W. PORZIG, Die Namen für Satzinhalte im Griechischen und im Indogermanischen, Berlin 1942, 216-220 und 349/350.

27) So ist etwa der an sich athematische Infinitiv-Ausgang -μεν auch in einigen Dialekten in die thematische Flexion eingedrungen: boiot. φερέμεν (IG 7, 1739 Z.16), thessal. ὑπαρχέμεν (IG 9/2,517 Z.19) speziell in der Pelasgiotis, hom. εἰπέμεν (Il. 7,373+; Od. 3,89+).

28) J.L. GARCÍA-RAMÓN, Proportionale Analogie und griechische Morphologie: Athematische Infinitive im Attischen und Westionischen. Akten der VIII. Indogermanischen Fachtagung "Philologie und Sprachwissenschaft: J. Wackernagel und die Indogermanistik heute", Basel: Oktober 1988 (im Druck), deutet die betreffenden Infinitive als das Resultat der sekundären analogen Umgestaltung. Die Zuweisung von myk. *e-re-e* zur athematischen Konjugation wird auch hier vertreten.

29) W. BLÜMEL, Die aiolischen Dialekte. Göttingen 1982, 208-216, geht allerdings nicht von einem Suffix **-(h)en* (**dido-(h)en*, **kernā-(h)en*) aus, sondern neigt eher zu einer Endung */n/*, die aus einer analogen Proportion κάλημι:κάλην übertragen ist. Dies trifft sicher für ὄμνῦν zu: ὄμνῦ-μι:ὄμνῦ-ν also nach κάλη-μι:κάλη-ν.

30) L. DUBOIS, Recherches sur le dialecte arcadien I-III. Louvain-la-Neuve 1988, I 173-177.

31) J.L. GARCÍA-RAMÓN, Le prétendu infinitif "occidental" du type ἔχεν vis-à-vis du mycénien *e-ke-e*. Minos 16 (1977) 179-206, rechnet mit einer Kürzung nach dem OSTHOFFschen Gesetz im kontextuellen Zusammenhang.

32) Sappho 58,25 LP. Vgl. auch: A. THUMB/A. SCHERER, Griechische Dialekte, 2. Teil, 102/103; E.-M. HAMM, Grammatik zu Sappho und Alkaios. Berlin 1957, 138-144.

33) P. CHANTRAINE, Grammaire homérique. Tome I: Phonétique et morphologie. Paris ^{3}1958, 189-192 und 298-300. Vgl. E. RISCH, Remarques sur l'accent du grec ancien. Mélanges E. Benveniste, Paris 1975, 471-479 (= Kleine Schriften, Berlin/New York 1981, 187-195).

34) F. AURA JORRO, DMic I s.v. *di-do-si*. Vgl. auch: E. RISCH, Ein Problem des griechischen Verbalparadigmas: Die verschiedenen Formen der 3. Person Plural. Serta Indogermanica (= FS G. Neumann), Innsbruck 1982, 321-334.

35) F. AURA JORRO, DMic I s.v. *e-ke*.

36) Diese Präsens-Stammbildung kann außerdem noch durch das Substantiv ἔρετμον *"Ruder"* beeinflußt sein, das möglicherweise als **eret-mo-* segmentiert worden ist (vgl. Anm. 13), wobei wiederum */eretās/* ἑρέτης Hilfestellung geleistet haben könnte.

37) E. SCHWYZER, Grammatik I 715/716 (mit weiteren Beispielen); H. RIX, Grammatik 208, 212/213.

The Tocharian active s-preterite: a classical sigmatic aorist

1. For almost fifty years scholars have been at pains to explain why the Tocharian active s-preterite (the class III preterite) exhibits a sigmatic suffix or ending only in the 3sg.[1]. PEDERSEN 1941 identified the s-ending of the 3sg. both with the suffix of the Proto-Indo-European (PIE) sigmatic aorist (p. 188) and with the 3sg. ending *-š ~ -iš* of the Hittite hi-conjugation preterite (pp. 146, 188)[2]; he believed that the other members of the Tocharian paradigm could only reflect the PIE thematic aorist (pp. 188-9)[3]. KRAUSE 1952: 180 suggested that the Tocharian s-preterite represents the merger of two fully developed PIE categories, the s-aorist and the perfect; this solution was repeated in KRAUSE and THOMAS 1960: 247[4] and has become the usual view (cf. e.g. VAN WINDEKENS 1982: 160-4, ADAMS 1988: 82-3). A few scholars have proposed alternatives; they all begin by accepting PEDERSEN's identification of Tocharian pret. 3sg. *-s(-)* with Hittite *-š ~ -iš*, and those who have discussed the problem in depth either accept KRAUSE's hypothesis of paradigm conflation within the history of Tocharian or propose a similar suppletive paradigm for PIE. Thus IVANOV 1959: 30 accepts PEDERSEN's idea and adds Sanskrit precative 3sg. *-s* to the equation[5]; he then asserts (without further discussion) that this distribution of forms shows that the s-aorist is of secondary origin and should not be reconstructed for PIE. IVANOV's view is accepted and elaborated by WATKINS 1962: 63-9, who adopts KRAUSE's merger of s-aorist and perfect in Tocharian as well (pp. 65-6); he argues further that the appearance of *-s(-)* only in the 3sg. of the Tocharian active s-preterite and of the Hittite hi-conjugation preterite is a shared archaism, reflecting an early stage of PIE in which

*-s was still a 3sg. ending and not yet a suffix (pp. 67-9). BADER 1978: 33 apparently agrees. JASANOFF 1988b follows the same line of reasoning much farther, reconstructing a "mixed paradigm" (of the sort proposed for Tocharian) for one class of late PIE aorists and deriving both the Tocharian active s-preterite and the preterite of the Hittite hi-conjugation directly from his late PIE construct with a minimum of analogical disturbance. This obliges him to explain how such a suppletive paradigm arose within the PIE period (pp. 60-7).

It is remarkable that all fully articulated proposals regarding the origin of the Tocharian active s-preterite involve a conflation of two originally distinct paradigms. Apparently a real merger of paradigms is envisioned, not just the acquisition by one stem of endings originally peculiar to another. Typically the s-ending of the 3sg. and the palatalizing root-vowels TB *e*, TA *a* are compared with the PIE s-aorist indicative (or whatever earlier category is thought to underly it), while the PIE perfect indicative (or some other o-grade formation) is thought to be the source of the other endings and of the NONpalatalizing root-vowels TB *e*, TA *a*. But a complete merger of two different STEMS, each with its own endings, requires very many analogical changes, or very radical analogical changes, and is therefore inherently unlikely. It would be better to explain the Tocharian s-preterite as the reflex of some single PIE category, if the data will support such an explanation.

In a brief and cursory statement, VAN WINDEKENS 1944: 272 identified the Tocharian s-preterite unequivocally with the "classical" PIE s-aorist and asserted that the original suffix *-s- had been lost in many forms. Unfortunately he did not explain how the loss of *-s- had occurred. Not surprisingly, VAN WINDEKENS 1982: 154-75 has abandoned that view, accepting KRAUSE's idea of the merger of two PIE paradigms (see above).

But in spite of all probability VAN WINDEKEN's earlier suggestion seems to be at least partly correct: as I hope to show here, the active s-preterite of the Tocharian languages actually can reflect the PIE s-aorist as traditionally reconstructed, and the loss of the suffix *-s- in most forms of the paradigm can be the result of regular sound change. Such an analysis (if correct) has important consequences for our reconstruction of the PIE verb system.

2. Most active s-preterites of Tocharian B (TB) ablauting verbs exhibit in their roots an *e*, or else a diphthong *ai* or *au* that reflects earlier **ey* or **ew*[6]; the s-preterites of Tocharian A (TA) ablauting verbs typically exhibit a regularly corresponding vowel *a*, *e* or *o*. These vowels can reflect either PIE *o (or *oy or *ow, respectively), the ablaut vowel of the perfect indicative singular, or PIE *ē (*ēy, *ēw), the ablaut vowel of the active indicative of the s-aorist[7]. However, Tocharian consonants were palatalized by an original following *ē, but not by *o; therefore Tocharian s-preterites with palatalized initial consonants or clusters presumably reflect the PIE s-aorist, directly or indirectly[8].

In fact, TA active s-preterites exhibiting the appropriate root vocalism do present us with numerous instances of distinctive[9] initial palatalization; note the following examples[10]:

kärk- 'bind': 3pl. *śarkr-äm* 'they bound them'
täñk- 'hinder': 3pl. *cañkär*
täs- 'put': 3sg. *casäs*, 3pl. *casär*
näk- 'destroy': 3sg. *ñakäs*, 3pl. *ñakär*
plutk- 'appear, stand out': 3sg. *plyocksā-m* 'it appeared before them'
lipā- 'be left over', causative 'leave behind': 3sg. *lyepäs*
luk- 'shine, illuminate': 3sg. *lyokä[s]*
lutk- causative 'cause to become': 1sg. *lyockwā*, 2sg. *lyockäṣt*

What is less often observed is that a l l o t h e r TA active s-preterites with this root vocalism begin with a labial consonant, *r-*, a cluster ending in *-y-* or *-r-*, or a lexically palatalized consonant - that is, with consonants and clusters that cannot normally show distinctive palatalization in TA. The relevant examples are the following:

cämp- 'be able'[11]: 1sg. *camwā*, 3sg. *campäs*, 3pl. *campär*
pyutk- 'bring into existence, create': 3sg. *pyocäs*
präk- 'ask': 1sg. *prakwā*, 3sg. *prakäs*
märk- (meaning?): 3sg. *markä[s]*
räk- 'spread': 3sg. *raksā-ṃ* 'he spread [a bed] for him', 3pl. *rakär*
wätk- 'separate': 1sg. *wackwā*

In other words, the active s-preterites of TA ablauting verbs exhibit distinctive initial palatalization whenever possible[12], and such a situation strongly suggests that the Tocharian active s-preterite is the lineal descendant of the PIE s-aorist.

It is therefore surprising to find that the active s-preterites of TB ablauting verbs normally lack initial palatalization. The following examples are typical[13]:

/kəl-/ 'endure': 2sg. *kelasta*, 3sg. *keltsa*
/kəs-/ 'extinguish': 2sg. *kesasta*
/tək-/ 'touch': 3sg. *teksa* (contrast pres. 3sg. *ceśäṃ*)
/təs-/ 'put': 3sg. *tessa*, 3pl. *tesar*
/nək-/ 'destroy': 1sg. *nekwa*, 2sg. *nekasta*, 3sg. *neksa*
/nəm-/ 'bow': 3pl. *nemar-neś* 'they bent (it) down for him'

Note especially the contrast between TA *casäs, casär, ñakäs* and TB *tessa, tesar, neksa*. It would seem that TA and TB contradict each other on this point, making it unclear whether we should reconstruct initial palatalization in the PT ablauting active s-preterite.

But it is easy to explain the TB lack of initial palatalization as a secondary development. In both languages the mediopassive s-preterite usually lacks initial palatalization;

presumably it lacked initial palatalization in PT, and TB active s-preterites might have lost their initial palatalization by analogy with the mediopassive. Moreover, two anomalies strongly suggest that TB did inherit initial palatalization in the active s-preterite from PT. In the first place, three TB ablauting active s-preterites do exhibit distinctive palatalization of initial /l/, or of a cluster ending in /l/:

/pləṅk-/ 'sell': 3sg. *plyeṅksa*, 1pl. *plyeṅkam*, 3pl. *plyeṅkare*[14]

/ləwk-/ (*luk-*) 'illuminate': 3sg. *lyauksa*

/ləwt-/ (*lut-*) 'drive forth': 3sg. *lyautsa-ñ* 'he exiled me', 3pl. *lyautar*

Two of these verbs have s-presents (class VIII presents) as well (3sg. *plaṅkṣäṃ*, *lukṣäṃ*), and paradigms including an s-present and an s-preterite are a conspicuous class of verbs inherited from PT; moreover, TB *lyauksa* is an exact cognate of TA *lyokäs*. For both those reasons the TB s-preterites beginning with *(C)ly-* appear to be inherited forms[15]. Secondly, there is a curious pair of TB verbs, both meaning 'float, drift, hover, soar', which must both reflect PIE *plew- 'float' (VAN WINDEKENS 1976: 377) but which seem to be synchronically distinct (COUVREUR 1954: 85; cf. THOMAS 1964: 217). One of these verbs is best analyzed as

/pləws-/ (*plus-*) 'float' etc.: pres. 3sg. *pluṣäṃ*, pret. 3sg. *pluṣā-ne* (in Berlin 375b4: *katkomñaisa arañce pluṣā-ne* 'his heart soared for joy'), 3pl. *pluṣar-ñ* 'my ... soared' (COUVREUR 1954: 84)[16];

note especially that the simple thematic present is paradigmatically linked with an a-preterite (class I preterite) which shows palatalization of the root-final consonant, as is normal in Tocharian (WINTER 1977: 136-9). The other verb is

/pl'ew-/ 'float' etc.: pres. 3sg. *plyewä-ñ* (in PK 17.3a5: *katkauñaisa arañce po ṅke plyewä-ñ* 'indeed my

whole heart soars for joy', cited by COUVREUR 1954: 85), pret. 3sg. [p]*ly(e)u̯*[*sa*], *plyews* = *iprerne* (see fn. 6 above).

In addition, there is an abstract noun, apparently formed from a subjunctive stem, which is not easy to fit into either of the above paradigms, namely

pluwälyñe 'exaltation' (in H 149.81b5: ///*katkauwñ*[*ai*] *pluwälyñe pälskontse*/// 'joy [and] exaltation of mind').

