endings with *-i. During the inter-
vening period the secondary endings, which had merged in -∅, must have

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[93] As Cowgill observes (1968: 27 fn. 11), the rationale for this analogy was
evidently that primary 2sg. *-txor and 3sg. *-tor had merged (as had secondary
2sg. *-txo and 3sg. *-to). – Or should we suppose that the 2sg. endings were actually
*-txe, *-txer? (Evidence??)

[94] However, the source of the *-y remains obscure; as Cowgill emphasizes
(1968: 27 fn. 12), it cannot possibly be the PIE hic-et-nunc particle *-i of the
primary active endings, as the Tocharian endings are secondary middle.

[95] This had striking consequences; it is evidently the precondition for the
creation of thematic active -êᵤ, -au by the analogical proportion athematic 3pl.
*-ən : 1sg. *-u (= */-əw/) :: thematic 3pl. *-ën : 1sg. X, X = *-ëw. Cf. the remarks of
Watkins 1969: 203.

[96] This is the easiest way to explain the lack of correspondence between the TB
and TA 3sg. present endings (TB -m̥, TA -ṣ, both apparently analogical and/or
accretive additions) and the absence of any consonant before PT 2sg. *-tə <
enclitic *tu 'thou' (e.g. in TB yat, TA yät 'you go'). Jasanoff 1987: 110–1 may
be right in deriving TA 3sg. -ṣ ultimately from *-ti, but it is possible that the
survival of this ending is due to the suffixation of a particle after word-final *-Vti
> *-Vsi; a similar explanation seems to be absolutely necessary to explain TA 3pl.
-iñc, -eñc beside the shorter -i, -e, especially as the latter endings are the ones that
correspond phonologically to TB -äm̥ (< PT *-ən) and -em̥, -am̥ (< PT *-ën, *-an)
respectively (see fn. 21, and note that the vowels of the longer endings must have
resulted from contamination with the shorter ones, as Warren Cowgill pointed
out to me in 1980).

been undergoing extensive replacement (at least in part by the endings of the perfect), but the primary set *-mi, *-si, *-ti, *-nti should have remained intact, and one might suggest that the pre-PT introduction of *-m- only into the primary 1sg. middle ending (and NOT into secondary *-ay; contrast Gk. -μᾱν) dates from that period[97]. But in that case it is difficult to explain why the *-t- of the 2sg. middle endings was not replaced by *-s- (cf. Greek!). Such an omission would make sense, though, if *-m- was introduced into *-mar after both *-s and *-si had been lost, since it is known that *-mi did survive in PT as *-m'ə (> TA pres. (etc.) -m, TB opt./ipf. -m), whereas *-m was lost by sound change and consequently replaced. But if that is what happened, *-mar was created long after Tocharian had ceased to resemble other IE languages, and a shared innovation with Greek is out of the question. Moreover, even if we prefer the earlier date – after the loss of the secondary endings only – in spite of the difficulties, we must recognize that the loss of final consonants (including *-m and *-s) would have made Tocharian very unlike Greek already by that period, so that a shared innovation would be unlikely (and in any case loss of final consonants was not one of the earliest Tocharian changes; see fn. 21). Finally, even if Tocharian did introduce *-m- into *-mar before the loss of original final consonants, it must be admitted that the Tocharian and Greek changes have little in common: in Tocharian only the 1sg. primary ending was affected, whereas Greek introduced -μα- into both 1sg. endings and -σο(-) into both 2sg. endings. In short, there is no conclusive evidence here for an early connection between Greek and Tocharian.

5.7. TB uses a suffix -śke (< PT *-śəkë) to derive diminutives; this suffix has been held to correspond exactly to the Slavic diminutive suffix *-čĭkŭ, both reflecting earlier *-kikos, apparently compound *-k-ikos (Georgiev 1981: 293; cf. Ivanov 1958)[98]. But *-kikos would have given Slavic *-čĭcĭ by regular sound change; and *-kikus, though a possible preform of *-čĭkŭ, is morphologically implausible and moreover cannot be the ancestor of the Tocharian suffix (TB -e < PT *-ë cannot reflect earlier *-u(C)). Slavic -čĭkŭ (the form of the suffix attested in OCS, and the one with which Ivanov 1958: 62–3 works) is no better; no matter whether its *i reflects ealier *ī or *ey, it ought to correspond to PT *i > TB i, which would not have been dropped. In short, no form of the Slavic suffix is exactly cognate with that of TB. It is most likely that the two suffixes are independent innovations, made by adding k-suffixes to forms that already had them (Hock, p.c.); this is made all the likelier by the fact that no

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[97] I am grateful to Hans Hock for helpful discussion that eventually led me to this idea.

[98] The feminine is derived from the masculine by a productive process in both branches, and thus has no independent evidential value.

similar formant seems to occur in Baltic (see fn. 1) and by the crosslinguistic tendency of palatals to appear in diminutives and other affective forms (Brian Joseph, p.c.). Indeed, according to Klingenschmitt 1975: 149–50, TB -*ške* is simply a loan from Iranian.

5.8. Adams 1981, 1984: 398–9, 1988a, 1988b: 110–2 has maintained that the prominence of secondary n-stem nominal forms in Tocharian reflects a distinction like that between Germanic "strong" and "weak" nouns and adjectives at a pre-PT stage. I do not believe that Adams has proved his point, because he offers no clear evidence of an opposition between n-stem and n-less forms at any stage in the development of Tocharian; nor am I convinced by his attempts (in Adams 1988a) to relate the secondary n-stem forms to such other phenomena as palatalization in the acc. sg. and the PT acc. sg. ending *-Vy. It seems to me that the observed pattern of Tocharian nominal endings can have resulted from analogical changes long after many of the old (PIE) stem classes had ceased to be identifiable in pre-PT. Consequently I see in the spread of n-stem forms in Tocharian no evidence of early contact with Germanic.

5.9. I also prefer to be cautious concerning the derivation of -*ais*- in TB gen. du. -*aisäñ*/-*aisi* from (quasi-)PIE *-oysu (Winter 1962a: 126) or *-oysi (Adams 1984: 398), as the fate of PIE nonfinal *oy in noninitial syllables remains unclear (see fn. 36). Moreover, Olav Hackstein (p.c.) points out that TB -*ai*- appears to be a dual marker in a number of verb endings (pres. 3du. mid. -*aitär*, K. Schmidt 1975: 289–90; pret. 3du. act. -*ais* (≈ TA -*enas*), imperative 2du. mid. -*ait*, Krause 1952: 195–6 etc.); if that is its function in nominal endings as well, it is unlikely to reflect any PIE morpheme directly. (Cf. also Van Windekens 1979: 247–8.)

5.10. Thus in Tocharian morphology too I find no indisputable evidence of early contact with other branches of IE. This should not be very surprising; though the Tocharian morphological system clearly reflects its PIE heritage[99], it has obviously developed in unique directions.

6. Vocabulary

6.0. Much of the evidence that has been adduced in the past for the position of Tocharian in the IE family has consisted of vocabulary shared exclusively with other branches of IE. Most of this evidence suffers from a fundamental methodological flaw that robs it of nearly all its probative value: in principle any shared word can be a shared retention of part of the

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[99] This is truer than is sometimes supposed. For example, the puzzling pattern in which *-s- appears (and fails to appear) in the active class III preterite can be explained almost entirely by regular sound changes starting from a "classical" PIE s-aorist (pace Krause and Thomas 1960: 247, Jasanoff 1988, etc.), as I hope to show in a future article.

PIE inheritance. Thus, for example, the fact that *pānt- 'all (vel. sim.)' appears only in Tocharian (TB *po, pont-*, TA *pont-*) and in Greek (παντ-; Cowgill apud Lane 1970: 86) does not necessarily indicate any close connection between the two; it can mean that only those two branches happen to have preserved this particular PIE term from the semantic range of 'all'. One might try to circumvent the difficulty by comparing the total numbers of words which Tocharian shares exclusively with each other branch and the number shared with the rest of IE as a whole, knowing that many of each group will be shared retentions but relying on the law of averages to keep the percentage of retentions in each group roughly the same; this method has been used to good effect by Stang (1972) in his comparison of the Germanic and BS lexica. Unfortunately our knowledge of the Tocharian languages is too fragmentary to permit any reliance on such a procedure; not only is the limited vocabulary of our texts unrepresentative of the Tocharian lexicon as a whole (Winter 1984: 20–1, 224–5), but the actual numbers are probably too small to yield statistically valid conclusions.

We are thus reduced to the consideration of individual words which for special reasons are not affected by these limitations, and it is to them that I now turn.

6.1. A notable case of lexical agreement between Tocharian and BS appears in TB *reki*, TA *rake* 'word' < PT *rëk- < *rok-, or else < PT *r̊ek- < *rēk-, and Lith. *rēkti* 'shout', OCS *rešti* (pres. 1sg. *rekǫ*) 'say' (Benveniste 1936: 236; Porzig 1954: 183). If this is not the result of chance (always a possibility), it would seem to be a common innovation; PIE used other roots for 'say' and 'word' (*(x̂)ex̂ĝ-, *x̂wer-, *sekʷ-, *wekʷ-). But even if the agreement is not illusory it can be the result of borrowing[100], especially as the Tocharian verb 'say' (TB, TA *weñ-*) is a derivative of PT *wékʷə 'voice' < PIE (acc.) *wókʷm̥ (Winter 1977: 133–4); moreover, it is virtually impossible to show that this particular borrowing (if that is what it was) occurred early, as a root of the shape *rok- or *rēk- should have been fairly stable phonologically both in Slavic and in Tocharian for long periods of time.

6.2. The common semantic innovation represented by PT *këmë (TB *keme*, TA *kam*), OCS *zǫbŭ*, Alb. *dhëmp* 'tooth' < PIE *ĝómbhos 'row of teeth' (Porzig 1954: 184–5) strikes me as less significant, as it seems natural enough to be repeatable[101].

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[100] See sect. 7.4 below for a discussion of the conditions under which borrowing between the more easterly branches of IE could have occurred.

[101] A path by which such a semantic shift might have occurred is suggested by the Germanic and Vedic Sanskrit data. Proto-Germanic *kambaz 'comb' (OE *camb*, etc.) must reflect a PIE singular *ĝómbhos 'row of teeth' with a unique shift in meaning; but the early Rigvedic form, *jámbhāsas* 'set of teeth', has been plural-

6.3. A lexical retention which (surprisingly) might reveal something about the position of Tocharian is TB *nekcīye*, TA *n[o]ktim* 'in the evening', which agrees in meaning with Hitt. *nekuz mēḫur* 'evening time'. All other cognates mean 'night' (Vedic *nák*, Gk. νύξ, Lat. *nox*, Goth. *nahts*, Lith. *naktìs*, etc.); that is likely to be an innovation, since a word *kʷsep- 'night' is attested in the most archaic IE languages (Hitt. *išp-ant-*, Skt. *kṣap-* 'night', Av. *xšap-* 'darkness', perhaps also Gk. ψέφας 'darkness'; see Schindler 1967 b: 294–5). What makes this case useful is the likelihood that an innovation shared by so many branches of IE occurred once over most of the IE area in the dialectal period, missing only the peripheral areas. If that is what happened, we have a clear indication that pre-Tocharian was a peripheral dialect of PIE. On the other hand, we cannot completely exclude the possibility that the semantic shifts were the reverse of those posited above (Hock, p.c.), i.e. that PIE *nekʷt-, *nokʷt- did indeed mean 'night' and that the meaning of the Hittite and Tocharian forms is an innovation. But in that case the pattern proves nothing, since the semantic change 'night' → 'evening' is commonplace. (The Tocharian word for 'night', TB *yṣiye*, TA *wṣe* < PT *w'əṣeye, is a derivative of PT *wəs- 'rest, stay' < PIE *xwes- 'spend the night' – an obvious innovation.)

6.4. An even more useful case involves a unique irregular change which can scarcely have been repeated independently in the different branches of IE. This is the u-stem noun meaning 'tear', PIE *dáḱru (Porzig 1954: 185, 202). In the western languages we find only forms with initial *d- (Gk. δάκρυ, Lat. *lacrima*, OIr. *dér*, Goth. *tagr*, etc.); such a form apparently occurs also in Armenian (*artawsr*, pl. *artasuk‘*), while in the more typical eastern languages we find only vowel-initial forms (Skt. *áśru*, Av. *asrū-*, Lith. *ãšara*). The difference has never been satisfactorily explained, though the distribution of forms – vowel-initial forms only in eastern branches known to have been in contact (and not in the more isolated, though eastern, Armenian) – makes it overwhelmingly likely that the *d- is original and that the vowel-initial form has somehow lost it[102]. It is therefore highly significant that the Tocharian forms, TA *ākär*, pl. *ākrunt*, TB pl. *akrūna*, are vowel-initial; that alone would demonstrate that pre-Tocharian was an eastern dialect of PIE.

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ized, evidently because of its collective meaning. Only later do we find a singular *jámbhas* 'tooth' backformed to the plural. (Loc. sg. *jámbhe* in RV 1.37.5 is very obscure, but in any case a meaning 'tooth' does not fit the context.)

   [102] On the forms of this word see Walde and Pokorny 1928–30: 33–4, 769 and Pokorny 1951–69: 23, 179, all with bibliography. The discussion on p. 769 of the earlier work is particularly sensible and enlightening. I see no connection between the disappearing initial *d- of 'tear' and the tangled problems besetting the initial of 'tongue'; the latter is surely a case of tabu deformation (Hock 1986: 303–5; see also fn. 16 above).

Note that the case of TB, TA *or* 'wood' < PT *ǫ́rə < *ǫ́ru < *ḗru (by u-umlaut, see Pedersen 1941: 220–1, Normier 1980: 255, and fn. 55 above) ←< PIE *dóru (Skt. *dā́ru* 'wood' etc., Gk. δόρυ 'spear(-shaft)', etc.; Schneider 1940: 203) is not comparable, for the following reasons. Since the *d- of 'wood' is dropped only in Tocharian, a specifically Tocharian explanation should be sought, and in fact such an explanation is available. The oblique stem of PIE *dóru was clearly *dréw- (cf. Skt. gen. sg. *drós*), and PIE *d- was dropped before consonants in Tocharian (see fn. 2 with references); evidently the pre-PT paradigm *déru, *réw- (vel sim.) was levelled analogically to give a nom./acc. sg. *ḗru, as posited above (Jochem Schindler, p.c. 1985)[103]. This explanation is not available for 'tear', whose *d- was always followed by a vowel (so far as we can tell) and was lost in several eastern branches, not only in Tocharian.

6.5. Of all the words that Tocharian shares with other individual branches of IE, potentially the most useful is TB *tek-* 'touch', which appears to be connected with Goth. *tekan* 'touch' (Meillet 1914: 19, Van Windekens 1976: 504–5)[104]. If the words are cognate, they can only reflect a protoform *dēg- or *dēĝ-, which violates the PIE constraint against two voiced stops in the same root and therefore must be post-PIE, or at the earliest late PIE[105]; if they are not cognate, 'touch' might be an early Germanic loanword in Tocharian or vice versa, which would testify to contact between the two groups at some time after PIE began to diversify. I shall therefore discuss this case at length.

7. TB *tek-* : Gothic *tekan* 'touch'

7.1. The preform and ablaut of 'touch' are clearer in Germanic. Goth. *tekan*, preterite *taítok* reflects an old ablaut *dēg/ĝ- ~ *dōg/ĝ-; ON *taka* 'take' (preterite *tók*; cf. also *taka á* 'touch', apparently with the older meaning preserved in a more peripheral use)[106] reflects a zero-grade

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[103] On the usual fate of PIE *d- before back vowels in Tocharian see sect. 7.2 below.

[104] I can find no phonologically acceptable way to connect these forms with the *tag- or *txg- reconstructable from Greek τεταγών 'having seized', Latin *tangere* 'touch', Old English *þaccian* 'stroke', etc.; the initial consonants are clearly different, and Gk. τεταγών (at least) cannot contain *x̂, the laryngeal needed to account for the ablaut of the Germanic family of Gothic *tekan*. (I also doubt that Lithuanian *dagỹs* 'bur, thistle' has anything to do with any of these words.)

[105] Possibly *dē-g- or *dē-ĝ-, i.e. a PIE root (*dex̂- >) *dē- with a root-extension, as suggested by Schindler apud Mayrhofer 1986: 95 fn. 19. The rarity of root-extensions violating the constraint seems to indicate that they were late developments.

[106] I am grateful to Hans Hock for pointing this out to me.

*dXg/ĝ-[107]; the isolated West Germanic forms (if they belong here)[108] are compatible with this ablaut schema. The e-quality of the long vowel in the Gothic form shows that the laryngeal in question must have been the first (e-coloring) laryngeal; the pre-Germanic alternation *ē ~ *ō ~ *X must therefore reflect (quasi-)PIE *ex̂ ~ *ox̂ ~ *x̂.

The TB situation is not as simple. The present of the verb is thematic and exhibits a palatalized initial consonant; the occurring forms (Krause 1952: 249–50) are 3sg. ceśäm, 3pl. ceken-ne (with suffixed 3sg. pronoun), ptc. ceśemñca, gerundive ceśale. A distinctively palatalized initial consonant is unusual in a simple thematic verb[109]; in fact, distinctive initial palatalization in Tocharian verbs tends to be eliminated except in the productive sk-causative paradigm, and so is generally an archaism wherever else it appears. In this case the palatalization clearly indicates that the e of the root reflects older *ē (rather than *o), agreeing with the Gothic present; the nonpalatalized form tek- occurring in the subjunctive (3sg. tekä(ṃ)-me)[110], preterite (3sg. teksa), and verbal noun (tetekor) can scarcely

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[107] Probably from an older thematic aorist, as Germanic present indicatives can represent present or aorist subjunctives. Such a subjunctive is apparently the source also of Proto-Germanic *wiganą 'to fight' (ON vega (analogically remodelled as a class V verb), pres. 3sg. vegr ≈ Olr. fichid vs. nasal-infixed pres. Latin uincere 'win'; in the other Germanic languages the ablaut of the present has been regularized within class I, but cf. the fossilized Gothic noun dat. sg. wigana 'battle'). More often Germanic presents reflect athematic aorist subjunctives; thus PG *kʷimidi 'comes' (Gothic qimiþ, etc.) corresponds to Vedic Sanskrit aorist subjunctive gámati '(s)he will come' < PIE *gʷém-e-ti (Hoffmann 1955: 91), etc.