This situation is almost certainly the result of paradigm split. The /-s-/ of /pləws-/ must originally have been the present stem suffix; its reanalysis as part of the root entailed the reanalysis of the old thematic s-present as a simple thematic present, to which an a-preterite with root-final palatalization was subsequently formed. Conversely, an athematic present /pl'ew-/ with /e/ in the root is unusual and unexpected, but that root vocalism was normal in the s-preterite; therefore s-preterite /pl'ews-/ is probably original, and present /pl'ew-/ must have been backformed to it. The inherited paradigm must have been s-pres. *pluṣə- ~ *plusë-, athematic subj. *plëw(ə)- ~ *plu(wə)-, s-pret. *pl'ews-, a common type of paradigm in Tocharian (cf. KRAUSE 1952: 77-8); for reasons that are not now recoverable the present and preterite are becoming dissociated in TB, and the result is a pair of verbs /pləws-/ (*plus-*, based on the old present) and /pl'ew-/ (*plyew-*, based on the old preterite). But note the ablaut of the inherited paradigm: the root-vocalism of the s-present is underlying */əw/ without initial palatalization; the athematic subjunctive presumably exhibited the ablaut typical of that stem-class (LANE 1959: 159-60, COWGILL 1967: 171-4, K. SCHMIDT 1985: 430-1), but in any case lacked initial palatalization; and in the s-preterite the root contained */ew/, WITH initial palatalization. In other words, we find distinctive initial palatalization in an s-preterite which

appears to be inherited but has become dissociated from its original paradigm. It is difficult to resist the conclusion that TB inherited from PT distinctive initial palatalization in the ablauting active s-preterite.

Unfortunately, the need to reconstruct such initial palatalization for PT active s-preterites does not guarantee that it directly reflects the vocalism of the PIE s-aorist. Several of the TA and TB s-preterites with initial palatalization listed above could be described as causatives[17]; they contrast in meaning with intransitive preterites such as the following:

TA 3sg. mp. s-pret. *nakät* '(s)he disappeared', 3pl. *nakänt*
TA 3pl. act. a-pret. *lepar-äṃ* 'they remained for her (him?)'
TA 3sg. mp. s-pret. *lyokät* 'it grew bright', 3pl. *lyokänt* (the initial palatalization can only be the result of analogy); TB act. a-pret. *ly[u]kā-me* 'their ... was radiant' (with old initial palatalization, cf. JASANOFF 1983: 55-61)
TA 3sg. act. a-pret. *loträk* 'he turned around', 3pl. *lotkar*
TB 3sg. act. a-pret. *plaṅka* 'it was sold', 3pl. *plaṅkāre* (COUVREUR 1954: 89-90)[18]

Palatalization is known to be characteristic of causatives and has clearly spread by analogy in causative paradigms; indeed, the *c* of TA s-pret. 3pl. *crakär* (in *ime crakär* 'they lost consciousness') and of forms such as TA s-pret. 1sg. *lyockwā* 'I converted' can only be explained as the result of analogy, and the same is true of the /l'/ of TB s-pret. 1sg. *pelykwa* 'I tormented'. TB even presents us with a pair of contrasting s-preterites, namely *kauwa* 'I killed', *śauwa-me* 'I caused them to be killed', in which the causative is distinguished from the basic verb only by its palatalization (which must be analogical, since the PT diphthong in this root was *aw or *ow). It is as least conceivable that initial palatalization arose first in some non-preterite class of

causative forms, then spread by analogy to causative s-preterites and eventually to all PT ablauting active s-preterites. Of course we can easily turn this argument on its head: there must be some original source for analogical initial palatalization in causatives, and the active s-preterite could easily be that source if its palatalization reflects PIE s-aorist *ē. But a conclusive argument for the analogical spread of initial palatalization to or from s-preterites is difficult to construct.

However, several personal endings of the active s-preterite paradigm provide additional evidence that it reflects the PIE s-aorist. The following sections discuss the development of the endings and the loss of *-s- before most of them.

3. The one form of the Tocharian active s-preterite that unquestionably exhibits a distinctive s-suffix or s-ending is the 3sg., which ended in *-sa in PT:

TA *lyokä[s]*, TB *lyauksa* < PT *l′ə̂wk-sa '(s)he illuminated'
TA *ñakäs*, TB *neksa* ← < PT *ñə̂k-sa '(s)he destroyed'
TB *casäs*, TB *tessa* ← < PT *cə̂s-sa '(s)he put'
TB *preksa* < PT *pr′ə̂k-sa '(s)he asked'

The *-s- of this ending can only be the PIE s-aorist suffix - or its etymological equivalent in alternative reconstructions of the PIE verb - and the *-a must have intruded from the a-preterite; but we need to determine, if we can, how those two elements were combined into the attested ending.

In general, final consonants were lost at an early stage of the development of Tocharian. Good examples of the loss of final *-m, *-n, *-t, *-s, *-mt, *-nt, and *-nts can be adduced:

PIE *ḱm̥tóm 'hundred' (Skt. *śatâm*, Lat. *centum*, etc.) >
*kəntóm > PT *kəntə́ > TB *kante*, TA *känt*

PIE *septm̥ 'seven' (Skt. *saptá*, Lat. *septem*, etc.) > *septə́m > PT *ṣəptə́[19] > TB *ṣukt*, TA *ṣpät*

PIE *(x̂)nêwn̥[20] 'nine' (Skt. *náva*, Gk. ἔννέα; Lat. *novem* by analogy with *septem*, *decem*, but cf. *nōnus* 'ninth') > *nêwən > *ñə́wə > PT *ñúwə > TB, TA *ñu*

(post-)PIE aor. inj. *x̂ludhêt '(s)he arrived' (OIr. *luid* '(s)he went'; augmented indic. *ê-x̂ludhet > Gk. ἦλυθε) > PT *ləcə́ '(s)he went out' > TB *lac*, TA *läc*

PIE *ékwos 'horse' (Skt. *áśvas*, Lat. *equos*, etc.) > PT *yə́kwë > TB *yakwe*, TA *yuk*

PIE *pántes nom. pl. masc. 'all' (cf. Gk. πάντες with ᾰ by Osthoff's Law) > PT *pə́ñcə > TB *poñc*, TA *poñś*

PIE n-stem nom. pl. *-n-es > PT *-ñə > TB, TA *-ñ* (the nom. pl. ending of several classes of nouns and adjectives)

PIE *tríx (d)kə́mt 'three tens' (SCHINDLER 1967b: 240) > *triyakōmt > PT *təryaka 'thirty' > TB *täryāka*

PIE *dékm̥t 'ten' (cf. Lith. *dẽšimt*, Goth. *taihun* with Proto-Germanic *-un < pre-Gmc. *-unt) > *dékəmt > PT *śə́kə > TB *śak*, TA *śäk*

PIE nom. sg. masc. *pánts and neut. *pánt 'all' (cf. Gk. masc. *πάντς > πᾶς, neut. *πάν in adv. πάμπαν 'completely') > PT *pə́ > TB *po* (the *nt is preserved in TB, TA inflected *pont-*; cf. the nom. pl. cited above)

We do not know whether all these consonants were lost at the same time, but in any case it is most unlikely that all the consonants of a final cluster were lost at the same time; loss in several stages is much more plausible phonetically. It therefore seems reasonable to suppose that the *-t of the PIE s-aorist 3sg. in *-s-t was lost before any of the consonants preceding it had been affected. That would have given rise to a paradigm in which the 3sg. was endingless, approximately as follows (the example is pre-PT s-preterite *nēk-s- 'destroyed'):

1sg. *nék-s-əm
2sg. *nék-s (*-s < *-s-s already in PIE, but perhaps still interpretable as *-s-s morphophonemically for some time)
3sg. *nék-s
1pl. *nék-s-me
2pl. *nék-s-te
3pl. *nék-s-ən(t)

Endingless 3sg. forms may be favored among languages in general, but they are not normal in the active paradigms of archaic IE languages. In Tocharian, as in Greek, a need to recharacterize this 3sg. was felt. Greek added an -ε, the 3sg. ending of the thematic aorist (or the pluperfect? see BERG 1977: 238-9)[21]; Tocharian resorted instead to the a-preterite 3sg. ending, which seems to have developed as follows (the example is PT a-pret. *ścəma- 'stood'; cf. JASANOFF 1983: 59):

PIE aor. inj. *stémbhX-t '(s)he propped' (cf. Skt. *stambhīt*) > *stémat[22] > *stéma > PT *ścáma > TB *śama*, TA *śäm* (VAN WINDEKENS 1976: 463)

If postvocalic final *-t was not lost at the same time as the *-t of *-s-t, then the development of the s-preterite 3sg. was

*nék-s-t > *nék-s → *nék-s-at > *nék-sa > PT *ñéksa, etc.;

if all final *-t were lost at the same time, the development must have been

*nék-s-t > *nék-s → *nék-sa > PT *ñéksa, etc.[23]

What is necessary is that the ending *-a(t) have been added by analogy before the *-s could be lost by sound change (as discussed in the following section).

4. It is clear that the 2sg. also acquired a new ending by analogy, no doubt because the inherited form *néks appeared endingless; it is also clear that the added ending was the old perfect 2sg. *-ta (< PIE *-txe). The addition of a perfect

ending to an aorist stem can only have occurred after the two categories had become isofunctional, or nearly so[24]. Let us adopt the simplest working hypothesis that can be devised, namely that the development was

*nḗks → *nḗk-s-ta.

What would the phonologically regular PT reflex of the latter form be?

An example of a PIE cluster *Cst has survived in the Tocharian ordinal 'sixth':

PIE *swe$\hat{k}$stós → *se$\hat{k}$stós (cf. Lat. *sextus*) > PT *ṣəkəstḗ > TB *ṣkaste*, TA *ṣkäṣt*[25]

Note the epenthesis of *ə between the first consonant of the cluster and the *s. That epenthesis must be the result of regular sound change[26], because the PT form is not easy to explain as an analogical creation. If our only attested Tocharian word for 'six' were TB *ṣkas*, we could easily suggest that the ordinal TB *ṣkaste*, TA *ṣkäṣt* had been derived from its cardinal relatively recently; but we must also account for TA *ṣäk* 'six', and the TB and TA cardinals cannot reflect the same PT ancestor by regular sound change - nor can TA *ṣäk* be explained as an analogical creation, since there is no convincing analogical model for its evident loss of original final *s[27]. We are therefore forced to treat TB *ṣkas* as a backformation to ordinal *ṣkaste*[28], and to reconstruct

PT *ṣə́k (or conceivably *ṣə́kə) 'six', *ṣəkəstḗ 'sixth';

and the earlier development of the cardinal must have been

PT (*ṣə́kə? <) *ṣə́k < *sḗks < *sḗ$\hat{k}$s ← PIE *swḗ$\hat{k}$s (Boiotian ϝέξ, etc.).

(Note the loss of final *s after *k, which must have occurred AFTER the addition of *-a(t) to the 3sg. of the s-preterite discussed in section 3.)

We thus have good evidence for a pre-PT sound change *Cst > *Cəst, and the development of the 2sg. of the s-peterite is seen to be entirely straightforward:

post-PIE 2sg. *nḗ̂ks > *nḗks → *nḗk-s-ta > *nḗkəsta > PT *ñḗkəsta > TA *ñäkäṣt (cf. *yāmäṣt* 'you did', *lyockäṣt*), TB *ñḗkəsta → *nḗkəsta > *nekə́sta (by the regular shift of accent from an initial syllable, RINGE 1987b: 258-9) > *nekasta*

To be sure, this sound change probably could not have affected the 2sg. forms of all s-preterites; for example, it is hard to believe that a cluster *wst would have been broken up by epenthesis. But it is very likely that this particular epenthesis affected all *Cst clusters in which the first consonant was a stop; and from such a (relatively broad) base the new suffix/ending complex *-əsta can easily have spread by analogy.

Thus the apparent stem vowel *ə of the 2sg. forms developed through regular epenthesis before the PT period (and spread by unremarkable analogical change). Moreover, that epenthesis physically dissociated the stem suffix *-s- from the root and associated it with the ending. If and when a substantial number of s-preterite forms lost their suffixal *-s-, the dissociation of root and suffix might have contributed to a reanalysis of the 2sg. ending as *-(ə)sta. For further discussion see sections 8 and 9.

5. The 1pl. of the PIE active s-aorist can only have been *ROOT + s + me, with a cluster of at least three consonants at the morpheme boundaries[29]. In PIE the *-m- of the ending should have been realized as syllabic *-m̥- by Sievers' Law. But at some point in the history of Tocharian the old Sievers' Law distribution of syllabic and nonsyllabic nasals broke down; that is demonstrated by the distribution of TB /-nä-/ and /-ənä-/ in na-presents (class VI presents)[30]. Replacement of disyllabic *-m̥e by monosyllabic *-me would thereby have become phonologically possible, and one would expect such a replacement to have occurred, since *-me was

the 1pl. secondary ending in most other categories (e.g. postvocalically).

I suggest that Sievers' Law ceased to operate before the PT period, that *-me replaced *-m̥e relatively quickly, and that the *-s- of the resulting *-Csm- cluster was lost by regular sound change, also before the PT period. I can cite no other examples of such a sound change, but it would certainly be phonetically natural, and there seems to be no positive reason not to posit it - provided there are no counterexamples.

Consonant clusters of the shape *CsR* (in which *R* represents a resonant other than a semivowel) are rare in attested Tocharian. Of the few that do exist, some can be shown to have resulted from recent losses of intervening vowels or consonants; typical examples are

TB *kärsnaṃ* 'he knows' H149.295b3 (verse text) beside *kärsänaṃ* Berlin 523b6 etc. < *kərs-ənə́-n[31] and

TB *karsnaṃ* 'it cuts short' Berlin 3b7 etc. < *kərst-nə́-n, cf. inf. *karstatsi* etc.

The rest have no secure etymology; a typical example is

TB *aiksnar* '(all) around' (translatable by TA *yärśār*), which could have entered the language from some unknown source after TB and TA had begun to diverge. Thus I find no counterexamples to a regular loss of *s between a consonant and a (nonvocalic) resonant in pre-PT.

Accordingly I propose that the development of the active s-preterite 1pl. was as follows (again using s-preterite *nēk-s- 'destroyed' as an example):

post-PIE 1pl. *nḗk̂-s-m̥e > → *nḗk-s-me > *nḗk-me > PT *ñḗk-m´ə 'we destroyed'

Presumably the *-s- was dropped by sound change only when preceded by a stop, as in the example given; certainly it is hard to believe that PT *kə́wm´ə (*kówm´ə ?) 'we killed' (>/→ TB *kawa*[*m*], see immediately below) has lost an *-s- by sound

change between its semivowel and resonant. However, loss of *-s- in the 1sg. can have spread by analogy from its original base to other s-preterites.