[108] The spellings of Old Frisian tetsia 'to seize', untteztsa 'to snatch away', bitech 'seizes' (Sjölin 1970: 165, 242, 1975: 16), biteszie '[that no one] seize' could reflect *tak-ja- or *tuk-ja- (as in ModHG zücken; I am grateful to Patrick Stiles for pointing this out to me); cf. the remarks of Steller 1928: 23, 31–2 on the phonology of *kj sequences, and note that van Helten 1890: 225 lists this verb in weak class I. Since a ja-stem does not fit the morphological pattern of ON taka, etc. very well, *tuk-ja- should probably be preferred for these Frisian forms. Middle Low German tacken 'touch', Middle Dutch takken 'seize', and Modern West Frisian take 'steal', whatever their original stem classes, must at least reflect *tak- (note that *tāk- < PG *tēk- would have given "tieke" in Modern West Frisian). The same is probably true of Middle Dutch taken 'take', though a preform *tāk- < PG *tēk- would also seem to be a possibility. Whether any of these was borrowed from another Germanic language I am not competent to say; it is well known that late OE tacan represents a borrowing of ON taka.

[109] Of the more than two dozen stems listed in Krause 1952: 62–5, only ceś(ä)- ~ ceke- 'touch' and cemś(ä)- ~ ceñke- 'obstruct' exhibit initial consonants which are distinctively palatalized (i.e. which contrast with nonpalatalized initials in other stems; ROOTS with inherently palatal initial consonants are a different case).

[110] But "teku-me" Berlin 542a1 should actually be read neku-me (K. Schmidt 1985: 430–1).

reflect an old short o-grade, and must instead be the result of analogical depalatalization of the form of the root found in the present. Since the subjunctive is athematic, it exhibits ablaut (see Cowgill 1967); beside the finite subjunctive singular forms cited above we find an optative stem *taśi-*/təś-i-/ and an abstract *takälyñe, täkälyñe* /tək-/[111], both with a nonpalatalizing /ə/ which serves as zero-grade to the /e/ of the other forms. The only PIE vowel that a nonpalatalizing /ə/ could reflect by regular sound change is *u, which is obviously out of the question; a laryngeal should have given /a/, not /ə/. Lane (1959: 160) is therefore correct in supposing that the ablaut /tek-/ ~ /tək-/ is analogical on the /e/ ~ /ə/ ablaut of other athematic subjunctives (pace Van Windekens 1976: 504); presumably it has replaced an older /tek-/ ~ */tak-/ (see further below).

In short, the only forms that might be genuine cognates are the thematic presents, Goth. *teki/a-* and TB *ceś(ä)-* ~ *ceke-*. Moreover, the ablaut of the Germanic forms makes sense in PIE terms, but the ablaut of the TB verb has been remodelled so as to make sense in TB terms. These points will have to be borne in mind in considering the value of this etymology for our study.

7.2. A further question is whether TB *cek-* ~ *ceś-* can reflect *dēg/ĝ-. It seems clear that *c* cannot directly reflect palatalized *d, since in our only really secure etymology involving palatalization of *d the result is PT *ś: PIE *dék̂m̥t 'ten' > PT *śókə > TB *śak*, TA *śäk*. But if Tocharian inherited zero-grade forms, which would have exhibited a nonpalatalized initial consonant before the medial laryngeal (*tak- vel sim.), and if nonpalatalized *d gave (pre-)PT *t, an original alternation *t ~ *ś could have been remodelled to *t ~ *c[112]. The fate of nonpalatalized *d before vowels[113] in Tocharian is thus a matter of importance; unfortunately it has also been a matter of dispute.

Winter's very thorough discussion of this and related problems (Winter 1962b: 16–24) underscores the difficulty of finding even one clear and obvious etymology revealing the outcome of *d. Winter arrives at his own clever solution through an attempt to explain the origin of those examples of Tocharian *ts* which did not develop out of *ty. He notes that we find

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[111] Most of the relevant forms happen to be from western dialect documents; on the problems of these "MQ-Schreibungen" see Krause 1952: 1–4, Marggraf 1970: 9–13. I have based my morphophonemic/generative analysis of this stem on the few central and eastern dialect forms available, and on the fact that no western dialect form exhibits *ä* in the root.

[112] For the alternation *t* ~ *c* in both Tocharian languages see Krause and Thomas 1960: 62; its PIE sources are *t (e.g. in TB *pācer*, obl. *pātär* 'father') and *dh (e.g. in TB *lac* '(s)he went out', 3pl. *latem* < (sub-)PIE aor. *x̥ludhé/ó- 'arrive').

[113] Before consonants *d was lost; see fn. 2 above with bibliography.

three roots of parallel shape which unexpectedly appear in Tocharian with initial *ts*[114]:

PIE *dheg^wh- 'burn' (pres. 3sg. Skt. *dáhati*, Av. *dažaiti*; cf. Gk. τέφρᾱ 'ashes') > *tsək^w- → PT *tsək-[115], e.g. in pres. 3sg. mid. TB *tsakṣträ*, TA *tsäknäṣtär*;

PIE *dheyĝh- 'form (of clay, dough, etc.)' (Lat. *fingere*; Arm. *dizanem* 'I heap up') > PT *tsik-a-, e.g. in TB gerundive *tsikale* 'should be made'; pret. ptc. PT *tsëtsáykawə > TA *tsātseku* (with remodelled ending), TB fem. pl. *(tsa)tsaikau(wa)*;

PIE *dhewgh- 'produce (milk)' (Skt. pres. 3sg. *dógdhi*; Gk. τεύχειν 'make, fashion'; Duchesne–Guillemin 1940: 144) > PT *tsuk-(a-) '(cause to) drink' > TB /tsuk-/, e.g. in gerundive *tsukäle* (possibly with deletion of *-a-, regular in causatives), TA *tsukā-*, e.g. in pret. ptc. *tsuko* (nonpresent stem of 'drink', possibly with analogical -*ā*-).

Having demonstrated that palatalization cannot be responsible for the appearance of *ts* in these forms (p. 23), Winter suggests instead that these roots, all with two voiced aspirated stops, have been affected by GL; the development will have been

PIE *dheg^wh- > *deg^wh- > *tsək^w- → *tsək- (with analogical elimination of initial palatalization), etc. (pp. 24–5),

and this involves a sound change *d > *ts. The objections to this hypothesis are obvious enough: though it is clear that something peculiar has happened to these roots, and though the double aspirates must have had something to do with it, how can we be sure that GL was what really happened?

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[114] I have restated these etymologies in my own orthography.

[115] Pre-PT *k^w was delabialized in PT when it stood at the end of a verb root; the other clear example is PT *pək- 'cook, ripen' ←< PIE *pek^w-. The morphological restriction on this phenomenon shows that it is the result of analogical change, and the only possible "pivot" for the change is the fact that both velars(/palatals) and labiovelars were palatalized to *ś in PT. This is important because, while NO stem of either of these verbs has any forms with a root-final palatalized consonant in our attested Tocharian, they did both form thematic presents in PIE – and the thematic vowel *e would indeed have palatalized the root-final consonant. It follows that the old thematic present survived (in some function) down through the period of palatalization; and that means that the inflection of these two verbs, at least, was massively remodelled not long before the PT period. Future discussions of the Tocharian verb system will presumably have to take account of these facts.

Winter is well aware that his hypothesis will carry conviction only if he can provide an independent, well-motivated example of PT *ts < *d, and he sets out to do so (pp. 25–8), ultimately arguing that PT *tsəma- 'grow' reflects PIE *demx̄- 'build'. But in spite of the fact that the shapes of the PT and PIE roots fit perfectly (if *d > *ts), and in spite of Winter's careful demonstration that the semantic development required is plausible, this etymology suffers from generic weaknesses peculiar to the etymologies of Tocharian verbs. The root-final *a cannot count for much, since *-a- has spread widely in the Tocharian verb system; the root-medial vowel is the one most common in this position in Tocharian verb roots, and it can reflect the commonest root-medial PIE vowel (*e). What is distinctive about this root is the two consonants, and unless a striking pattern of parallelism can be found (as in the three roots cited above), two consonants do not offer an etymology much support[116]; a longer example would be much more convincing.

Such an example actually exists, though the *d involved was not inherited from PIE. TB *witsako* 'root', a word with no Tocharian kin and no PIE etymology[117], must have been borrowed from something very like Proto-Ossetic *wēdāga (Winter 1971: 222 with bibliography), the form reconstructable from Iron *widag* and Digor *yedagä* (W. Miller 1903: 25; the sound laws involved can easily be worked out from the material on pp. 14–25). To be sure, the *d* of the Ossetic word (which is itself isolated within Iranian) probably reflects Proto-Iranian *t. But if the borrowing had occurred while the word still contained *t, it is difficult to see why TB does not retain the *t* as such; even PIE *t survives unaltered in Tocharian unless it was affricated by *y, palatalized, or lost in word-final position – none of which conditions obtains in this case. By far the simplest hypothesis is to accept Winter's sound change *d > PT *ts[118].

A consideration of the relative chronology of this sound change reveals some startling facts. The first vowel of the (pre-)Proto-Ossetic word is a front vowel, and so is the first vowel of the TB word; there is no reason to

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[116] Other possible etymologies involving PIE *d labor under the same handicap; examples are PT *tsər-a- 'separate (intrans.)' < PIE *der- 'split' and the etymology of PT *tsuwa- 'fit together' adduced in fn. 41.

[117] The TA word is *tsmār*, a derivative of PT *tsəma- 'grow' (see above); but TA must once have contained a cognate of *witsako*, since the word was borrowed into Tocharian before the pre-PT change of *d to *ts (see below).