Note the shape of the resulting PT form. Such words, containing a *CR cluster at the end of an initial stressed syllable, underwent a complex development in TB, as the following examples demonstrate:

PIE *swépnos 'sleep' (Skt. *svápnas*, OE *swefn*, etc.) > PT *ṣw´ə́pnë (TA *ṣpäṃ*) > TB *ṣə́pəne > *ṣəpə́ne > *ṣpane*

PIE *k^{W}ék^{W}los 'wheel' (Homeric Gk. κύκλος, OE *hwēol*, etc.) > PT *k^{W}ə́k^{W}lë[32] 'chariot' (TA *kukäl*) > TB *kə́kəle > *kokə́le > *kokale*

An epenthetic *ə has been inserted into the medial consonant cluster; subsequently the accent has been shifted onto that *ə by the regular TB rightward shift of initial-syllable accent (RINGE 1987b: 258-9). The 1pl. of the s-preterite should therefore have developed as follows in TB:

PT *ñékm´ə → TB *nékm´ə (see sect. 2) > *nékmə > *nékəmə > *nekə́mə > **nekam* 'we destroyed'

This particular 1pl. happens not to be attested in TB, but the form given is almost certainly correct; cf.

TB *plyeṅkam* 'we sold' < *pl´eṅkə́mə < *pl´éṅkəmə < PT *pl´éṅkm´ə < *plénk-s-me (etymology?).

The ending *-ə́mə undoubtedly spread by analogy to those few stems that ended in vowels or diphthongs, in which no regular epenthesis occurred; a surviving example of such a 1pl. form is TB *kawa[m]* 'we killed'.

In TA the secondary ending *-m´ə was extended, or perhaps replaced, to give *-mäs* (the 1pl. active ending for all tenses and moods)[33]; the only occurring example is *wälmä(s)* 'we died', made to an s-preterite stem probably created within the history of TA. (There is no TB cognate; moreover, the unexpected root-ablaut agrees with that of the pres. and subj. stems, which strongly suggests that this s-preterite

was made to them within the history of TA.)

Thus it is easy to explain the loss of *-s- in the Tocharian s-preterite 1pl. as the result of a regular sound change and simple and unobjectionable analogical changes.

6. We now need to explain why the 3pl. of the Tocharian s-preterite also exhibits no suffixal *-s-*. Before we can discuss that, however, we must establish the shape of the PT ending and try to determine its exact etymology.

The attested 3pl. endings are TB *-ar*, TA *-är* (see the examples in section 2)[34]. Most scholars who have commented on these endings compare them with the 3pl. ending of the PIE perfect without being very specific about the details of the comparison. PEDERSEN 1941: 149 tentatively suggested that they reflect PIE *-ṛ, and several scholars have adopted that view (see the references in VAN WINDEKENS 1982: 286); G. SCHMIDT 1971: 248 suggested *-ṛs as an alternative possibility[35].

But the Tocharian 3pl. endings are most unlikely to reflect PIE *-ṛs or *-ṛ, because if they did it would be difficult to explain the accent of the TB forms. The vowel of TB *-ar*, TA *-är* is *$_{\partial}$, which precedes all the endings of the Tocharian active s-preterite except the 1sg. and 3sg. (PEDERSEN 1941: 188, KRAUSE and THOMAS 1960: 247); since it is regularly spelled *a* in TB 3pl. *tesar*, *lyautar*, etc., it must be accented in those forms, just as it is in 1pl. *kawa[m]*, *plyeṅkam*, 2sg. *kelasta*, *nekasta*, etc. Perhaps the most solidly established fact concerning TB accent is that the final syllable of a PT polysyllabic word never retained the accent in TB; final accent was always retracted by one syllable (MARGGRAF 1970: 15-8). This regular sound change must have occurred fairly recently (from the perspective of

attested TB), because it remains a largely productive rule governing much of the morphophonemic alternation observable in TB. Thus we find TB *pācer* 'father' (with initial-syllable accent), pl. *pacera* (with accent on the second syllable) from underlying /pacêr/, PT *pacêr; *camel* 'birth' (with initial-syllable accent), pl. *cmela* (with accent on the *e* and syncope of the original initial-syllable vowel) from underlying /cəmêl/, PT *cəmêl; and so on. TB surface forms with accent on the final syllable are derived from underlying forms in /-ə/, which reflects PT *-ə; underlying final /-ə/ is usually dropped by a phonological rule, but in verse texts it can surface as *-o* (KRAUSE 1952: 7-10). Thus we find TB *tallāñc ~ tallāñco* /tallâñcə/ nom. pl. 'wretched', PT *tallâñcə; *kälpām* and *kalpāmo* /kəlpâmə/ 'we have attained', PT *kəlpaḿə; etc. One sometimes finds classes of forms in which the accent has been fixed farther toward the beginning of the word by analogy (cf. JASANOFF 1988b: 71fn. 2, and see section 11 below), but I am not aware of any TB form which has unquestionably acquired a new word-final accent by analogy. In fact, such an analogical change would probably be impossible, given that the system of underlying final /-ə/'s and accent retraction seems to be intact in attested TB[36].

It follows that the immediate preform of TB *tesar*, for example, cannot have been *tesə̂r (which would have become *tə̂sər > TB *"tesär"*); it must have been *tesə́rə, just as that of *kawa[m]* was *kawə́mə (see section 5). Since TA *-är* can also reflect *-rə or *-ərə, such an ending ought to be reconstructed for PT as well. But PT *-(ə)rə[37] cannot reflect PIE *-r̥s or *-r̥, which would have given PT *-ər instead. What, then, is the etymological source of PT 3pl. *-(ə)rə?

Recalling that PT palatalized *ŕ and nonpalatalized *r cannot be distinguished before PT final *ə (which disappeared in both languages)[38], we might reconstruct PT *-əŕə and suggest that it reflects a post-PIE ending *-r̥-i, in which

*-r̥ is a 3pl. perfect ending and *-i is the hic-et-nunc particle; the addition of this particle to a perfect ending might be parallel to the same process in Latin, where pf. 3pl. *-ēre*, for example, reflects PIE *-ēr plus *-i. But the situation in Tocharian is not comparable to that in (pre-) Latin. Several Latin perfect endings have been extended with *-i:

Lat. 1sg. *-ī* < *-ai ← *-a+i, *-a < PIE *-xe
Lat. 2sg. *-istī* < *-istai ← *-is+tai, *-tai ← *-ta+i, *-ta < PIE *-txe
Lat. 3pl. *-ēre* < *-ēri ← *-ēr+i

It is clear from this pattern that the perfect was integrated into the system of primary tenses before it merged with the aorist in Latin. But in Tocharian we find no clear trace of *-i in old perfect endings; note especially the following:

TA a-pret. 1sg. *-ā* < *-a-wa (cf. WINTER 1965: 203-6), s-pret. 1sg. *-wā* ← *-u < *-wa; TA *-wa*, TB *-wa* < PT *-wa ← *-a < PIE *-xe (see section 8)
TA 2sg. *-ṣt*, TA *-sta* < PT *-sta ← *-ta < PIE *-txe

In both cases the addition of *-i would have produced a diphthong which should have survived in PT. We can only conclude that the pre-Tocharian perfect was not integrated into the system of primary tenses before it merged with the aorist; and in that case it makes no sense to explain the shape of the PT s-pret. 3pl. ending by positing an addition of hic-et-nunc *-i.

It is not immediately clear what other PIE source could have given rise to the final vowel of this ending, but at least that vowel is not completely unparalleled in Tocharian verb inflection: in the active a-preterite we find 3pl. TB *-āre*, TA *-ār* ~ *-ar*, from which a PT 3pl. *-a-rë can be reconstructed. The *ë of this ending should reflect PIE *o, and for that vowel too a plausible etymological analysis is not easy to find[39]. Scholars have suggested repeatedly that

PT *-rë is neither more nor less than the PIE secondary mediopassive 3pl. *-ro (see VAN WINDEKENS 1982: 285-6 with references), but that is certainly mistaken. Tocharian, like every other branch of Indo-European that preserves the mediopassive, maintains a clear distinction between active and mediopassive endings, and it is not reasonable to suggest that an old mediopassive ending has somehow wandered into the active preterite; moreover, the only PIE secondary 3pl. ending that survives in the Tocharian mediopassive is *-nto (> PT *-ntë > TB *-nte*, TA *-nt*), the innovative form that owes its consonants to analogy with the active ending in (late) PIE. But if PIE *-ro cannot be the source of this ending, it has no obvious PIE source.

A structural approach to this problem might give more reliable results than "brute force" etymological analysis. We have puzzling final vowels in two active preterite 3pl. endings, and in each case the preceding consonant is PT *r; since the two cases are so similar, let us consider the possibility that they are historically connected. A plausible starting point is Warren COWGILL's suggestion (p.c. 1980) that PT a-pret. 3pl. *-rë reflects pre- Tocharian *-ront, an innovative ending composed of an *-r- that reflects some form of PIE 3pl. perfect ending plus the 3pl. *-ont of inherited thematic aorists. This proposal causes no phonological difficulties, since word-final consonant clusters of nasal plus dental stop are known to have disappeared in Tocharian (see section 3)[40]. Moreover, there is an approximate parallel in another branch of Indo-European: Latin pf. 3pl. *-ērunt* is likewise a hybrid of older *-ēre* (< *-ēri, see above) and *-erunt* (apparently < *-is-onti, but the reflex of *-onti might have replaced a reflex of *-ont)[41], and it is perhaps not irrelevant that Latin, like Tocharian, has merged the PIE perfect and aorist into a single preterite tense. But if PT *-rë reflects older *-r-ont, presumably PT *-rə reflects older

*-r-n̥t; and the final *-n̥t of this latter construct is the zero-grade alternant of the athematic active 3pl. ending - precisely the alternant that occurred in the PIE s-aorist. Thus the final vowel of the 3pl. ending could be taken as corroborating evidence that the Tocharian active s-preterite does reflect the PIE s-aorist[42].

If that analysis is correct, we must try to determine exactly how PT *-a-rë and *-(ə)rə arose. In the case of PT *-a-rë we are hampered by the fact that the ending is always preceded by PT stem-final *-a-, which has presumably contracted with whatever vowel originally preceded the *-r-; thus we cannot tell whether PT *-a-rë reflects older *-a-ēr-ë (*-ēr-ë < *-ēr-ont, cf. Latin *-ērunt*) or *-a-ər-ë (*-ər-ë < *-r̥-ont; or else *-ər-ë < *-ər+ë, *-ər < PIE *-r̥ or *-r̥s). It is even possible that old perfects first acquired an innovative 3pl. ending *-Vrë, that that ending was resegmented as *-V-rë, and that the resulting *-rë was introduced into the a-aorist - later the a-preterite - by analogy.

In the s-preterite ending the problem is different: we do have a vowel, namely *ə, before the *-r* in both Tocharian languages, but we cannot be certain that it is not of secondary origin. Of course it is possible that pre- TB *-ə̂rə reflects PT disyllabic *-ərə, and that the latter should be analyzed as *-ər < PIE *-r̥ or *-r̥s plus *-ə < *-ən < PIE *-n̥t; in that case the development of the TB and TA forms from PT will have been very straightforward, as follows:

PT *cə́sərə 'they put' > TA *casär*; but → TB *tə́sərə > *tesə́rə (rightward shift of initial accent, see above) > TB *tesar*

PT *pr´ə́kərə 'they asked' > TB *prə́kərə > *prekə́rə > *prekar*, etc.

But an inherited *-s- ought not to have been lost before inherited *-ər by sound change; adopting this solution for

the ending therefore entails finding some way to lose the *-s- by analogy, or else abandoning the enterprise altogether and accepting some form of the usual view that the Tocharian active s-preterite reflects a conflation of two different stems. Given the inherent improbability of the conflation hypothesis, it seems preferable to explore ways of explaining a loss of *-s-.

Unfortunately our chances of explaining the loss of *-s- in this form by analogy seem slim. The only form of the paradigm in which we have been able to motivate a loss of *-s- by sound change is the 1pl. (in the 2sg. the *-s- was only displaced, not lost); it seems unlikely that the 3pl. could have lost its *-s- by analogy with the 1pl. alone, especially since the 3sg. never lost its *-s-. A loss of *-s- by sound change in the 3pl. would be preferable, if such a thing is possible.

To put this problem in perspective, let us return to the PIE s-aorist paradigm and see what would have happened to its 3pl. according to the sound laws of Tocharian. It is clear that the earliest changes would have included vocalization of the syllabic nasal in the ending:

post-PIE 3pl. *nḗḵ-s-n̥t > *nḗk-s-ənt;

the result would have been a final postvocalic *-nt, which in hindsight we might say was marked for eventual destruction. But recall that in the 3sg. the *-t of final *-Cst was lost before any of the consonants that preceded it (and the preceding consonants have survived, protected by the new ending *-a). It does not necessarily follow that the *-t of final *-nt was lost before the preceding *-n-, but it is very likely; in that case the further development of the ending would have been

*nḗk-s-ənt > *nḗk-s-ən,

and it is at that point that a problem might have arisen for native speakers. The same vocalization of syllabic nasals

had taken place in the 1sg.:

post-PIE 1sg. *nḗk̂-s-m̥ > *nḗk-s-əm,

and the final *-m of the resulting form was likewise marked for eventual destruction (so to speak). But there is evidence that final *-m became *-n before being lost. Note the Tocharian words for 'earth':

TA *tkaṃ*, TB *keṃ* 'earth' < PT *tkḗnə (cf. Gk. acc. χθόνα) ← < acc. *dhĝhómm̥ (for the stem *dhĝhom- cf. thematized Lat. *humus* 'ground') ← *dhĝhṓm (cf. Skt. *kṣā́m*, Av. *ząm*, OIr. *don*) ← *dhéĝhōm (cf. Hitt. *tēkan*; see SCHINDLER 1967a on the PIE ablaut)

In Tocharian, as in Greek, the final *m of the stem has become /n/. The details of the process are not completely clear, but in any case no such change should have affected intervocalic *m, and there is no good evidence that this word ever had a nom. sg. in *-s (in which *-m-s could have become *-n-s by regular sound change) either in Tocharian or in Greek. On the other hand, the nom. sg. originally ended in *-ōm and might have continued to do so in both languages; a change of that *-ōm to *-ōn would have given rise to a stem-final *n in a salient member of the paradigm from which it could have spread to the other forms. If the endingless locative (PIE *dhĝhém; cf. Skt. *kṣā́mi* with hic-et-nunc *-i) survived long enough in either language, it could have contributed to the same process. Minimal speculation is involved in positing such a process for Greek, since we have independent evidence that final *m did become ν in that language. For Tocharian we have no other evidence, but also no better way to explain why 'earth' has a stem-final *n in PT; consequently it is most economical to assume that in Tocharian, too, final *m became *n. Thus a further stage in the development of the 1sg. would have been

*nḗk-s-əm > *nḗk-s-ən.

We know nothing definite about the relative chronology of this change and the (probable) loss of final *-t in 3pl. *-nt,

but it is obviously possible that there was a period in which both the 1sg. and the 3pl. of the s-preterite paradigm ended in *-ən. Such an identity of endings is not normal. Even Greek, which long tolerated an identity of thematic 1sg. and 3pl. secondary active endings, eventually replaced 3pl. -ον with -οσαν[43], and it is possible that the much earlier replacement of s-aorist 3pl. *-σα (< *-s-n̥t) with -σαν was motivated in part by pressure to avoid homonymy with the 1sg. ending. Thus the chronology suggested here, in which the 1sg. and 3pl. endings of the Tocharian s-preterite had become identical, provides a reasonable motivation for the replacement of one or both of those endings, and I shall adopt that scenario as a working hypothesis.

It is clear that the 1sg. ending was replaced by *-wa, on which see section 8 below. One might suppose that there would then be no need to replace the 3pl. ending as well. But experience suggests that such an inference is not trustworthy, and it is relatively easy to see why. In every instance of morphological replacement, there is a period of variation in which the old and new endings are used side by side. If replacement of 1sg. *-ən and 3pl. *-ən began more or less at the same time, there would have been a period during which the 1sg. ending of the active s-preterite was *-ən varying with *-wa, while the 3pl. ending was *-ən varying with something else. So long as *-ən was an alternative for both endings, neither of the less ambiguous alternatives need have been felt to be superfluous; and because *-ən continued to be ambiguous, it is likely that the innovative alternatives would have prevailed in the end.

What, then, was the new ending that replaced 3pl. *-ən? I propose that it was *-rən, which arose in the following way. The a-preterite 3pl. ending, reflecting older *-Vr-ont, would have become *-Vr-ën by unrounding of the *o and loss of *-t (as in the s-preterite ending); it is reasonable to

suppose that the vowel before *-r- had been eliminated, either by contraction with the preceding *-a- or because already resegmented *-rën was introduced into the a-preterite as such (see above). Given the need to disambiguate s-pret. 3pl. *-ən, one simple means of doing so would have been to insert an *-r- before it, creating an ending *-rən parallel to the already existing *-rën[44]. The subsequent loss of final nasals resulted in the PT endings *-rə and *-rë.

If s-pret. 3pl. *-ən was actually replaced by *-rən, the loss of suffixal *-s- becomes easy to explain: it is an automatic consequence of the same sound changes by which *-s- was lost in the 1pl. The development can be illustrated as follows:

post-PIE 3pl. *nḗk̂-s-n̥t > *nḗk-s-ənt > *nḗk-s-ən (= 1sg.)
→ *nḗk-s-rən (≠ 1sg.) > *nḗk-rən > *nḗkrə > PT *ñḗkrə; then
PT *ñḗkrə > TA *ñakär*, but → TB *nḗkrə > *nḗkərə > *nekə́rə > **nekar* (cf. *prekar* 'they asked')

This solves the problem neatly.

I do not expect that everyone will find this proposal credible; it therefore makes sense to consider each step of the posited development in an attempt to determine exactly how plausible that step is. The motivation for the change has already been discussed; so has the replacement of the 3pl. as well as the 1sg. ending. The sound change by which *-s- was lost is that by which it was lost in the 1pl., and those two examples stand or fall together. The crux of the problem is the creation of an ending *-rən; that seems suspicious, especially since there is no neat analogical proportion that can plausibly be made to give such a result. But it seems beyond question that such an ending was created somehow or other; PT *-rə can hardly reflect anything else. Moreover, the part of the ending following *-r- can only

reflect the old acrostatic secondary 3pl. ending *-n̥t, as I have argued above; and it should follow that the new ending was created within the paradigm of the s-aorist (or rather of its direct descendant), the only relevant paradigm in which secondary *-n̥t appeared. It would seem that the only point open to serious argument is whether the new ending ought to have been monosyllabic *-rən or disyllabic *-ərən. I do not see how one could argue for either alternative on purely phonological grounds. Certainly the disyllabic ending looks more familiar - "normal", if you will - but we can hardly exclude the monosyllabic one on grounds of phonetic improbability. If the 1pl. was of the expected shape, pre-PT already had consonant clusters of the shape *CsR, and the creation of a few more ought not to have caused serious problems.

In short, I find no great implausibility in the specific changes proposed. Nevertheless a notable difficulty remains: a considerable number of details in the above proposal are not independently verifiable. I cannot adduce independent evidence that Sievers' Law ceased to operate before the PT period, nor that *s was lost between a consonant and a resonant, nor that the chronology of *Auslautgesetze* was precisely such that the 1sg. and 3pl. endings would have become homonymous, nor that a-preterite 3pl. *-a-rën was already in existence when the need to disambiguate the s-preterite 3pl. arose. This general difficulty needs to be discussed in a broader context, and I will take it up again in section 12.

7. It seems most convenient to treat the remaining plural form, the 2pl., at this point, since the shape of the plural paradigm as a whole will be important for the discussion of the 1sg.

The 2pl. of the Tocharian s-preterite is not attested. It is usually suggested that the ending was TB *-*as*, TA *-*äs* (so KRAUSE and THOMAS 1960: 270: TB **prekas*, TA **prakäs* 'you (pl.) asked'), and that is very likely to be correct. The history of those forms, however, is much less clear, chiefly because there are several plausible alternative lines of development.

The PIE ending of the active 2pl. was *-te, and the 2pl. of the Tocharian s-preterite should therefore have undergone the same type of epenthesis as the 2sg. if the original ending survived that long:

post-PIE 2pl. *nék̂-s-te > *nék-s-te > *nékəste > "*ñékəścə"

But at some point the old ending was replaced by the ancestor of PT *-sə[45], the etymology of which is not known[46].

If *-sə replaced inherited *-te relatively early, the 2pl. of the s-preterite would probably have developed as follows:

post-PIE *nék̂-s-te > *nék-s-te → *nék-s-sə > *néksə > PT *ñéksə

(This scenario is based on the overwhelmingly likely assumption that a cluster *Css could not exist for long without being simplified to *Cs.) If *ñéksə was the PT form, it can have survived in TA **ñakäs*; but in TB **nekas* /nekəsə/ it presumably aquired a medial syllable on the analogy of 1pl. **nekam* /nekəmə/ and 3pl. **nekar* /nekərə/.

If *-sə replaced inherited *-te after *nékəste had arisen, the result must have been *nékəssə, whence PT *ñékəssə; the *-ss- of this form could have been simplified to *-s-* by sound change in TA even before it became word-final (cf. TA mediopassive *tsāt* = TB *tässāte* '(s)he put'), while in TB it would have been simplified upon becoming word-final.

A third alternative is that the 2pl. reflects a late PT analogical formation on the model of the 2sg., as follows:

PT 2sg. *takasta: 2pl. *takasə::2sg. *ñékəsta: X;
X = 2pl. *ñékəsə

(See section 9 on PT 2pl. *takasta and similar a-preterite forms.) PT *ñékəsə would then give the required results by sound change. Finally, we must reckon with the possibility that the 2pl. was repeatedly remade analogically, since it was the least influential member of the paradigm (aside from the moribund duals, also unattested).

If the PT 2pl. was *ñéksə, its s-suffix had already been lost by sound change (i.e. by the reduction of *Css to *Cs); if it was *ñékəsə, the specific analogical proportion by which it was created treated *-ə- as the suffix. If the PT 2pl. was *ñékəssə, a suffix *-s- or *-əs- must have been recognizable when the form was created, but it is not clear how long that analysis would have remained viable. These alternatives will be important for the discussion in the following section.

8. The remaining attested form of the active paradigm is the 1sg. I have argued in section 6 that pre-PT 1sg. *néksən was replaced by *nékswa; the latter form, and its putative reflexes TB *nekwa* and TA **ñakwā* (cf. *prakwā*), must now be discussed.

It is clear that the ending *-wā* of TA *prakwā* 'I asked', etc. is not perfectly cognate with the *-wa* of TB *nekwa* 'I destroyed', etc., since final nonhigh vowels were always lost in TA (except in monosyllables). But if TA *-ā* must be a recent analogical importation[47], the preceding *-w-* fits perfectly with TB *-wa*; clearly we must reconstruct PT 1sg. *-wa. The fact that no stem vowel ever appears before this ending confirms that the *-ə- of the 2sg. and 3pl. (and, in TB, the 1pl.) is indeed the result of sound change, as posited above, and not a functional entity[48]; but the fact that there

is also no -s- before the 1sg. ending requires an explanation if the active s-preterite is the direct descendant of the PIE s-aorist. Of course it is possible that *-s- was lost in consonant clusters of the form *Csw, but such a change is not very plausible phonetically; it would clearly be better to explain the loss of *-s- before this ending as an analogical change.

There are at least two reasonably plausible scenarios for the replacement of 1sg. *-s-wa by PT *-wa. If the pre-PT 2pl. was *nḗksə (see section 7), the active s-preterite paradigm at that stage of development must have been the following:

sg.	*nḗk-s-wa	pl.	*nḗk-me
	*nḗk-əs-ta		*nḗk-sə
	*nḗk-s-a		*nḗk-rə

Note that the singular forms all contain an identifiable suffix *-s-, but that none of the plural forms does. Such a pattern could have led to the resegmentation of the singular forms as

*nḗk-swa
*nḗk-əsta
*nḗk-sa,

just as Greek ἔθηκ-α, -ας, -ε were resegmented to ἔθη-κα, -καϛ, -κε on the basis of the κ-less plural ἔθε-μεν, -τε, -ν (KIMBALL 1990). The new 3sg. ending *-sa, which marked the pivotal member of the paradigm, maintained its identity; so did 2sg. *-əsta (on which see further in section 9). But 1sg. *-swa was evidently replaced by *-wa, the 1sg. ending of the a-preterite, apparently because the latter was much more common.

If the pre-PT 2pl. ending was *nḗkəssə, the scenario just sketched would not necessarily have been possible, because *nḗkəssə would have been analyzable to the same degree that 2sg. *nḗkəsta was. In that case one might suggest that both

the second person forms had been reanalyzed as root plus ending (*nék-əsta, *nék-əssə) because the suffix *-s- had been mechanically dissociated from the root by epenthesis of *-ə- (see section 4). The only forms still containing an identifiable suffix *-s- would then be 1sg. *nék-s-wa and 3sg. *nék-s-a; that would prompt their reanalysis as *nék-swa and *nék-sa, which would develop as suggested above. This hypothesis seems somewhat less plausible than the preceding, since it is not clear that mere dissociation of the old suffix *-s- from the root would lead to its reanalysis as part of the endings. But such a development does seem possible, especially since the suffix of the s-present, by contrast, was always in contact with the root (cf. PT active 3sg. *nək-ṣə, 3pl. *nək-së-n, mediopassive 3sg. *nək-ṣə-tər, 3pl. *nək-së-ntər, etc.).

If the PT 2pl. was *ñékəsə, as suggested toward the end of section 7, no inferences about the resegmentation of the singular forms can be drawn, since *ñékəsə can only have been created via an analogical proportion including a-preterite 2sg. *-a-sta, that sequence probably includes an ending introduced from the s-preterite (see section 9), and an s-preterite ending *-əsta can only be the result of a prior resegmentation. We would need to know what form 2pl. *ñékəsə replaced in order to make coherent suggestions about the earlier history of the paradigm.

These indeterminacies ensure that we cannot know for certain how such 1sg. forms as PT *ñékwa arose. However, it is clear that the PT 1sg. c a n reflect an earlier s-aorist form in spite of the fact that it exhibits no suffix *-s-. The development can be summarized as follows:

post-PIE 1sg. *nék̂-s-m̥ > *nék-s-əm > *nék-s-ən (= 3pl.) → *nék-s-wa (≠ 3pl.) → *nék-swa → *nék-wa (*-wa as in other prett.) > PT *ñékwa > TA *ñaku → *ñakwā (cf. *prakwā*, etc.), TB *ñékwa → *nekwa*

Since the later processes presuppose the existence of all the relevant paradigms in shapes similar to those in which they are actually attested, I suspect that the replacement of *-swa by *-wa was among the latest changes in the pre-PT history of the active s-preterite paradigm.

The source of the ending *-wa is clear in Tocharian terms: it can only have been the 1sg. ending of the perfect, and its *-a must reflect PIE *-xe (cf. Luvian pret. 1sg. *-ḫḫa*, Gk. pf. -α, etc.). But the ultimate source of the *-w- of PT 1sg. *-wa is anything but clear. I do not see how it can be related to the *-u-* of such Latin perfects as *rogāuit* '(s)he asked', *sonuit* 'it sounded', *nocuit* '(s)he/it hurt', etc., which is a stem-forming suffix and seems never to have been anything else[49]. A connection with Luvian present active 1sg. *-wi* also seems unlikely, both because the Luvian ending is itself isolated[50] and because a conflation in Tocharian of the two endings reflected separately in Luvian would require yet another set of complex analogical changes. The most we can say is that at some early stage of the prehistory of Tocharian a salient 1sg. perfect active form was resegmented so that the ending *-a became *-wa, and that the new ending spread to all other perfects in the language.