[118] It follows that PT *tsuk-(a-) '(cause to) drink' could actually reflect PIE *dewk- or *dewk̑- 'lead, pull' (Goth. *tiuhan*, Lat. *dūcere*, etc.), as suggested in Lane 1938: 27; in that case the PT meaning was probably 'drink'. Whether TA *tspok* 'taste' is also related (Adams 1987: 5) is not clear; better evidence would be needed to justify the assumption of a (pre-)TA *tspuk- or the metathesis of *wəts- to *tsw- (ibid. pp. 5–6).

posit a stage in between at which the vowel was not front. Yet the initial w of the TB word HAS NOT BEEN PALATALIZED; contrast

PIE *wĭk̂m̥tî 'twenty' > *wĭkn̥ti > PT *w'íkən > TA *wiki* but TB *yikän > ikä́m̥ (see Szemerényi 1960: 47–9) and

PIE *xux̂-ónt- 'wind' → *xwex̂-n̥t- (original meaning different but not reconstructable; see Mayrhofer 1987: 97 fn. 43) > → *xwēntós > PT *w'enté > TA *want* but TB *yente,*

in which PIE *w was palatalized to PT *w', whence TB y. We must reconstruct the following sequence of pre-PT changes:

1) palatalization runs its course;
2) 'root' is borrowed into Tocharian;
3) *d > *ts[119].

But palatalization itself was not a particularly early change (see fnn. 2, 21, and 51 above), and the affrication of *d must therefore be so late that any root with initial *d which was already in the language in the post-PIE dialectal period should appear in PT with initial *ts. Therefore NO form of TB *tek-* can reflect any form of post-PIE *dēg/ĝ- by regular sound change within Tocharian.

7.3. It follows that TB *tek-* 'touch' and the Germanic forms in question cannot be cognate. It is possible that the resemblance of these Germanic and Tocharian verbs is the result of mere chance, which is always a possibility to be reckoned with (as Hans Hock, Jay Jasanoff, and Patrick Stiles remind me)[120]. But the fact that in both branches the verb has a present with medial *ē is striking enough, I think, to warrant consideration of the possibility that it was borrowed from Germanic into Tocharian, or vice versa, or into both languages from a third source. If we wish to evaluate that alternative, we must attempt to determine the direction and date of the putative borrowing. (In the following paragraphs I adopt the working hypothesis that such a borrowing did occur; the question will be reopened in section 7.5.)

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[119] Whether palatalized *d' likewise became *ts', which then became PT *ś, is another question. Note that the sound laws as I formulate them here collapse the special developments of *d with the general Tocharian devoicing of obstruents; in reality the latter was almost certainly a separate change. Thus we are probably dealing with such sequences of changes as *d > *dz > *ts, *d' > *dž > *ž > *ś, etc. (the details being in each case subject to further discussion beyond the scope of this paper).

[120] Hock (p.c.) notes the general resemblance in form and meaning between these verbs and the Romance family of Italian *toccare* 'touch', which clearly began life as an affective word (see Meyer-Lübke 1911: 664 s.v. *tok* (#8767)).

I can find no way to determine which language *tēk- was borrowed from. It is true that the ablaut of this root in Germanic is of a PIE type, while the Tocharian ablaut is not (see above); but the original Tocharian ablaut pattern should have been identical with the Germanic, viz. *ē ~ *x̄ ~ *ō > *ē ~ *a ~ *ō > PT *e ~ *a ~ *a[121]. We should probably exclude the alternative of common borrowing from a third language on grounds of simplicity unless and until we have definite evidence for it; but even that is a methodological rather than an evidential argument.

Since the Tocharian verb cannot have had an initial *d, it seems clear that the word was borrowed (in either direction) AFTER Grimm's Law (StS, i.e. "stop shift") had occurred in Germanic (see fn. 53 above). Unfortunately StS was a very early Germanic sound change. No other sound change can be shown to have occurred before it, whereas it stands at the beginning of a long sequence of pre-PG changes (cf. Ringe 1987a: 131). No certain Germanic word is attested in ancient (e.g. Classical) sources in a certainly pre-StS shape[122]; the only Germanic word borrowed into another language before StS occurred seems to be Lith. *Gùdas* 'White Russian' ("Goth") ← pre-PG *Ghudos > PG *Gutaz (cf. Goth. dat. sg. *Gut-þiudai*, ON pl. *Gotar*; Feist 1939 s.v. *Gutþiuda*). That Germanic and Baltic should have been in contact at so early a date is of course not surprising[123]. Most loanwords from other languages entered Germanic after Grimm's Law had occurred; the list of exceptions is very short, comprising PG *hanapiz* 'hemp' (see fn. 53 above), *paidō 'coat', and a few Celtic words, viz. *rīk- 'king' (← Celtic *rīg-), *lēkijaz 'physician' (← Celtic *leagis), and perhaps

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[121] Traces of an ablaut /a/ ~ /e/ are actually preserved in TB /tas-/ ~ /tes-/ ~ /təs-/ 'put', an s-extension of PIE *dhx̄- ~ *dhex̄- (and note the analogical /ə/ as well!); cf. subj. 3sg. mediopassive *tāṣträ*, imperative 2sg. *ptes*, 2pl. *ptässo*. The same ablaut is observable in TA opt. 1sg. *tāṣimār*, imperative 2sg. act. *ptas*, mid. *pätstsār*, and cf. pret. 3sg. *casäs* with regular palatalization < PT *ces- < *dhēs-. (I can find no morphological support for an o-grade *dhōs- < *dhox̄-s-, though that would also give PT *tas-.)

[122] Latin spellings with *t* and *c* for apparently unshifted PIE *t and *k/*k̂ cannot be trusted (pace Streitberg 1896: 136), since there is a reasonable likelihood that speakers of Latin would have transcribed Germanic /þ/ and /x/ as *t* and *c* at least some of the time.

[123] The meaning of the Lithuanian word also suggests that at least some Slavs had come under Germanic suzerainty before the operation of StS; this lends plausibility to the idea that at least a few of the "centum"-forms in Slavic (e.g. OCS *svekry* 'mother-in-law'; contrast Sanskrit *śvaśrûs*) are actually pre-PG loanwords. On the other hand, *Gùdas* might have been borrowed as a name for Goths very early and applied to Slavs only much later; and the *k* of the Slavic words in question might be an early loan-rendering of Germanic *h (Vaillant 1950: 31) – in which case *svekry* would be a post-StS but pre-Verner's Law borrowing into Slavic. (Moreover, the Slavic words must be viewed in the context of the incompletely "satem" character of BS; see fn. 1 above with references.)

one or two others[124]. Of these only *rīk- might be useful: since Celtic *rīg- shows the effects of the sound change *ē > *ī (the PIE word was *rēĝ- (*Xreх̂ĝ-?), cf. Lat. rēx, rēg-, Skt. rā́t)[125], it must have been borrowed into Germanic after that change had occurred[126]. Here too, though, our luck is bad: the only sound changes that can be shown to have preceded the shift of *ē to *ī in Celtic are the loss of intervocalic *y and the contraction of the resulting sequence *ee to *ē (thus PIE *tréyes 'three' (masc.) > *trees > *trēs > PC *trīs > OIr. trí; PIE *loghéyeti 'lays' > *logeyeti > *logeeti > *logēti > *logīti > PC *logīt in OIr. do·luigi 'forgives' (*'lays aside'); etc.); the only other pre-PC sound changes that can be shown to have followed it are Osthoff's Law (cf. Welsh gwynt 'wind' < *wintos < *wīntos < post-PIE *xwéntós; cf. TB yente) and the loss of *p with subsequent contraction of originally flanking vowels (cf. OIr. íar 'after' (nasalizing) < PIr. *ēran < PC *ērom < PIE *éperom, Skt. áparam

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[124] PG *paidō (Gothic paida, Old English pād, etc.) is neither cognate with Greek βαίτη 'goatskin cloak' nor borrowed from it; rather, both seem to have been borrowed from some lost language(s) once spoken in eastern Europe (Feist 1939 s.v. paida with bibliography). On the other words see Feist 1939 s.vv. lekeis, *reiks; Lane 1933: 263–4; de Vries 1960: 64–73 with discussion and bibliography. Note the reservations that de Vries expresses about several of the words in Marstrander's list (Marstrander 1911: 204–7, discussed by de Vries 1960: 65–6); quite a few of them are listed as cognates, not borrowings, in Lane 1933. Not only are very early loanwords indistinguishable from borrowings, but at a sufficiently early period the distinction becomes moot in real historical terms, since much of the late regional PIE vocabulary must have spread by borrowing between dialects and would not be reconstructable at all (except within individual branches) if it had not so spread.

[125] I agree with Sihler 1977: 223–5 that the connection of this noun with the verb root *xʷreĝ- 'put/be in a straight line' is highly dubious semantically, but I am not convinced by his alternative connection of the word with Sanskrit ūrj- 'power' (ibid. pp. 232–4); among other things, he does not seem to be aware that the initial ū – not ī – of the latter is a serious problem, as it is difficult to account for without positing an original initial *w, and in fact related Iranian forms with initial v do exist (Mayrhofer 1988 s.v. ū́rj-; I am grateful to Professor Mayrhofer for having sent me the relevant part of his proofs). As for the apparent lengthened-grade root of *rēĝ-, if it is not really full-grade *ex̂, I reserve judgment; it might be true that such an ablaut grade would not be expected (Sihler 1977: 225–9), but at least to some extent we must take such archaic PIE root nouns as we find them, recognizing that we cannot be sure of recovering all possible patterns of PIE nominal ablaut and that in any case some PIE nouns might have been irreducibly anomalous in ablaut. See Strunk 1987 on the possible relationship between rēx, regere, etc. and the morphological consequences of positing such a relationship.