9. I have suggested in section 8 that 2sg. *-əs-ta was reinterpreted as an ending *-əsta in PT. If that is true, it seems reasonable to suggest that the new ending spread by analogy to the a-preterite, where we find PT 2sg. *-a-sta[51]. It is possible that the spread of *-(ə)sta began when the old aorist ending *-s began to disappear (variably) by sound change; in that case we could say with confidence that either word-final *-s had been retained in Tocharian longer than other word-final obstruents (as in Greek), or else the new 3sg. ending (see section 3) was still *-at when it was introduced into the s-preterite. Alternatively, the ending

that *-(ə)sta replaced might have been *-ta in old root-aorists; in that case *-ta, the old perfect ending, was itself a replacement for still older *-s. In either case, *-(ə)sta must have replaced *-ta directly in preterites that reflected inherited perfects.

10. The developments outlined above can be represented schematically in the following diagram. Each column represents a point later in time than the preceding one. If the relative chronology of two changes is completely unclear, they are treated as though they had occurred simultaneously, except that palatalization and the systematic PT vowel shifts are arbitrarily ordered after all the analogical changes for ease of presentation. As before, the example is s-pret. 'destroyed'.

	post-PIE s-aor. inj.		(I)		(II)		(III)
1sg.	*nḗk̂-s-m̥	>	*nḗk-s-əm	>	*nḗk-s-ən	→	*nḗk-s-wa
2sg.	*nḗk̂-s[-s]	>	*nḗk-s	→	*nḗk-s-ta	>	*nḗk-əs-ta
3sg.	*nḗk̂-s-t	>	*nḗk-s	→	*nḗk-s-a(t)		*nḗk-s-a(t)
1pl.	*nḗk̂-s-me	>	*nḗk-s-me		*nḗk-s-me		*nḗk-s-me
3pl.	*nḗk̂-s-n̥t	>	*nḗk-s-ənt	>	*nḗk-s-ən	→	*nḗk-s-rən

	(IV)		(V)		(VI)		PT s-pret.
	*nḗk-s-wa	→	*nḗk-swa	→	*nḗk-wa	>	*ñḗk-wa
	*nḗk-əs-ta	→	*nḗk-əsta		*nḗk-əsta	>	*ñḗk-əsta
>	*nḗk-s-a	→	*nḗk-sa		*nḗk-sa	>	*ñḗk-sa
>	*nḗk-me		*nḗk-me		*nḗk-me	>	*ñḗk-ḿə
>	*nḗk-rə		*nḗk-rə		*nḗk-rə	>	*ñḗk-rə

and	PT		(pre-TB 1)		(2)		(3)	
	*ñék-wa	→	*nék-wa		*nék-wa	>	*nek-wá	
	*ñék-əsta	→	*nék-əsta		*nék-əsta	>	*nek-ə́sta	
	*ñék-sa	→	*nék-sa		*nék-sa	>	*nek-sá	
	*ñék-m′ə	→	*nék-m′ə	>	*nék-əmə	>	*nek-ə́mə	
	*ñék-rə	→	*nék-rə	>	*nék-ərə	>	*nek-ə́rə	

	(4)		TB
>	*nék-wa	>	*nekwa*
	*nek-ə́sta	>	*nekasta*
>	*nék-sa	>	*neksa*
	*nek-ə́mə	>	**nekam* (cf. *plyeṅkam*)
	*nek-ə́rə	>	**nekar* (cf. *prekar*)

but	PT		(pre-TA 1)		(2)		(3)	
	*ñék-wa	>	*ñëk-wa	>	*ñëk-u	→	*ñëk-wā	
	*ñék-əsta	>	*ñëk-əṣta	>	*ñëk-əṣt		*ñëk-əṣt	
	*ñék-sa	>	*ñëk-sa	>	*ñëk-s	>	*ñëk-əs	
	*ñék-m′ə	>	*ñëk-mə	→	*ñëk-məs		*ñëk-məs	
	*ñék-rə	>	*ñëk-rə	>	*ñëk-ər		*ñëk-ər	

	TA
>	**ñakwā* (cf. *prakwā*)
>	**ñakäṣt* (cf. *lyocäṣt*)
>	*ñakäs*
>	**ñakmäs* (cf. *wälmäs*)
>	*ñakär*

11. It seems advisable to make a few remarks about the mediopassive s-aorist in the Tocharian languages. As is well known, there are two different formations. A type lacking any suffix appears only in TA, where it is unfortunately attested only in the 3sg. and 3pl.:

täm- 'be born': 3sg. *tamät*, 3pl. *tamänt*

näk- 'perish' (act. 'destroy'): 3sg. *nakät*, 3pl. *nakänt* (cf. active 3sg. *ñakäs*, 3pl. *ñakär*)

päk- 'ripen, cook': 3sg. *pakt-äṃ* 'its ... was cooked'

luk- 'shine': 3sg. *lyokät*, 3pl. *lyokänt* (cf. active 3sg. *lyokäs*)

tsäk- 'burn': 3sg. *tsakät*

In TB this type has acquired a suffix *-sa-* from the 3sg. active and/or the other mediopassive type (see below); thus corresponding to the above forms we find TB *temtsate*, *temtsante*, *neksate*, and *lauksāte* (St. 42.2.1b1, sic; see below). It seems clear that the TA forms are older, and that we should reconstruct PT

**təm-* 'be born': 3sg. **temtë*, 3pl. **teməntë* (or **tëm-*?)

**nək-* 'perish': 3sg. **nektë*, 3pl. **nekəntë* (or **nëk-*?)

and so on. The fixed initial accent of most of the TB paradigms is easily explained as follows (JASANOFF 1988b: 71 fn.2):

3sg. **nektḗ* (see below) > **nḗkte* (retraction) → **nḗksate* (with no further shift of accent) > *neksate*

3pl. **nekəntḗ* > **nekə́nte* → **nḗksante* (by analogy with the 3sg.) > **neksante*

3sg. *lauksāte* must have acquired its suffix substantially earlier, since the suffix did acquire the retracted accent.

VAN WINDEKENS 1982: 161-2 insists that the TB *e* and TA *a* in the roots of these forms, which normally do not palatalize the preceding consonant, be taken at face value and projected back by sound laws alone; that entails reconstructing PT **ë*

in the roots (according to my current views of Tocharian phonology) and explaining that vowel as PIE perfect indicative sg. *o, presumably introduced into these mediopassive preterites by some sort of analogy. But VAN WINDEKENS fails to consider a much more likely source for the root-vowels of the suffixless mediopassive s-preterite. After palatalization had become phonemic in PT, there is no reason why the root-vowel *e of the active (which reflects PIE *ē) could not have spread to the mediopassive without bringing its initial palatalization with it. I propose that that is exactly what happened. Note that in one paradigm, TA 3sg. *lyokät*, 3pl. *lyokänt*, the initial palatalization of the active did spread to the mediopassive; the lack of palatalization in TB *lauksāte* is an archaism.

If we accept that explanation of the root vowel, there is no reason not to agree with KRAUSE and THOMAS 1960: 247 that these mediopassive preterites reflect PIE mediopassive root aorists, originally with zero-grade roots. The development of these paradigms from PIE will have been as follows (using 'perish' as an example):

PIE 3sg. *n̥k̂-tó > *ənktó → *nəktó[52] > *nəktḗ →
PT *nektḗ > TA *nakät*, but → TB *neksate* (see above)
PIE 3pl. *n̥k̂-n̥tó > *ənkəntó → *nəkəntó > *nəkəntḗ →
PT *nekəntḗ > TA *nakänt*, but → TB **neksante*

Any other hypothesis would involve positing more and/or more drastic analogical changes; its advantages would have to be overwhelming to make it preferable to this scenario.

It is not surprising to find mediopassive root aorists - all of them intransitive - associated with transitive active s-aorists. No mediopassive s-aorists are reconstructable for PIE; if the category existed at all, it must have been rare. Thus the association of the s-aorist with active inflection in pre-Tocharian can be an archaism. Moreover, we know that it is natural for s-aorists to acquire transitive

function in opposition to the intransitive function of suffixless aorists, because the same thing has happened in Greek; note the following examples:

3sg. intrans. ἔβη, trans. ἔβησε (Iliad, etc.)

3sg. intrans. ἔδῡ, trans. ἔδῡσε (mostly in cpds.; 3pl. ἔδῦσαν Od. 14.341)

3sg. intrans. ἦλυθε, 3pl. trans. ἐλεύσαν Ibykos 282.18 (Page); in *Inscriptiones Creticae* IV 72 (the great law code of Gortyn) we find also 3pl. ἐπέλευσαν III.52, inf. ἐπελεῦσαι III.45, 53, IV.10, ptc. acc. ἐπελεύσανϝτα IV.7-8

The differences of detail show that this is not a shared innovation in the real historical sense, but a parallel development.

The other mediopassive s-aorist formation exhibits a suffix *-sa- in all forms; examples are relatively numerous in both languages. Most of the examples could be late creations built to the active 3sg. in *-sa, on the analogy of the a-preterite:

PT 3sg. act. *k^{w}aka '(s)he called': mp. *k^{w}akatë:: act. *yamsa '(s)he did': mp. X; X = *yamsatë

(Cf. TA act. 3sg. *kāk*, mp. 3pl. *kākant*, act. 3sg. *yāmäs*, mp. 3sg. *yāmtsāt*, TB act. 3sg. *kāka*, mp. 3sg. *kakāte*; TB has replaced the preterite of /yam-/ 'do' with a stem based on the present.) However, there are a handful of stems that show distinctive zero grade of the root and therefore require a more detailed explanation. At least three such stems are reconstructable for PT:

*təs- ~ *tas- ~ *tes- 'put': mp. pret. 3sg. *təssatë (TB *tässāte*, TA *tsāt*), but act. *cêssa (TB *tessa*, TA *casäs*)

*pərk- ~ *prek- (*prëk-?) 'ask': mp. pret. 3sg. *pərksatë (TA *pärksāt*; cf. TB 3pl. *parksante-ne* 'they asked him'), but act. *pr´éksa (TB *preksa*, TA *prakäs*)

*rək- 'spread, cover': mp. pret. 3sg. *rəksatë (TB *raksate* 'he spread [his cloak on the ground]'), but act. *r´êksa (TB *reksa-me* 'it covered ... their'(?), TA *raksā-ṃ* 'he spread [a bed] for him')

Some other stems for which no active forms happen to be attested might belong here; a notable example is

*wəs- 'clothe', mp. 'put on [one's clothes]': pret. 3sg. *wəssatë (TB *wässāte*), 3pl. *wəssantë (TA *wsānt*)

At least the *-a- of the suffix *-sa- must have been acquired from the active 3sg., and it is possible that the whole suffix is nothing more than the active 3sg. ending; but because the root-ablaut of these mediopassives differs from that of the actives, a formally simple analogical proportion will not give the required results. On the other hand, it is not likely that these stems directly reflect any PIE inflectional type; as I have noted above, a mediopassive s-aorist is scarcely reconstructable for PIE. On general grounds of morphological patterning we might expect that this class too reflects older root-aorists; in that case the original ablaut of the root has been preserved, but a suffix *-sa-, apparently borrowed from the active 3sg., has somehow been added[53]. Conceivably the motivation for this development was a need to introduce active suffixal *-s- into the mediopassive, and the *-a of the active 3sg. was also borrowed either because simple *-s- would not have been a sufficiently salient morphological marker or because the active 3sg. had been reinterpreted as the functional "zero-form" of the paradigm even though it did have an overt ending. But why should anyone want to introduce *-s- into the mediopassive, and why should some mediopassive root aorists have acquired that suffix from the active while others did not?

Surprisingly, a simple answer lies ready to hand: t h e s e mediopassive preterites can be used transitively (and usually

are), whereas the group that remained unsuffixed in PT (and in TA) are all obligatorily intransitive. The spread of *-sa- from the active to one group and not the other is a direct consequence of the use of aorist *-s- as a marker of transitivity. Why this particular group of stems should have resisted the incursion of the active root vocalism is not clear; but resistance to analogical change is often difficult to explain, and such a difficulty does not make any particular hypothesis significantly less plausible.

The most disturbing detail of the mediopassive sa-preterites' inflection is the fact that so many examples bear fixed accent on the root in TB; that would seem to suggest not only that they are old root aorists, but that they remained suffixless well into the individual history of TB (see above), acquiring their suffix only after the accent had become fixed. If we accept that line of reasoning, we will have to reconstruct some of this group, too, as suffixless preterites in PT: instead of PT 3sg. *pərksatë we must posit *pərkté (visibly a zero-grade mediopassive root aorist), and so on. However, it seems at least as likely that these TB stems have acquired their root-accent by analogy with the type *neksate*, which do reflect PT suffixless preterites. Thus I continue to reconstruct PT *pərksatë, etc. (TB *parksate*, with initial accent) as well as PT *təssatë, etc. (TB *tässāte*, with noninitial accent).

Apparently, then, all Tocharian mediopassive s-preterites can ultimately be explained as direct or indirect reflexes of PIE and post-PIE root-aorists, or as late analogical forms.

12. I believe that the hypothesis outlined in this paper is coherent and reasonably plausible; accordingly I propose to accept, in the case of the active s-preterite (only),

VAN WINDEKENS' original contention that the Tocharian s-preterite is neither more nor less than a PIE s-aorist. But I do not expect that such a proposal will meet with universal approval. No matter how plausible this hypothesis might be, the positive evidence for it is strictly limited. As I observed at the end of section 6, the proposed scenario depends crucially on a substantial number of unverifiable suppositions; and given the enormous gaps in the recoverable history of Tocharian, it is not likely that independent evidence for some of them will ever be forthcoming.

It is only fair to ask whether the proposals of this paper should not be rejected on just those grounds. So far as I can see, that depends on what the alternatives are. Against a verdict of *non liquet* I can make no cogent appeal. But alternative hypotheses can be compared with the hypothesis advanced here, and I believe that such a comparison will reveal the following interesting situation.

The attested Tocharian s-preterite paradigm is so different from anything usually reconstructed for PIE that an Indo-Europeanist of traditional stamp must posit extensive changes, including analogical changes, to account for its origin, and those changes must be supposed to have occurred in the long period of Tocharian development which is a total documentary blank. At least two such accounts have been attempted, one based on the idea of paradigm conflation (KRAUSE's hypothesis), the other working from the PIE s-aorist alone (VAN WINDEKENS' hypothesis as elaborated here); both do indeed posit extensive unverifiable changes in the history of the paradigm. But the converse approach is no better in that regard: if we suggest that PIE had a preterite paradigm much like that of the Tocharian s-preterite, we must posit extensive unobserved analogical changes to account for the various s-aorist paradigms of most other IE languages. In fact, the latter scenario might actually be more difficult,

since we will need to posit such changes independently for several branches of the IE family (instead of for Tocharian alone). We might circumvent that difficulty by asserting that the other IE languages underwent common innovations after the departure of the Tocharians, but such an assertion - in effect, an "Indo-Tocharian hypothesis" - would require solid independent evidence to support it. These problems also bedevil any attempt to reconstruct a compromise paradigm for PIE: in effect, positing anything too like the Tocharian s-preterite for PIE multiplies the difficulties elsewhere. That is thrown into sharp relief by the sketchy remarks of JASANOFF 1988b: 67, which do not amount to an adequate explanation of how his PIE s-aorist paradigm (see section 1 above) developed into the "classical" s-aorist[54].

In other words, the difficulties are largely inherent in our data, which are so disparate that no hypothesis can easily account for all of them. This situation is very familiar to Indo-Europeanists who have tried to cope with the differences between the Anatolian verb system and the traditional PIE verb. Such difficulties can never be completely eliminated, but they can be substantially reduced by taking to heart the remarks of EICHNER 1975: 71-4, particularly his general observation that we m u s t advance specific and detailed plausible hypotheses regarding the unobservable changes which the data force us to posit. That is what I have tried to do here. In the spirit of EICHNER's observations, I would argue that the acceptability of my hypothesis can only be gauged by comparing it with alternatives elaborated in similar detail. If such detailed alternatives are proposed, and if a close comparison of them all is undertaken, we will necessarily acquire more definite knowledge of the PIE verb, no matter whose hypothesis is ultimately judged the most plausible.

It is likewise important to make the criteria for a choice between alternative hypotheses as explicit as possible. In the case of sound changes that is easy to do. Sound change is observed to be overwhelmingly regular; therefore, proposed irregular sound changes are inherently less plausible than regular ones (other things being equal), and a single clear counterexample should justify the rejection of any proposed sound change. If different proposals involve regular but incompatible sound changes, considerations of phonetic plausibility can sometimes motivate a choice between them, though such choices necessarily lack the determination and force conferred by the principle of regularity of phonemic change. But the real crux of the matter is analogical change: how can we judge between competing hypotheses which differ principally in the analogical changes proposed?

A decade of studying analogical change in the ancient Greek verb has convinced me that there are n o universally applicable laws of analogical change[55]. Frequently used forms do not always resist replacement, 3sg. forms of verbs do not behave as though they exhibited zero-endings, the member of a paradigm which ought to be the *forme de fondation* is sometimes replaced (cf. Gk. ipf. 3sg. ἦς → ἦν!), and so on. It follows that the plausibility of a proposed analogical change cannot be judged on general grounds. The change must be judged in the specific context of the paradigm in which it is supposed to have taken place; and in order to render such judgments possible, that paradigm, as well as all other relevant paradigms in the language, must be reconstructed in the greatest possible detail. Only thus can plausible analogical changes be proposed in the absence of documentation. It thus appears that we must make our hypotheses about analogical change as detailed as possible not only in order to make them comparable, but even to make them plausible at all. Again, that is what I have tried to do here.

13. It would not be feasible to undertake in this paper the kind of detailed comparison advocated in the preceding section, even if the existing alternatives to the s-aorist hypothesis had been comparably elaborated. However, because of its popularity KRAUSE's hypothesis of paradigm merger demands at least a cursory examination in the terms outlined immediately above.

I began by arguing against the hypothesis of paradigm conflation on the grounds that it would require a great deal of radical analogical change, and on the whole that seems to be true. It is hard to see how two paradigms could be merged into one unless at least a few of their salient forms were similar, and it is hard to find much similarity between the PIE indicative paradigms of the perfect and the s-aorist. Though the reduplication of the PIE perfect was largely lost in Tocharian (and so can be left out of account), its other morphological characteristics are almost completely different from those of the s-aorist. The root vocalism of the PIE s-aorist indicative was *ē (see fn. 7), while that of the perfect indicative was *o in the singular and zero in the dual and plural; the perfect had no stem-forming suffix, while the s-aorist was characterized by invariant *-s-; the endings of the singular and the 3pl., at least, were entirely different in shape.

But a notable similarity between the two paradigms might have developed by sound change within the history of Tocharian. Both PIE *o and PIE *ē usually appear in TB as *e* and in TA as *a*. The merger of these vowels could have made the perfect and s-aorist indicative paradigms similar enough to permit mutual influence between them, and paradigm merger might eventually have resulted (ADAMS 1988: 82). However, the entire process could only have occurred b e f o r e the PT period, since the PT s-preterite endings are essentially

those of the attested languages. As far as I can determine, most scholars do assume that the merger of PIE *o and *ē was pre-PT, and until recently I agreed(cf. Ringe 1987a: 110-4). However, the following facts have convinced me that the two vowels had n o t merged in PT[56].

It is clear that PIE *o gives TA *a* (and TB *e*) when it occurred next to PT *p or *m:

PIE *ĝómbhos 'row of teeth' (OE *camb* 'comb', Gk. γόμφος 'peg', Skt. pl. *jámbhāsas* 'set of teeth', etc.) > PT *kémë 'tooth' > TA *kam* (TB *keme*)

PIE *ono- 'that' (OCS *onŭ*) and *prô 'in front' (Skt. *prá*, Gk. πρό, etc.) > PT *ënëprë 'in front' > TA *anapär* (TB *enepre*)

PIE *pótis, *póty- 'master, husband' (Skt. *pátis*, dat. *pátye*, Gk. πόσις, etc.) > PT *pëts- > TA *pats* (TB *petso*)

PIE *x^{w}nogh-(u-) 'fingernail' (OE *naegl*, Gk. ὄνυχ-, etc.): pl. *x^{w}nóghu-x > → PT *mëkuwa >TA *maku* (TB *mekwa*)

Note that I represent the PT vowel in the above examples as *ë (implying only that it was some unrounded mid vowel). But there is also a well-attested correspondence TB *e*: TA *o* next to *p or *m. Since experience shows that sound changes are normally regular, it is decidedly preferable to posit a different PT vowel for these words; for reasons explained below, I posit PT *e. Most examples of PT *e do not have PIE etymologies; typical are the following:

PT *épəstiyë 'clever' > TA *opäśśi* (TB *epastye*)

PT *eməl'ë 'hot' > TA *omäl* (TB *emalye*)

Some are loanwords from Iranian languages:

PT *épiyacə 'to mind' (in *épiyacə kəla- 'bring to mind') > TA *opyāc* (TB *epiyac*), ultimately ← Middle Persian *aβyāt* 'memory' (HANSEN 1940: 151)

PT *peretə (*perëtə?) 'ax' > TA *porat* (TB *peret*), ultimately ← pre-Ossetic *färätŭ > Ossetic *färät* (WINTER 1971: 221-2)

One word,

PT *cəmêl 'birth' > TA *cmol* (TB *camel*),

contains a vowel which, as I have argued on other grounds (RINGE 1987a: 114-8, forthcoming (a) sect. 4.1), cannot reflect PIE *o, whatever its source may have been.

But in addition to all the above, there is at least one TA word with *o* before a labial which almost certainly reflects a preform containing PIE *ē (HILMARSSON 1984: 141, 143):

PT obl. sg. masc. *ṣemë 'one' > TA *ṣom*, compounding form *ṣoma-* (TB *ṣeme*)

PT nom. pl. masc. *ṣemę 'some' > TA *ṣome* (TB *ṣemi*)[57]

If the regularity of sound change is to be taken seriously, these words cannot represent PIE *somo- with an analogically palatalized initial consonant (an alternative suggested by HILMARSSON 1984: 145); moreover, PIE *somo- (or rather *somXó-, cf. Skt. *samá-* with no lengthening) meant 'same' or the like, not 'one'. As HILMARSSON has seen, the only remaining possibility is that these Tocharian forms represent an early thematization of PIE nom./acc. sg. masc. *sḗm 'one' (which survives as such in TB nom. sg. masc. *ṣe*), and the palatalization of the initial consonant points clearly in that direction.

A somewhat less certain, but still fairly probable, parallel case is the Tocharian word for 'name':

PT *ñḗmə 'name' > TA *ñom* (TB *ñem*),

whose initial palatalization likewise points to an earlier form containing PIE *$\bar{e}x^W$; I do not think the *ñ could have resulted from the palatalization of *-nm- in a reflex of PIE gen. sg. *$x̂n̥x^W$mḗns (pace JASANOFF 1988a: 228 and the scholars cited in fn. 4 loc. cit.), because I know of no other word in which all members of an amphisyllabic consonant cluster were palatalized. This example is less certain than 'one' because *ē is rather unexpected in 'name', but a PIE

acrostatic paradigm *x̂néx^{w}mn̥, gen. *x̂néx^{w}mn̥s is by no means out of the question. As Sara KIMBALL has pointed out to me, Hittite gen. sg. *lamnaš* and Gothic nom./acc. pl. *namna* could reflect earlier acrostatic forms, and the short root vowel of the Germanic forms could be the result of Osthoff's Law; the attested paradigm of Skt. *nā́ma* is also compatible with such a hypothesis[58]. The situation in Greek is admittedly more complex. We might account for the short medial vowel of ὄνομα by Osthoff's Law (so NUSSBAUM 1986: 52 fn. 10) if all the Greek words that exhibit long vowels before -μνο- or -μνᾱ- could be explained as late analogical formations, but the latter does not seem possible (PETERS 1980: 332, addenda to p. 307); κρημνός 'edge, bank' and πλήμνη 'hub, nave' are particularly intractable because of their lexical isolation. If 'name' was acrostatic in PIE, its inflection must have undergone extensive remodelling in Greek. But such remodelling is inherently very plausible. Deverbal *-men-stems, which constituted the large majority of neuter n-stems in PIE (NUSSBAUM 1986: 51), undoubtedly exhibited proterokinetic ablaut (SCHINDLER 1975: 263-4); and 'name', one of the very few neuter *-men-stems which was lexically isolated[59], would surely have tended to assimilate to the inflection of the deverbal class. The same process accounts for the inflection of OIr. *ainm*, gen. sg. *ainme* < *x̂n̥x^{w}-men-s (note that all OIr. neuter n-stems have acquired this gen. sg. ending), and probably also for that of the Balto-Slavic forms; in those branches, as well as in Greek, the nom./acc. sg. has been remodelled on the oblique stem, which is itself an innovation[60].

If at least one of these two examples is accepted, the immediate source of these TA *o* must have been PT *e, the reflex of PIE *ē that resulted from the loss of distinctive vowel length in Tocharian, and that is what I have suggested throughout the above discussion.

It might be objected that there is one word in which (post-)PIE *ē next to a labial has not given TA *o*, namely

PIE *meh₂nes- 'moon' > *mēnes- > PT *m′eñ-, nom. sg. *m′eñe > TA *mañ* (TB *meñe*).

But note that the labial in question was palatalized in PT[61], whereas we cannot show that the labials in any of the preceding examples were[62]. It therefore seems reasonable to suggest that PT *e was rounded to TA *o* only next to non-palatalized *p and *m[63].

The above discussion seems to show that PIE *o and *ē had not merged in PT, even though they eventually did give the same result in TB and (in most environments) in TA. One might object that the hypothesis just outlined rests on very few examples, and indeed it does. But our only alternative is to posit merger for PT and a sporadic rounding of the merged vowel next to labials in TA - that is, an irregular sound change. Neither alternative is obviously correct, but the choice between them is not merely a matter of taste; rather, we ought to choose the alternative that appears more likely to be correct, in accordance with the principles advanced in section 12. Since sound change is known to be regular in an overwhelming majority of cases, it is hard to see how we can reject the hypothesis consistent with such regularity, in spite of the paucity of probative examples.

But if PIE *o and *ē had not merged in PT, it is difficult to see how the perfect and s-aorist paradigms could have been conflated in such a way that both stems survived in the Tocharian s-preterite paradigm (ADAMS 1988: 103 fn. 56). The s-aorist hypothesis advanced here - or indeed any hypothesis which posits a unitary origin for the Tocharian s-preterite - would therefore seem to be preferable.

Footnotes:

1) See KRAUSE and THOMAS 1960: 270 for the paradigm in question; it is recapitulated in section 10 below. The mediopassive s-preterite will be discussed briefly in section 11. - - - An abbreviated version of this paper was read at the 9th East Coast Indo-European conference in Philadelphia on June 15, 1990. I am grateful to George CARDONA, Bernhard FORSSMAN, Hans HOCK, Jay JASANOFF, Craig MELCHERT, and Alan NUSSBAUM for helpful discussion and criticism of this paper. All remaining errors and infelicities are my own.

2) PEDERSEN interpreted this latter ending as *-es*; the modern interpretation */-s/* (with epenthetic *-i-* after consonants) actually offers his hypothesis better support. See also section 12 below.

3) PEDERSEN thought that the apparent stem vowel */-ə-/* which appears in various forms of the paradigm is the reflex of PIE *e. That is scarcely likely, since the preceding consonant is never palatalized; moreover, the discussion below will show that all those */ə/*'s can be explained as secondary developments.

4) With the additional important observation that the Tocharian A s-less mediopassive paradigm can reflect the PIE athematic root-aorist; see the discussion in section 11 below.

5) That Skt. precative *-s* reflects a very archaic PIE 3sg. ending had been proposed by BURROW 1954; WATKINS 1962: 90-6 also accepted and developed BURROW's idea. But the putative Avestan 3sg. forms which BURROW cites (p. 37) can be 2sg. (and that is the usual interpretation); a succession of 2sg. and 3sg. forms is not surprising in a late Avestan text which was almost certainly cobbled together from earlier fragments. I accept the usual view that the precative is a purely Sanskrit development (see BRUGMANN 1915, LEUMANN 1952: 41-2, HOFFMANN 1967: 27-8).