[126] If PC *leagis 'physician' really reflects PIE *lep- (Walde and Pokorny 1926–7 s.v. 1. lep-), StS must have occurred after the Celtic loss of *p; but the etymology of this word is by no means secure.

'later'; Lewis and Pedersen 1974: 26–7)[127]. The former changes, and the shift of *ē to *ī, might have occurred in rapid succession early in the prehistory of Celtic; or the shift of *ē to *ī, and the latter changes, might have occurred in the last few generations before PC. In effect we learn next to nothing about the date of the borrowing of *rīg- into Germanic and the date of StS; hence the date of the borrowing of 'touch' remains as indeterminate as ever[128].

Since laryngeals between consonants regularly appear as *a both in PT and (in initial syllables) in PG, virtually any relative ordering of borrowing and laryngeal sound changes in Germanic and Tocharian should have resulted in the borrowing of a zero-grade *tak-; even if the borrowing language had already changed laryngeals to *a but the lending language had not, it is reasonably likely that the laryngeal of the lending language (*ə at that stage?) would have been borrowed as *a. One would expect the borrowing to have occurred before *tak- was replaced by *tək- in PT or TB, but that replacement can have been very late (see fn. 121 for an example of ablaut $e \sim a$ still surviving in both Tocharian languages).

It seems clear that 'touch' was borrowed before palatalization in Tocharian; but I have argued above that palatalization was not an early Tocharian change. Since the sweeping changes that affected Tocharian vowels largely followed palatalization[129], they do not even come into question.

7.4. Further precision is impossible; we clearly cannot prove that the borrowing of 'touch' occurred early enough to show that pre-Germanic and pre-Tocharian were neighbors in the immediate post-PIE period. Perhaps we should ask whether it indicates something rather different. Tocharian is known to have borrowed words from at least three Iranian languages, viz. Khotanese, Baktrian, and pre-Ossetic or the like (in reverse chronological order), and it is clear that the Tocharians were part of the (predomi-

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[127] It is possible that the Sanskrit word is not an exact cognate but a parallel formation from PIE *ápo 'away' (as Lewis and Pedersen assume loc. cit.).

[128] We do know that StS had run its course well before the birth of Christ (Streitberg 1896: 135–7), but that is not a very helpful datum (see the discussion in section 7.4).

[129] These changes can be stated briefly as follows. Short *i, *e, and *u all became *ə (and we know that the merger followed palatalization because consonants appear palatalized before original *i and *e, but not before original *u); concurrently or later, long *ī, *ē, and *ū became *i, *e, and *u. It makes by far the most sense to suppose that this was part of a wholesale loss of the distinction of vowel length in the language. In that case original long *ā must already have become *ō by the time the loss of vowel length occurred, because it appears in PT as *o; original *o, *ō must have been unrounded to *ë, *ë̄ (or the like), and the latter must have been lowered to *ā, since it appears in PT as *a. These changes of back vowels cannot be ordered chronologically with respect to palatalization, but they are not relevant to the case at hand.

nantly Iranian) Kushan empire (Winter 1971: 220, 1984: 28–30). It is reasonable to suggest that the Tocharians had also been under Iranian overlordship for a longer period of their prehistory (cf. the suggestions of Abaev 1965: 138), though that cannot be proved[130]. If that suggestion is correct, it fits with a further Germanic fact: there are at least two Iranian loanwords in Germanic, viz. PG *paþaz 'path' (OE *pæþ*, etc.) < Iranian *paϑ- (cf. Av. gen. sg. *paϑō*)[131] and *wurstwą 'work' (Goth. *waúrstw*) < Iranian *vr̥štvam (= Av. *varštuua-* 'to be done')[132], and at least the first must have been borrowed after StS had run its course. 'Touch' can have been borrowed from Tocharian, or from Germanic into Tocharian, during the same period; thus it need reveal nothing about the original position of Tocharian in the IE family.

To be sure, this raises further chronological problems. Winter points out that PT *m'ətə 'honey' (TB *mit*) was apparently borrowed into Chinese as early as the third century B.C. (Winter 1984: 23–4); at least some Tocharians must therefore have been in central Asia at that time, and contact between those groups and any Germanic language then or at any later time is out of the question. But this is not an insurmountable problem. We cannot be sure that the groups of Tocharians that survived into the historic period were the only ones that ever existed; since they must have come from much further west in any case, it is not impossible that some

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[130] It is not surprising that they should have maintained their identity and language under such circumstances. Later "empires" of semicivilized nations in eastern Europe and areas further east seem to have been loose tributary confederations of internally cohesive units; we find Goths ruling Slavs, Huns ruling Goths, Volga Bulgars ruling Mari (Cheremis) and Mordvins, etc., all without any absorption of one nation by another. So also on the North American plains: of the Athabaskan tribes, the Kiowa Apache were politically and culturally a division of the (linguistically unrelated) Kiowa, while the Sarsi were in effect a dependency of the Algonkian Siksika (Blackfeet), yet neither Athabaskan tribe abandoned its language.

[131] This is still by far the most likely etymology of 'path' (see Mayrhofer 1970: 224–6 and Bailey and Ross 1961: 127–42). For alternatives – all of which strike me as distinctly improbable – see Greule 1980 with bibliography.

[132] Gothic *waúrstw* is usually held to be a native formation with a PIE suffix *-s-two- not otherwise in use in Germanic (cf. Feist 1939 s.v.). Warren Cowgill suggested to me (ca. 1979) that the word's shape actually makes more sense if it is an Iranian loan, its *s* representing Iranian *š < PIE *ǵ before *t. The Avestan equivalent cited is younger Avestan; Manfred Mayrhofer (p.c.) points out that younger Avestan *-arš-* can reflect *-r̥š- (and that Iranian, unlike Indic, does seem to exhibit zero-grade of the root before some examples of the suffix *-tva-, despite the reservations of Debrunner 1954: 712). Possibly this word was borrowed before the Germanic change of *R to *uR, but it is also possible that Iranian *r̥ would have been borrowed as *ur in any case, especially when preceded by *v (= *[w]). – On the subject of Iranian loanwords in Germanic see also Mayrhofer 1970 with bibliography.

groups migrated no further east than the Ukraine, but were subsequently absorbed by other peoples. (In that case the word for 'touch' is likely to have been inherited in Tocharian and borrowed from the western group into Germanic, since it can scarcely have been borrowed from Germanic into the eastern branch of Tocharian.) It is not necessarily the case that such a "lost" western group of Tocharians would be identifiable in the archaeological record, since they could have been integrated politically and culturally into the dominant Iranian nation(s) (see fn. 130). Moreover, for a people possessing horses migration across plains can be very rapid; even if all Tocharians migrated from, say, the Ukraine to central Asia, they could have done so in a generation or two – conceivably WITHIN the fourth century B.C. Finally, it is not clear that the contacts that could have permitted such borrowings must have been as late as the fifth or fourth century B.C.; we must reckon with the possibility that contact between some Germanic tribes and some Iranians (hence possibly also some Tocharians) occurred many centuries before these nations emerged into history. (There is no cogent evidence for such a supposition, but there seems to be none against it either.) But in any case, whatever contacts occurred can have occurred long after the post-PIE dialect continuum had been disrupted.

7.5. Whether we posit a borrowing of 'touch' from Tocharian into Germanic (or vice versa) or regard the similarity between the two words 'touch' as a result of chance depends on an comparative estimate of incommensurables: we must decide whether the scenario just sketched is more unlikely than the occurrence of roots *tēk- 'touch' in two related languages by chance. But whichever choice we make, the occurrence of *tēk- in Germanic and Tocharian will tell us nothing about their relative positions in the (post-)PIE dialect continuum.

8. Conclusions

Very little of the evidence adduced for the original position of Tocharian in the IE family has any probative value. The shape of the noun 'tear' shows that pre-Tocharian was an eastern dialect of PIE; the meaning of PT *nëkᵂt- 'evening' suggests, but does not prove, that it was a relatively peripheral dialect. If either of the hypotheses discussed in section 4 should prove to be correct, we would have good evidence that pre-Tocharian was a (relatively) northeastern dialect of PIE, adjacent to BS and perhaps also to Germanic; on the other hand, if further research shows that the pattern of developments of *iX sequences in Tocharian is very like that of Greek (see fn. 45), it will seem more likely that Tocharian was an east-central dialect. Even later contacts between Tocharian and other branches of IE remain problematic, except for the intimate and prolonged association of Tocharian and Iranian, which is well known.

Since these conclusions are almost entirely negative, the reader may feel entitled to demand some further justification for so long and involved an article. My justification is methodological rather than substantive. If historical linguistics can be called a science, it seems appropriate to apply to it the maxim that "science is a procedure for testing and rejecting hypotheses, not a compendium of certain knowledge" (Gould 1985: 111); "the conclusions are the consequence, not the essence" (ibid. p. 417). I venture to hope that the present paper illustrates that principle, and that the very limitedness of my conclusions is validated by a strict adherence to the most rigorous investigative procedures that I can muster.