6) This last is attested in the western dialect forms *[p]ɨy(e)u̯[sa]* 'he hovered' (Berlin 365a3), *plyews = ipreṛne* 'he floated in the air' (Pe 2a2, cited by COUVREUR 1954: 85). A striking exception to the usual ablaut pattern is *yopsa* '(s)he went in'; the puzzling */ə/ ~ /o/* ablaut of */yəp/* 'enter' does not seem to reflect any PIE ablaut pattern. A number of non-ablauting verbs also make s-preterites.

7) I accept the traditional view that the PIE s-aorist exhibited *ē*-grade of the root throughout the active indicative and injunctive, e-grade in the mediopassive (if there was a mediopassive) and the subjunctive, and

root-accent in all forms; it also seems reasonable to suppose that the ē-grade of the active dual and plural had spread by analogy from the singular forms, so that a slightly older form of the paradigm exhibited the type of acrostatic ablaut posited for Narten presents (cf. STRUNK 1985). I am aware that this hypothesis is not without its problems, but no other seems preferable. We must project the lengthened grade back into PIE because we have no plausible analogical source for such an ablaut grade in Indo-Iranian, Tocharian (see below), Latin *uēxī*, and the relic class of OCS s-aorists. It is conceivable that some PIE s-aorist active indicatives had lengthened-grade roots while others had full-grade roots, but such a pattern is unexpected and puzzling. Moreover, short *e is consistently explicable as a secondary development. For example, LEUMANN 1952: 43 and NARTEN 1964: 53-5 (and passim) have shown that a majority of the full-grade iṣ-aorists of Vedic Sanskrit patently developed from root-aorists by analogical replacement of certain endings; it seems reasonable to accept NARTEN's suggestion that the remaining ones can be accounted for by the same process (insofar as they are not the result of secondary spread of the full-grade type, which became productive), and I can find no examples for which such a development is not at least possible. The *e presupposed by Greek can have arisen by Osthoff's Law before *RC clusters and have then spread by analogy; the *e of the Old Irish forms can reflect the root-vowel of the subjunctive, where short *e would be expected in PIE. WATKINS' contention that this *e, and not *ē, was the original root-vowel of all PIE s-aorist indicatives active (WATKINS 1962: 18-52) fails to convince me for a variety of reasons. For example, his attempt to explain the Indo-Iranian lengthened-grade forms as secondary developments (pp. 49-52) depends crucially on an acceptance of KURYŁOWICZ's theories regarding the mechanisms of analogical change, which I believe to be unrealistic; his demonstration that long root vowels in Latin s-perfects are secondary (pp. 30-7), while clearly correct for most stems, fails for *uēxī* 'I conveyed' - the one such stem with a good Indo-Iranian cognate! - and he omits to note that the Latin examples with short *e* (pp. 28-9) can reflect an analogical generalization of vowel shortening by Osthoff's Law, as in Greek. On the Slavic forms see MATHIASSEN 1969, who argues convincingly that the small class of s-aorists with *ē is a relic class (pp. 211-2) and points out that Serbian Church Slavonic *otĭvĕsta sę* 'ἀπέπλευσαν' (*Acts* 14.26) is most likely to reflect PIE *wēĝh-s- for semantic reasons (p. 206). (This last seems to be denied by VAILLANT 1966: 50, but it is difficult to see how it can be excluded; OCS *ved-* 'lead' would seem

to be a much poorer translation of the Greek verb.)

8) This was pointed out by PEDERSEN 1941: 188 and has been reemphasized by LANE 1953: 284, LINDEMAN 1972, and other scholars.

9) That is, palatalization not shared by all other forms of the verb; some verbs have lexically palatalized initial consonants.

10) On 3pl. *crakär* see below.

11) Initial *c-* is invariable in this verb; nonpalatalized *t-* appears only in the related noun *tampe* 'power'.

12) This has also been seen by Werner WINTER, who is cited for the observation by ADAMS 1988: 83.

13) TB verb roots are cited in morphophonemic shape throughout this paper; the relative transparency of TA morphophonemics makes a similar expedient unnecessary for that language.

14) These forms from the Paris texts are all cited in COUVREUR 1954: 90; the ending *-are* (for expected *-ar*) has been influenced by *-āre*, the 3pl. ending of the a-preterite. His reading 1sg. *pleṅ[k]awa* for *Innermost Asia* Kucha 0191.4 should perhaps be treated with more reserve, as it is difficult to reconcile with the known inflection of this class of preterites. (We expect monosyllabic *-wa*, not a disyllabic ending; moreover, the *-a-* of other forms of the paradigm is underlying /-ə̂-/, which ought to appear as *-u-* before *w*, giving *"-uwa"* rather than *-awa*.)

15) To be sure, various other forms of these verbs exhibit initial palatalization too (cf. e.g. subj. 3sg. *plyañcäṃ*, inf. *lyuśśi*, opt. *lyucī-ne*, etc.), and one might argue that initial palatalization has spread from such forms to the preterites by analogy within the history of TB; but the fact that these preterites are a small and isolated group militates against such an explanation, as does the TA cognate noted immediately above. (I cite subj. 3sg. *plyañcäṃ* from THOMAS 1964: 217, who reports it without citation. I have not been able to find the text in which it occurs.)

16) There are also two less certain forms. The optative [*p*]*lus*[*ṣ*]*i-ñ* 'my [mind and heart] would soar' (Berlin 246a 1-2) seems to belong to this verb; but the spelling *-ṣṣ-* (if read correctly) is surprising, suggesting instead an sk-subjunctive (class IX subjunctive) stem, and caution seems advisable. The badly damaged infinitive [*p*]*ly*[*us*]*ts*[*i*] (Berlin 71.2) is difficult to evaluate. If it has been read correctly, it can only be made from a causative sk-subjunctive (class IX subjunctive), as

suggested by KRAUSE 1952: 143; otherwise the initial palatalization and the nonpalatalized *-s-* before the ending are scarcely explicable. If it has been misread for **pluṣtsi*, it would be part of the paradigm discussed here. Fragmentation of the context precludes any judgment on semantic grounds.

17) Though it does not necessarily follow that they can be fitted into a binary opposition "Grundverb" vs. "Kausativ"; in subsuming several different types of derivation under such an opposition KRAUSE 1952 and KRAUSE and THOMAS 1960 have obscured a more complex situation, and it is precisely the s-presents of class VIII and their s-preterites that KRAUSE's dichotomy handles least satisfactorily (cf. LANE 1962: 124).

18) Note also the intransitive mediopassive sk-present TB 3sg. *lutasträ* 'he traverses', 3pl. *lutas(k)entr*, which contrasts semantically with the active s-preterite *lyautsa-ñ* 'he exiled me', 3pl. *lyautar*; but for the preterite of *lutasträ* TB uses the innovative mediopassive s-preterite 3pl. *lyutstsante*.

19) I think that the development of PIE syllabic resonants to PT sequences of *ə plus resonant did not involve an intermediate stage *u plus resonant (RINGE forthcoming (a) sect. 3.4, pace ADAMS 1984: 397-8, 1988:16-7); however, that question does not affect the arguments advanced in this paper.

20) Note that I represent the three PIE laryngeals as *x̂, *x, and *x^{w} respectively.

21) It is true that BERG's explanation - namely, that this ending was borrowed from the pluperfect - operates with an exact formal proportion, whereas the usual derivation from the thematic aorist does not; but the semantic and functional connection between the two aorist types seems so much more intimate than any possible relation between aorist and pluperfect that I am reluctant to commit myself entirely to BERG's explanation.

22) For the loss of *bh after *m cf. PIE *ĝ̑ómbhos 'row of teeth' (OE *camb* 'comb', Gk. γόμφος 'peg', Skt. pl. *jámbhāsas* 'set of teeth', etc.) > PT *këmë 'tooth' > TB *keme*, TA *kam*; the details of this sound change remain obscure.

23) It might be argued that *-a (rather than *-at) is not very likely to have spread as a 3sg. ending, since it is not (strictly speaking) an ending at all, but the final segment of a stem. However, it could be countered that in a language in which 3sg. forms normally have endings the final segment of a stem with a 3sg. zero-ending might tend to be reinterpreted as an ending (thus

*śćóma-Ø → *śćóm-a). If the -ε of the Greek sigmatic aorist 3sg. indicative was actually borrowed from the thematic aorist (see fn. 21), some such reinterpretation must have preceded the spread of -ε (unless it was still *-ετ at the time, which does not seem likely).

24) Unless some mediating category existed; cf. the spread of Greek 2sg. -(σ)θα from the perfect through the pluperfect to such imperfects as ἤειθα 'you were going' and ἦθα 'you were' (BERG 1977: 254). But there is no evidence for such a category at any stage of the development of Tocharian.

25) I reconstruct the PT form with initial *ṣ- rather than *ṣw´- because the corresponding cardinal shows no trace of *w´ in TA (see below, and contrast TA *ṣurm*, *ṣrum*, TB *ṣarm*, pl. *ṣärmana* 'cause' < PT *ṣw´órmə, pl. *ṣw´órməna). In the ordinal both PT *ṣə- and PT *ṣw´ə- would give TB, TA ṣ- because the following *ə was syncopated; cf. TB *ṣpane*, TA *ṣpäṃ* 'sleep' < PT *ṣw´ópnë < PIE *swépnos. TB *ṣkaste* shows accent retraction, as expected; see MARGGRAF 1970: 15-8.

26) I am not impressed by VAN WINDEKENS' etymologies of TB *āśce*, *āst-* 'head' (VAN WINDEKENS 1976: 171) and *lesto* 'nest' (ibid. p. 261), which would make them counter-examples to this sound change. The etymology of 'sixth', by contrast, is absolutely certain.

27) The situation is perhaps different for 'five': TA *päñ* might conceivably owe the loss of its second obstruent to analogy with *pänt* 'fifth', i f the following series of developments is credible:
PIE *pénk^{w}e 'five', *penk^{w}tós 'fifth' > PT *p´ónca, *p´ənk^{w}të (TB *piṅkte*); then in TA
*p´ənk^{w}të > *pəntë = */pən+të/, whence *p´óñcə > *póñcə → *póñə = */pón+´ə/; and
*póñə, *pəntë > TA *päñ*, *pänt*
But this does not answer all the relevant questions - for example, why is there no nasal in TB *piś* 'five'? - and the suggested reanalysis leading to TA *päñ* is perhaps not very likely. Least likely of all would be some sort of influence of 'five' on 'six' leading to loss of final *s in the latter; the two numerals and their derivatives just do not behave in parallel fashion in TA.

28) I realize that no perfect analogical proportion for such a development can be cited, but I can see no other plausible way to explain the distribution of forms of 'six' in the two languages. As Bernhard FORSSMAN (p.c.) reminds me, Germanic exhibits a similar backformation in the case of 'seven': Proto-Germanic *sebun is likely to have been backformed to *sebundaz 'seventh' < *sepṃtós ← *septṃtós (see SZEMERÉNYI 1960: 35 with

references). Certainly the explanation of TB *śkas* offered here is preferable to that of RINGE 1987b: 258-9, 263, which should be rejected on the grounds that there are no other examples of TB epenthesis between a consonant and prevocalic *s; for example, contrast TB *preksa* '(s)he asked' < PT *pr'ə́ksa!

29) Loss of laryngeals and (possibly) reanalysis of diphthongs would have reduced the cluster to *-sm- in some verbs, but a majority must still have contained heavy consonant clusters.

30) Thus we find PT *-ənå- after light roots (e.g. in TB *rapanaṃ* 'he digs') as well as after heavy roots (e.g. TB *tärkanaṃ* 'it allows'); more importantly, we find PT *-nå- after heavy roots (e.g. in TB *karsnaṃ* 'it cuts short', root /krəsta-/; present attested 1Ox, always with /-nå-/) as well as after light roots (e.g. in TB *musn[ā]trä* 'he raises'). There is no unambiguous evidence for the survival of Sievers' Law in any other class of forms either; see RINGE forthcoming (b) for further discussion. Unfortunately TA offers no evidence, since PT *ə was always dropped in syllables that remained open in TA.

31) In fact, all other forms of the present of this TB verb exhibit a disyllabic suffix *-ana-* < *-ə́na- < *-ənå-; but even a stressed schwa can be syncopated in verse, so that the form first cited is not particularly surprising (in spite of the unease of BROOMHEAD 1962 I.132, II.73).

32) The initial consonant has been depalatalized, apparently through some sort of assimilation to the nonpalatalized *k^{w} at the end of the first syllable.

33) The *-s* of this ending could reflect that of PIE primary 1pl. *-mos or *-mes only if some added particle has protected it from regular loss (see above); alternatively, it could itself be a particle of some sort.

34) Occasionally one finds TB *-are* (COUVREUR 1954: 90, KRAUSE and THOMAS 1960: 248), evidently because of the analogical influence of a-pret. 3pl. *-āre* (on which see further below).

35) JASANOFF 1988b: 71 fn. 3 suggests that the 3pl. of the PIE perfect might originally have ended in (oxytone?) *-ḗr (> Hitt. *-er*; *-ḗr+i > Lat. *-ēre*), apparently < pre-PIE **-ers as in the nom. sg. of r-stems, and (barytone?) *-r̥s (> Av. *-ərəš*, Skt. *-ur*), and that *-r̥ results from various analogical changes. Bernhard FORSSMAN (p.c.) reminds me that we must also account for Avestan *-arə*, Gāthic *-arē* (e.g. in *å̊ŋharə*, *å̊ŋharē* 'they were'), which presumably reflects PIE *-er, the full-grade form of *-r̥; that makes it seem less likely that *-r̥ developed from *-r̥s by analogy. But JASANOFF's analysis of *-ḗr is almost

certainly correct, as it offers a unitary explanation for two otherwise puzzling facts (the long vowel in *-ēr and the *-s of the Indo-Iranian forms).

36) This is my main reason for rejecting the suggestion of Jay JASANOFF (p.c.) that the accent of TB *tesar*, etc. is the result of analogy with the rest of the plural paradigm (e.g. 1pl. **tesam*, 2pl. **tesas*, both with accent on the surface final syllable); for the same reason I find a shift of accent by analogy with the a-preterite 3pl. (*takāre* 'they were', *śimāre* 'they stood', etc.) most unlikely, even though s-pret. *-ar* does occasionally appear as *-are* under the influence of a-pret. *-āre* (see fn. 34). JASANOFF also points out that such an analogical change would have created a columnar pattern of accent in the s-preterite plural, but I do not find it more plausible on that account; note that the singular (e.g. *nêkwa, nekåsta, nêksa*) does not exhibit columnar accent.