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References

Abaev, Vasilij I., 1965. Skifo-evropejskie izoglossy. Moscow: Akademija Nauk SSSR.
Adams, Douglas Q., 1978a. Ablaut and umlaut in the Tocharian vowel system. JAOS 98.446–50.
—, 1978b. On the development of the Tocharian verbal system. JAOS 98.277–88.
—, 1981. Toward a history of PIE n-stems in Tocharian. JAOS 100.439–44.
—, 1984. The position of Tocharian among the other Indo-European languages. JAOS 104.395–402.
—, 1987. Marginalia to the Tocharian lexicon. TIES 1.1–9.
—, 1988a. The expansion of PIE n-stems in Tocharian: the systematic development of a paradigm. TIES 2.7–30.
—, 1988b. Tocharian historical phonology and morphology. New Haven: American Oriental Society. [= American Oriental Series, Vol. 71.]
Ahlqvist, Anders (ed.), 1982. Papers from the 5th International Conference on Historical Linguistics. Amsterdam: Benjamins.
Anthony, David W., 1986. The "Kurgan culture", Indo-European origins, and the domestication of the horse: a reconsideration. Current Anthropology 27.291–313.
Anttila, Raimo, 1969. Proto-Indo-European Schwebeablaut. Berkeley: U. of California Press. [= U. of California Publications in Linguistics 58.]
Arndt, Walter W., Paul W. Brosman, Jr., Frederic E. Coenen, and Werner P. Friederich (edd.), 1967. Studies in historical linguistics in honor of George Sherman Lane. Chapel Hill: U. of North Carolina Press.
Arntz, Helmut (ed.), 1936. Germanen und Indogermanen. Festschrift für Herman Hirt. Zweiter Band. Ergebnisse der Sprachwissenschaft. Heidelberg: Winter.

Bailey, H. W., and Alan S. C. Ross, 1961. Path. TPS 1961: 107–42.
Bammesberger, Alfred (ed.), 1988. Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems. Heidelberg: Winter.
Beck, Heinrich (ed.), 1986. Germanenprobleme in heutiger Sicht. Berlin: de Gruyter.
Beekes, R. S. P., 1969. The development of the Proto-Indo-European laryngeals in Greek. The Hague: Mouton.
—, 1972a. H₂O. Die Sprache 18.117–31.
—, 1972b. Review of Anttila 1969. IIJ 14.68–74.
Bennett, William H., 1962. The parent suffix in Germanic weak verbs of class III. Language 38.135–41.
—, 1978. The Germanic reflex of Indo-European /ə/ in originally medial syllables. Jazayery et al. (edd.) 1978: 13–8.
Benveniste, Émile, 1935. Les infinitifs avestiques. Paris: Maisonneuve.
—, 1936. Tokharien et indo-européen. Arntz (ed.) 1936: 227–40.
—, 1951. Prétérit et optatif en indo-européen. BSL 47.11–20.
Bereczki, Gábor, 1988. Geschichte der wolgafinnischen Sprachen. Sinor (ed.) 1988: 314–50.
Bergmann, Rolf, Heinrich Tiefenbach and Lothar Voetz (edd.), 1987. Althochdeutsch. Band I. Grammatik. Glossen und Texte. Heidelberg: Winter.
Brixhe, Claude, and Michel Lejeune, 1984. Corpus des inscriptions paléophrygiennes. Paris: Éditions Recherche sur les Civilisations. [= Institut Français d'Études Anatoliennes, Mémoire No. 45.]
van Brock, Nadia, 1971. Le traitement des nasales voyelles en tokharien. ZVS 85.280–95.
Brugmann, Karl, 1906. Grundriss der vergleichenden Grammatik der indogermanischen Sprachen. 2nd ed. II. Band. Lehre von den Wortformen und ihrem Gebrauch. I. Teil. Strassburg: Trübner.
Campanile, Enrico, 1969. Etimologie tocarie. Studi e saggi linguistici 9.198–205.
Cardona, George, Henry M. Hoenigswald, and Alfred Senn (edd.), 1970. Indo-European and Indo-Europeans. Philadelphia: U. of Pennsylvania Press.
Cardona, George, and Norman H. Zide (edd.), 1987. Festschrift for Henry Hoenigswald. Tübingen: Narr.
Chantraine, Pierre, 1968. Dictionnaire étymologique de la langue grecque. Vol. I. Paris: Klincksieck.
Churchward, C. Maxwell, 1953. Tongan grammar. London: Oxford U. Press.
Collinge, Neville E., 1985. The laws of Indo-European. Amsterdam: Benjamins.
Comrie, Bernard, 1976. Aspect. Cambridge: Cambridge U. Press.
Couvreur, Walter, 1947. Hoofdzaken van de Tochaarse Klank- en Vormleer. Louvain: Beheer van Philologische Studiën.
—, 1949. Zur tocharischen Etymologie I. IF 60.33–7.
Cowgill, Warren, 1959. The inflection of the Germanic ō-presents. Language 35.1–15.
—, 1963. Review of Puhvel 1960. Language 39.248–70.
—, 1967. Ablaut, accent and umlaut in the Tocharian subjunctive. Arndt et al. (edd.) 1967: 171–81.
—, 1968. The first person singular medio-passive of Indo-Iranian. Heesterman et al. (edd.) 1968: 24–31.
—, 1973. The source of Latin stāre, with notes on comparable forms elsewhere in Indo-European. JIES 1.271–303.

—, 1985a. PIE *duo̧ '2' in Germanic and Celtic, and the nom.-acc. dual of non-neuter o-stems. MSS 46.13–28.

—, 1985b. The personal endings of thematic verbs in Indo-European. Schlerath and Rittner (edd.) 1985: 99–108.

—, 1986. Einleitung. Cowgill and Mayrhofer 1986: 9–71.

Cowgill, Warren, and Manfred Mayrhofer, 1986. Indogermanische Grammatik. Band I. Heidelberg: Winter.

Debrunner, Albert, 1954. Altindische Grammatik. Band II, Teil 2. Die Nominalsuffixe. Göttingen: Vandenhoeck & Ruprecht.

Décsy, Gyula, 1965. Einführung in die finnisch-ugrische Sprachwissenschaft. Wiesbaden: Harrassowitz.

Dishington, James, 1976. Functions of the Germanic ē-verbs: a clue to their formal prehistory. Language 52.851–65.

Duchesne-Guillemin, J., 1940. Tocharica. BSL 41.140–83.

Eichner, Heiner, 1975. Die Vorgeschichte des hethitischen Verbalsystems. Rix (ed.) 1975: 71–103.

Feist, Sigmund, 1939. Vergleichendes Wörterbuch der gotischen Sprache. Leiden: Brill.

Filliozat, Jean, 1948. Fragments de textes koutchéens de médecine et de magie. Paris: Adrien-Maisonneuve.

Forssman, Bernhard, 1969. Nachlese zu ὅσσε. MSS 25.39–50.

Francis, Eric David, 1970. Greek disyllabic roots: the aorist formations. New Haven: Dissertation, Yale U.

Gamkrelidze, Tamaz V., and Vjačeslav V. Ivanov, 1984. Indoevropejskij jazyk i indoevropejcy. Tbilisi: Izdatel'stvo Tbilisskogo Universiteta.

Georgiev, Vladimir I., 1981. Introduction to the history of the Indo-European languages. Sofia: Bulgarian Academy of Sciences.

Gould, Stephen Jay, 1985. The flamingo's smile. New York: Norton.

Greule, Albrecht, 1980. Neues zur Etymologie von nhd. Pfad. ZVS 94.208–19.

Hartmann, Hans, and Hans Neumann (edd.), 1960. Indogermanica. Festschrift für Wolfgang Krause. Heidelberg: Winter.

Heesterman, J.C., G.H. Schokker, and V.I. Subramoniam (edd.), 1968. Pratidānam. Indian, Iranian, and Indo-European studies presented to Franciscus Bernardus Jacobus Kuiper on his sixtieth birthday. The Hague: Mouton.

van Helten, W.L., 1890. Altostfriesische Grammatik. Leeuwarden: Meijer.

Hilmarsson, Jörundur, 1982. Indo-European "tongue". JIES 10.355–67.

—, 1986. Studies in Tocharian phonology, morphology, and etymology with special emphasis on the o-vocalism. Reykjavík. [=Dissertation, Rijksuniversiteit te Leiden.]

Hock, Hans Henrich, 1973. On the phonemic status of Germanic e and i. Kachru et al. (edd.) 1973: 319–51.

—, 1986. Principles of historical linguistics. Berlin: Mouton de Gruyter.

Hoffmann, Karl, 1955. Vedisch "gámati". MSS 7.89–92.

Ivanov, Vjačeslav V., 1958. Tocharskaja parallel' k slavjanskim umen'šitel'nym formam. Slavjanskaja Filologija 2.58–63.

Jasanoff, Jay H., 1976. Gr. ἄμφω, lat. ambō et le mot indo-européen pour 'l'un et l'autre'. BSL 71.123–31.

—, 1978. Stative and middle in Indo-European. Innsbruck: Innsbrucker Beiträge zur Sprachwissenschaft (Band 23).

—, 1983. The IE. "ā-Preterite" and Related Forms. IF 88.54–83.

—, 1987. Some irregular imperatives in Tocharian. Watkins (ed.) 1987: 92–112.

—, 1988. The sigmatic aorist in Tocharian and Indo-European. TIES 2.52–76.

Jazayery, Mohammad Ali, Edgar C. Polomé, and Werner Winter (edd.), 1978. Linguistic and literary studies in honor of Archibald A. Hill. III. Historical and comparative linguistics. The Hague: Mouton.

Kachru, Braj B., Robert B. Lees, Yakov Malkiel, Angelina Pietrangeli, and Sol Saporta (edd.), 1973. Issues in linguistics. Papers in honor of Henry and Renée Kahane. Urbana: U. of Illinois Press.

Kimball, Sara, 1987. *H₃ in Anatolian. Cardona and Zide (edd.) 1987: 185–92.

—, 1988. Analogy, secondary ablaut, and *OH₂ in Common Greek. Bammesberger (ed.) 1988: 241–56.

Kiparsky, Paul, 1973. On comparative linguistics: the case of Grassmann's Law. Sebeok (ed.) 1973: 115–34.

Klingenschmitt, Gert, 1975. Tocharisch und Urindogermanisch. Rix (ed.) 1975: 148–63.

Krause, Wolfgang, 1952. Westtocharische Grammatik. Band I. Das Verbum. Heidelberg: Winter.

—, 1956. Bemerkungen zu dem nominalen nt-Suffix im Hethitischen und Tocharischen. Kronasser (ed.) 1956: 189–99.

—, 1961. Runica III. Nachrichten der Akademie der Wissenschaften in Göttingen, Philologisch-historische Klasse, 1961, Nr. 9 (= pp. 255–80).

Krause, Wolfgang, and Werner Thomas, 1960. Tocharisches Elementarbuch. Band I. Grammatik. Heidelberg: Winter.

Kronasser, Heinz (ed.), 1956. Μνήμης χάριν. Gedenkschrift Paul Kretschmer. I. Band. Vienna: Wiener Sprachgesellschaft.

Kuiper, Franciscus Bernardus Jacobus, 1947. Traces of laryngeals in Vedic Sanskrit. India Antiqua (Studies Jean Philippe Vogel, no ed.; Leyden: Brill), pp. 198–212.

Lane, George S., 1933. The Germano-Celtic vocabulary. Language 9.244–64.

—, 1938. Problems of Tocharian phonology. Language 14.20–38.

—, 1959. The formation of the Tocharian subjunctive. Language 35.157–79.

—, 1960. The Indo-European labiovelars in Tocharian. Hartmann and Neumann (edd.) 1960: 72–9.

—, 1962. Tocharian evidence and the Trubetzkoy-Benveniste hypothesis. Language 38.245–53.

—, 1970. Tocharian: Indo-European and non-Indo-European relationships. Cardona et al. (edd.) 1970: 73–88.

Leumann, Manu, 1977. Lateinische Laut- und Formenlehre. Munich: Beck. [= Handbuch der Altertumswissenschaft, II. Abteilung, 2. Teil, 1. Band.]

Lévi, Sylvain, and Antoine Meillet, 1914. Remarques sur les formes grammaticales de quelques textes en tokharien B. MSL 18.1–33.

Lewis, Henry, and Holger Pedersen, 1974. A concise comparative Celtic grammar. 3rd ed. Göttingen: Vandenhoeck & Ruprecht.

Marggraf, Jürgen, 1970. Untersuchungen zum Akzent in Tocharisch B. Kiel: Dissertation, Christian-Albrechts-Universität.

—, 1975. Bemerkungen zur historischen Phonologie und Morphologie einiger „primärer" Kasusmorpheme in Tocharisch B. Rix (ed.) 1975: 198–203.

Marstrander, Carl, 1911. The deaths of Lugaid and Derbforgaill. Ériu 5.201–18.

Mayrhofer, Manfred, 1970. Germano-Iranica. ZVS 84.224–30.

—, 1982. Über griechische Vokalprothese, Laryngaltheorie und externe Rekonstruktion. Tischler (ed.) 1982: 177–92.

—, 1986. Lautlehre (Segmentale Phonologie des Indogermanischen). Cowgill and Mayrhofer 1986: 73–181.

—, 1987. Die Vertretung der indogermanischen Laryngale im Lateinischen. ZVS 100.86–108.

—, 1988. Etymologisches Wörterbuch des Altindoarischen. Lieferung 4. Heidelberg: Winter.

Mayrhofer, Manfred, Martin Peters, and Oskar E. Pfeiffer (edd.), 1980. Lautgeschichte und Etymologie. Akten der VI. Fachtagung der Indogermanischen Gesellschaft, Wien, 24.–29. September 1978. Wiesbaden: Reichert.

Meid, Wolfgang, 1986. Hans Kuhns „Nordwestblock"-Hypothese. Beck (ed.) 1986: 183–212.

—, 1987. Germanische oder indogermanische Lautverschiebung? Bergmann et al. (edd.) 1987: 3–11.

Meillet, Antoine, 1911. Remarques linguistiques. JA (dixième série) 17.449–64.

—, 1914. Le tokharien. Indogermanisches Jahrbuch 1.1–19.

—, 1931. Caractère secondaire du type thématique indo-européen. BSL 32.194–203.

Melchert, H. Craig, 1977. Tocharian verb stems in -tk-. ZVS 91.93–130.

—, 1984. Studies in Hittite historical phonology. Göttingen: Vandenhoeck & Ruprecht. [=ZVS, Ergänzungsband 32.]

—, 1987. PIE velars in Luvian. Watkins (ed.) 1987: 182–204.

—, 1989a. Lycian lexicon. Chapel Hill (desktop publication).

—, 1989b. The middle voice in Lycian. Paper read at the Eighth East Coast Indo-European Conference, Harvard, June 16, 1989.

—, Forthcoming. Relative chronology and Anatolian: the vowel system. To appear in Beekes, R. S. P. et al. (edd.), Akten der VIII. Fachtagung der Indogermanischen Gesellschaft.

Meyer-Lübke, W., 1911. Romanisches etymologisches Wörterbuch. Heidelberg: Winter.

Miller, D. Gary, 1977. Was Grassmann's Law reordered in Greek? ZVS 91.131–58.

Miller, Wsewolod, 1903. Die Sprache der Osseten. Grundriss der iranischen Philologie, Anhang zum ersten Band. Strassburg: Trübner.

Normier, Rudolf, 1977. Idg. Konsonantismus, germ. „Lautverschiebung" und Vernersches Gesetz. ZVS 91.171–218.

—, 1980. Tocharisch ñkät/ñakte 'Gott'. ZVS 94.251–81.

Nussbaum, Alan, 1975. Studies in Latin noun formation and derivation: $\bar{\imath}$ in Latin denominative derivation. Watkins (ed.) 1975: 116–61.

—, 1986. Head and horn in Indo-European. Berlin: de Gruyter.

Oettinger, Norbert, 1979. Die Stammbildung des hethitischen Verbums. Nürnberg: Hans Carl. [=Erlanger Beiträge zur Sprach- und Kunstwissenschaft, Band 64.]

Pedersen, Holger, 1938. Hittitisch und die anderen indoeuropäischen Sprachen. Kgl. Danske Videnskabernes Selskab, Historisk-filologiske meddelelser 25, No. 2. Copenhagen: Munksgaard.

—, 1941. Tocharisch vom Gesichtspunkt der indoeuropäischen Sprachvergleichung. Kgl. Danske Videnskabernes Selskab, Historisk-filologiske meddelelser 28, No. 1. Copenhagen: Munksgaard.

Penney, John H. W., 1976. The treatment of Indo-European vowels in Tocharian. TPS 1976–7: 66–91.

—, 1989. Preverbs and postpositions in Tocharian. TPS 1989: 54–74.

Peters, Martin, 1976. Attisch hīemi. Die Sprache 22.157–61.

—, 1980. Untersuchungen zur Vertretung der indogermanischen Laryngale im Griechischen. Sitzungsberichte der ÖAW, Philosophisch-historische Klasse, Band 377. Vienna: Österreichische Akademie der Wissenschaften.

Pinault, Georges-Jean, 1982. A neglected phonetic law: the reduction of the Indo-European laryngeals in internal syllables before yod. Ahlqvist (ed.) 1982: 265–72.

Pokorny, Julius, 1951–69. Indogermanisches etymologisches Wörterbuch. Bern: Francke.

Porzig, Walter, 1954. Die Gliederung des indogermanischen Sprachgebiets. Heidelberg: Winter.

Poucha, Pavel, 1955. Institutiones linguae Tocharicae. Pars I. Thesaurus linguae Tocharicae dialecti A. Prague: Státní Pedagogické Nakladelství.

Puhvel, Jaan, 1960. Laryngeals and the Indo-European verb. Berkeley: U. of California Press.

Rasmussen, Jens Elmegård, 1988. Tocharian B oṅkolmo, A oṅkaläm "elephant": an etymological suggestion. TIES 2.166–83.

Ringe, Donald A., Jr., 1986. Review of Collinge 1985. Diachronica 3.107–13.

—, 1987 a. A closer look at Tocharian e and o and the Indo-European mediopassive. TIES 1.98–138.

—, 1987 b. On the prehistory of Tocharian B accent. Watkins (ed.) 1987: 254–69.

—, 1988. Laryngeal isoglosses in the western Indo-European languages. Bammesberger (ed.) 1988: 415–41.

—, 1989. Tocharian B ausu, auṣu, aultsu. TIES 3.35–50.

—, Forthcoming. Laryngeals and Sievers' Law in Tocharian. To appear in Indo-European studies V (Harvard U. Dept. of Linguistics).

Rix, Helmut, 1969. Anlautender Laryngal vor Liquida oder Nasalis sonans im Griechischen. MSS 27.79–110.

—, 1976. Historische Grammatik des Griechischen. Darmstadt: Wissenschaftliche Buchgesellschaft.

Rix, Helmut (ed.), 1975. Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft, Regensburg, 9.–14. September 1973. Wiesbaden: Reichert.

Schindler, Jochem, 1966. Idg. *du̯- im Tocharischen. IF 71.236–8.

—, 1967 a. Tocharische Miszellen. IF 72.239–49.

—, 1967 b. Zu hethitisch nekuz. ZVS 81.290–303.

—, 1972. Review of Anttila 1969. Kratylos 15.146–52.

—, 1975. L'apophonie des thèmes indo-européens en -r/n. BSL 70.1–10.

—, 1976. Diachronic and synchronic remarks on Bartholomae's and Grassmann's Laws. LI 7.622–37.

Schlerath, Bernfried, and Veronica Rittner (edd.), 1985. Grammatische Kategorien, Funktion und Geschichte. Akten der VII. Fachtagung der Indogermanischen Gesellschaft, Berlin, 20.–25. Februar 1983. Wiesbaden: Reichert.

Schmid, Wolfgang P., 1963. Studien zum baltischen und indogermanischen Verbum. Wiesbaden: Harrassowitz.

Schmidt, Gernot, 1973. Die iranischen Wörter für „Tochter" und „Vater" und die Reflexe des interkonsonantischen H (ə) in den idg. Sprachen. ZVS 87.36–83.

Schmidt, Klaus T., 1975. Zu einigen Problemen der tocharischen Verbal- und Nominalflexion. Rix (ed.) 1975: 287–95.

—, 1980. Zu Stand und Aufgaben der etymologischen Forschung auf dem Gebiete des Tocharischen. Mayrhofer et al. (edd.) 1980: 394–411.

—, 1982. Spuren tiefstufiger seṭ-Wurzeln im tocharischen Verbalsystem. Tischler (ed.) 1982: 363–72.

—, 1985. Beiträge zur Kenntnis der tocharischen Verbalmorphologie. Schlerath and Rittner (edd.) 1985: 424–34.

—, 1988. Stellungsbedingte Konsonantisierung von ə₂ im Tocharischen? Bammesberger (ed.) 1988: 471–80.

Schmitt-Brandt, Robert (ed.), 1971. Donum indogermanicum. Festgabe für Anton Scherer zum 70. Geburtstag. Heidelberg: Winter.
Schneider, K., 1940. Zur Wortkunde und Grammatik des Tocharischen. IF 57.193–204.
Sebeok, Thomas A. (ed.), 1973. Current trends in linguistics. Vol. 11. Diachronic, areal, and typological linguistics. Assoc. edd. Henry M. Hoenigswald and Robert E. Longacre. The Hague: Mouton.
Seebold, Elmar, 1972. Das System der indogermanischen Halbvokale. Heidelberg: Winter.
Sieg, Emil, and Wilhelm Siegling, 1921. Tocharische Sprachreste. I. Band. Die Texte. A. Transcription. Berlin: de Gruyter.
—, 1949. Tocharische Sprachreste, Sprache B. Heft 1. Die Udānālaṅkāra-Fragmente. Göttingen: Vandenhoeck & Ruprecht.
Sieg, Emil, Wilhelm Siegling, and Wilhelm Schulze, 1931. Tocharische Grammatik. Göttingen: Vandenhoeck & Ruprecht.
Sieg, Emil, Wilhelm Siegling, and Werner Thomas, 1953. Tocharische Sprachreste, Sprache B. Heft 2. Fragmente Nr. 71–633. Göttingen: Vandenhoeck & Ruprecht.
Sihler, Andrew L., 1977. The etymology of PIE *rēǵ- 'king' etc. JIES 5.221–46.
Sinor, Denis (ed.), 1988. The Uralic languages. Leiden: Brill.
Sjölin, Bo, 1970. Die „Fivelgoer" Handschrift. I. Einleitung und Text. The Hague: Nijhoff.
—, 1975. —. II. Namenregister, Glossar, synoptische Übersicht. The Hague: Nijhoff.
Stang, Christian S., 1966. Vergleichende Grammatik der baltischen Sprachen. Oslo: Universitetsforlaget.
—, 1972. Lexikalische Sonderübereinstimmungen zwischen dem Slavischen, Baltischen und Germanischen. Skrifter utgitt av Det Norske Videnskaps-Akademi i Oslo, Historisk-filosofiske Klasse, Ny Serie, No. 11. Oslo: Universitetsforlaget.
—, 1974. Ieur. *swad-/*swād-. NTS 28.99–101.
Steller, Walther, 1928. Abriß der altfriesischen Grammatik. Halle (Saale): Niemeyer.
Streitberg, Wilhelm, 1896. Urgermanische Grammatik. Heidelberg: Winter.
Strunk, Klaus, 1987. Further evidence for diachronic selection: Ved. ráṣṭi, Lat. regit, etc. Cardona and Zide (edd.) 1987: 385–92.
Szemerényi, Oswald, 1960. Studies in the Indo-European system of numerals. Heidelberg: Winter.
Thomas, Werner, 1985. Die Erforschung des Tocharischen (1960–1984). Stuttgart: Steiner.
Tischler, Johann (ed.), 1982. Serta indogermanica. Festschrift für Günter Neumann zum 60. Geburtstag. Innsbruck: Innsbrucker Beiträge zur Sprachwissenschaft (Band 40).
Trubetzkoy, Nikolai, 1926. Gedanken über den lateinischen a-Konjunktiv. Festschrift für Paul Kretschmer (no ed.; Vienna: Deutscher Verlag für Jugend und Volk), pp. 267–74.
Þórhallsdóttir, Guðrún, 1988. Tocharian contraction across -w-. TIES 2.184–210.
Vaillant, André, 1950. Grammaire comparée des langues slaves. Tome I. Phonétique. Lyon: IAC.
—, 1958. —. Tome II. Morphologie. Première partie. Flexion nominale. Lyon: IAC.
—, 1966. —. Tome III. Le verbe. Paris: Klincksieck.

Vine, Brent, 1988. Review of Gamkrelidze and Ivanov 1984. Language 64.396–402.
Vries, Jan de, 1960. Kelten und Germanen. Bern: Francke.
Wackernagel, Jakob, 1897. Vermischte Beiträge zur griechischen Sprachkunde. Basel: Reinhardt.
Walde, Alois, and Julius Pokorny, 1926–7. Vergleichendes Wörterbuch der indogermanischen Sprachen. II. Band. Berlin: de Gruyter.
—, 1928–30. —. I. Band. Berlin: de Gruyter.
Walsh, D. S., and Bruce Biggs, 1966. Proto-Polynesian word list I. Auckland: Linguistic Society of New Zealand.
Watkins, Calvert, 1962. Indo-European origins of the Celtic verb. I. The sigmatic aorist. Dublin: Dublin Institute for Advanced Studies.
—, 1969. Indogermanische Grammatik. Band III. Formenlehre. I. Teil. Geschichte der indogermanischen Verbalflexion. Heidelberg: Winter.
—, 1971. Hittite and Indo-European studies: the denominative statives in -ē-. TPS 1971[73]: 51–93.
—, 1974. I.-E. 'star'. Die Sprache 20.10–4.
Watkins, Calvert (ed.), 1975. Indo-European studies II. Cambridge (Mass.): Harvard U. special report to the National Science Foundation.
—, 1987. Studies in memory of Warren Cowgill (1929–1985). Papers from the Fourth East Coast Indo-European Conference, Cornell University, June 6–9, 1985. Berlin: de Gruyter.
Van Windekens, Albert Joris, 1941. Lexique étymologique des dialectes tokhariens. Louvain: Muséon.
—, 1960. Études d'étymologie et de grammaire comparée. Lingua Posnaniensis 8.30–43.
—, 1976. Le tokharien confronté avec les autres langues indo-européennes. Vol. I. La phonétique et le vocabulaire. Louvain: Centre International de Dialectologie Générale.
—, 1979. —. Vol. II, 1. La morphologie nominale. Louvain: Centre International de Dialectologie Générale.
—, 1982. —. Vol. II, 2. La morphologie verbale. Louvain: Centre International de Dialectologie Générale.
Winter, Werner, 1952. An Indo-European prefix *n̥- 'together with'. Language 28.186–91.
—, 1962a. Nominal and pronominal dual in Tocharian. Language 38.111–34.
—, 1962b. Die Vertretung indogermanischer Dentale im Tocharischen. IF 67.16–35.
—, 1965. Tocharian evidence. Winter (ed.) 1965: 190–211.
—, 1971. Baktrische Lehnwörter im Tocharischen. Schmitt-Brandt (ed.) 1971: 217–23.
—, 1977. Internal structure and external relationship of two verbal paradigms: Tocharian B weñ-, A weñ- 'say'. JIES 5.133–59.
—, 1982. Indo-European words for 'tongue' and 'fish': a reappraisal. JIES 10.167–86.
—, 1984. Studia Tocharica. Poznań: Wydawnictwo Naukowe Uniwersytetu Imienia Adama Mickiewicza.
—, 1985. Tocharian B soy, A se and related forms. JAOS 105.259–64.
Winter, Werner (ed.), 1965. Evidence for laryngeals. The Hague: Mouton.
Wyatt, William F., 1976. Early Greek /y/ and Grassmann's Law. Glotta 54.1–11.