37) See below on the first *ə.

38) Compare TB *ṣer*, TA *ṣar* 'sister' < PT *ṣw´åsërə < PIE acc. *swésorm̥, but TB *śtwer*, TA *śtwar* masc. 'four' < PT *śətwḗr´ə < PIE *k^{w}etwóres. Note that 'sister' in both Tocharian langiages can have developed by regular sound changes from a PT form with final *-ə reflecting the PIE accusative, and that a similar explanation is available for TB *ṣar* 'hand'; this obviates the need for the special "sibilant syncope" posited in RINGE 1987b: 263-5, which should therefore be rejected.

39) The ending can also be reconstructed as PT *-re or *-r´e, with PT *e reflecting PIE *ē (as VAN WINDEKENS 1982: 285 emphasizes), but it is even more difficult to imagine a morphologically plausible source for final *ē in this ending. The *-a- is the stem-final vowel.

40) The putative counterexamples cited by HILMARSSON 1989: 121-5 are all better explained in other ways. TB pres. 3pl. *-äṃ* and *-eṃ* surely reflect PIE primary *-n̥ti and *-onti respectively; it follows that TB *ikäṃ* 'twenty' reflects *wíkm̥ti < PIE *wíkm̥tix̂, and since 'twenty' is *wiki* in TA, it should follow that TA pres. 3pl. *träṅki* 'they say' and thematic *-e* also directly reflect PIE *-n̥ti and *-onti (as seen already by SZEMERÉNYI 1960: 47-9). It is n o t clear that the variation between *-i* and *-iñc*, between *-e* and *-eñc* in TA must be explained as competition between old primary and secondary endings; other plausible explanations (involving sandhi variants, for example) can easily be devised. TB pret. 3pl. *latem* 'they went out' also need not exhibit a reflex of PIE *-ont, since it can have acquired its ending by analogy quite late within the history of Tocharian, or even of

TB (cf. 1sg. *latau* with a reflex of PIE primary 1sg. *-ō!).

41) As Hans HOCK points out (p.c.), the parallel is not exact because no Tocharian ending is structurally parallel to Latin *-ĕrunt*, and the *-r-* of that ending almost certainly contributed to the formation of the hybrid *-ērunt*.

42) To be sure, we could reconstruct PT *-ŕə (see above) < *-r-ent; but it is difficult to see why *-ent would have been introduced into the s-preterite, since it was characteristic only of the aniţ root-aorist (and athematic imperfect). There would be less danger of circularity in the above argument if *-ent could be excluded on phonological grounds alone, but it does seem reasonable to exclude it on the grounds that it does not fit morphologically (as an ending of the PIE perfect, for example, might).

43) Such forms appear in Attic koine documents of the Hellenistic period, not only in aorists such as ἐλάβοσαν, but also in imperfects like ἐλέγοσαν; see SCHWYZER 1939: 666. I am grateful to Bernhard FORSSMAN for reminding me of this.

44) As Jay JASANOFF notes (p.c.), it would have been even simpler to introduce *-rën into the s-preterite, and that fact makes the analysis offered here somewhat less plausible. But unless we prefer one of the analyses of the s-preterite 3pl. ending rejected above (hic-et-nunc *-i, or the accent shift hypothesis discussed in fn. 36), I do not see how we can avoid analyzing PT *-(ə)rə as *-r- plus a reflex of the PIE athematic 3pl. ending.

45) The ending must have ended in *ə in PT because of its effect on TB accent; cf. TB *takās* 'you (pl.) were', in which the accent on the last surviving syllable shows that it cannot have been the last syllable in PT (see section 6).

46) Though Paelignian *lexe* 'legistis' (VETTER 312.7) remains difficult to analyze, it is most unlikely to contain a 2pl. ending *"-se"*; the most probable analysis is perhaps *leg+s+e* (root + aorist suffix + 2pl. ending), the ending being cognate with Skt. *-á* (*vidá* 'ye know', etc.) < PIE *-é. For yet another view see COWGILL 1987: 87-8.

47) The only plausible source is a-preterite -ā, apparently a product of the contraction of *-awa (WINTER 1965: 203-6; I do not see why WINTER does not opt for this simple analogy ibid. pp. 209-10).

48) This is the apparent stem vowel that prompted PEDERSEN 1941: 188-9 to suggest that the s-preterite in part

reflects the PIE thematic aorist; see fn. 3 above.

49) The traditional habit of citing these Latin stems in the 1sg. when comparing them with PT *-wa only obscures the facts and should be resisted.

50) Craig MELCHERT (p.c.) reminds me that the *-u-* of Hittite preterite active 1sg. *-(n)un, -ḫḫun* might be connected with the Luvian present ending. That would lessen the isolation of the latter a bit, but the ending would still be Anatolian only. Resegmentation within Tocharian (as suggested in the text) seems a far more likely source for the *-w- of PT *-wa.

51) The elimination of the vowel *-ə-, either by contraction with the preceding *-a- or as part of the process of analogical extension, seems natural and unproblematic.

52) This change preserves the overall shape of the root; the main model for it must have been the full-grade root, which was probably *nek- at this stage. A comparable example is Gothic *brukans* 'broken' for expected *"baûrkans"* (*aûr* < *ur < zero-grade *r̥*) on the model of full-grade *brikan* 'to break'.

53) WATKINS 1962: 68 suggests that because *-sa- occurs throughout the mediopassive, but only in the 3sg. of the active, its original locus should have been the mediopassive, from which it has only begun to spread to the active in PT. I don't think that any such inference can be drawn from that pattern. It seems odd that the 3sg. active, surely the most "basic" member of the paradigm in psychological terms, should have acquired its ending from another member of the same paradigm.

54) Moreover, the highly idiosyncratic nature of JASANOFF's PIE paradigm involves him in many further difficulties of the same sort: in order to account for the eccentric ablaut of his paradigm, he is forced to posit extensive analogical changes within the PIE period (JASANOFF 1988b: 60-7), which are by definition unobservable and unverifiable. It might be countered (with JASANOFF p. 57) that the general resemblance of the Tocharian active s-preterite to the Hittite hi-conjugation preterite can only be a shared *Randarchaismus*, in which case the remaining branches can have innovated together after the pre-Anatolians and the pre-Tocharians had effectively lost contact with the rest of the IE world. But the Hittite and Tocharian paradigms actually do not resemble one another closely. As the discussion above demonstrates, the root vocalism of the Tocharian s-preterite clearly reflects *ē, while the root *-a-* of the Hittite paradigm cannot; the Hittite 3pl. ending *-er* directly reflects a

PIE perfect ending, whereas the corresponding Tocharian ending cannot; the PT 2sg. ending *-əsta clearly contains an *-s-, while the corresponding Hittite ending usually does not. The only distinctive characteristic that the two paradigms share is the appearance of *-s(-)* in a 3sg. e n d i n g. Moreover, one would expect a *Randarchaismus* to be shared not only by Tocharian and Hittite, but also by Italic and Celtic (cf. the *-r endings of the mediopassive); yet both Italic and Celtic preserve clear evidence of a classical PIE s-aorist.

55) KURYŁOWICZ's fourth law, to which no clear counter-examples have been adduced, might be considered an exception to this statement. But note that the law specifies what will happen to an inherited form and a new (analogical) form which are already in competition; it makes no assertions regarding the direction of analogical change, the identity of models for such change, etc.

56) Werner WINTER apud ADAMS 1988: 103 fn. 56 also expresses doubt that this merger was pre-PT. No reasons are given loc. cit.

57) I reconstruct PT *ę for the correspondence TB *i*, TA *e*, reflecting earlier word-final *-oy in nom. pls. (< PIE pronominal *-oy), duals (< PIE o-stem neut. *-o-yx̂), and one class of deverbative nouns (e.g. TB *leki*, TA *lake* 'bed, couch', ← < PIE stems in *-oy-?); some TB optatives might also belong here (e.g. TB 3sg. *śāyi* '(s)he would live' < *g^{w}yawoy ← < PIE *g^{w}ix^{w}woyt; *-i-* by analogy in the other forms?), though PIE zero-grade athematic *-ix̂- is an equally probable source for the TB optative suffix and must be the source of TA *-i-*. For an alternative solution to this problem see HILMARSSON 1989: 36-9, 53-5.

58) I.e. to the extent that its inflection is inherited; a prevocalic stem *nā̆mn-*, with nonsyllabic *-n-* after a heavy syllable, has clearly undergone some analogical remodelling. For further discussion see NUSSBAUM 1986: 160-1 with fn. 5.

59) The only other example which comes readily to mind is *stex^{w}-men- (*stomen-?) 'mouth' (cf. Gk. στόμα 'mouth', Av. *staman-* '(dog's) mouth', etc.).

60) These conclusions regarding the Tocharian and PIE forms have prompted me to abandon the reservations expressed in RINGE 1988: 421-2; I now accept the Celtic sound change proposed by Lionel JOSEPH (*#XR̥XC- > *#XR̥C-, JOSEPH 1982: 42, 50-1) which I discussed in that passage. I now see, too, that the original intonation of the first syllable of the Balto-Slavic forms of 'name' has been

eliminated as an automatic consequence of the sound change $*C_1C_1 > *C_1$ (simplification of geminates); that is, post-PIE *x̂n̥xʷmên- (see immediately above) > *n̥mên- > *ìmmên- > PBS *imên-, the initial short syllable of the last form being unable to bear the distinctive acute intonation.

61) That palatalized labials must be reconstructed for PT is not a matter of doubt (pace ADAMS 1988: 41); note the following contrasts:
PIE *mêdhu 'honey' (Skt. *mádhu*, OE *meodu* 'mead', etc.) > PT *m'ə̂tə > TB *mit*
PIE *penkʷtós 'fifth' (Gk. πέμπτος) > PT *p'əṅkʷtẽ > TB *piṅkte* (TA *pänt*)
but PIE *men- 'wait' (Gk. μένειν), zero-grade *mn̥- + *-sk̂é/ó- > PT *məsk- 'be (in a place)', pres. 3sg. *məskêtər > TB *mäsketär* (TA *mäskatär*)
PIE *pr̥Xwós 'first' (Skt. *pū́rvas*) > PT *pərwë > → TB *pärweṣṣe* (TA *pärwat* 'eldest')
As far as I can see, the dual TB reflex (*ä* vs. *i*) must reflect some PT opposition; and since we know that PIE *R̥ gave PT *əR, while PIE *e gave PT *ə with palatalization, that opposition is most likely to have been palatalized vs. nonpalatalized labials (so MARTINET 1974: 130). Examples with *p-* can be multiplied, though most do not have PIE etymologies.

62) In fact, TB *witsako* 'root' < PT *wętsəka-, a loanword from pre-Ossetic (cf. Proto-Ossetic *wēdāga > Iron *wīdag*, Digor *yedagä*), shows that even the earliest stratum of Iranian loans had been borrowed after palatalization had run its course; see RINGE forthcoming (a) sect. 7.2 for further discussion.

63) I failed to see this in RINGE 1987a: 112-4; the conclusions I reached there should be rejected. TA *n[o]ktim̥* 'in the evening' (TB *nekcīye*, < PIE *nokʷt-) is a completely different case, involving labiovelars rather than labials; for further discussion see RINGE forthcoming (b) sect. 2 with fn. 10.

References:

ADAMS, Douglas Q.
1978. On the development of the Tocharian verbal system. JAOS 98.277-88.
1984. The position of Tocharian among the other Indo-European languages. JAOS 104.395-402.
1988. Tocharian historical phonology and morphology. [= American Oriental Series, Vol. 71.] New Haven: American Oriental Society.

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. [= UNC Studies in the Germanic Languages and Literatures 58.]

BADER, Françoise
1978. Flexions d'aoristes sigmatiques. Etrennes de septantaine ... offerts à Michel Lejeune (Paris: Klincksieck), pp. 29-44.

BAMMESBERGER, Alfred (ed.)
1988. Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems. Heidelberg: Winter.

BERG, Nils
1977. Der Ursprung des altgriechischen aktiven Plusquamperfekts und die Entwicklung der alphathematischen Flexion. NTS 31.205-63.

BROOMHEAD, J.W.
1962. A textual edition of the British Hoernle, Stein, and Weber Kuchean manuscripts. I. Texts and commentary. II. Glossary. Dissertation, Cambridge U.

BRUGMANN, Karl
1914. Die Entstehung des altindischen Prekativs. IF 34.392-7.

BURROW, Thomas
1954. The Sanskrit precative. Asiatica (Fs. Weller) pp. 35-42.

CARDONA, George, and Norman H. Zide (edd.)
1987. Festschrift for Henry Hoenigswald. Tübingen: Gunter Narr.

COUVREUR, Walter
1947. Hoofdzaken van de tochaarse klank- en vormleer. Louvain: Beheer van Philologische Studiën.
1954. Review of Krause 1952. GGA 208.79-92.

COWGILL, Warren
1967. Ablaut, accent, and umlaut in the Tocharian subjunctive. Arndt et al. (edd.) 1967: 171-81.
1987. The second plural of the Umbrian verb. Cardona and Zide (edd.) 1987: 81-90.

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

GUARDUCCI, Margarita
1950. Inscriptiones creticae. IV. Tituli gortynii. Rome: Libreria dello Stato.

HANSEN, Olaf
1940. Tocharisch-iranische Beziehungen. ZDMG 94. 139-64.

HILMARSSON, Jörundur
1984. Reconstruction of a Tocharian paradigm: the numeral "one". ZVS 97.135-47.
1989. The dual forms of nouns and pronouns in Tocharian. Reykjavík. [= TIES Supplementary Series 1.]

HOFFMANN, Karl
1967. Der vedische Prekativtyp yeṣam jeṣma. MSS 20. 25-37.

IVANOV, Vjačeslav Vsevolodovič
1959. Тохарские языки и их значение для сравительно-исторического исследования индоевропейских языков.
Ivanov (ed.) 1959: 5-37.

IVANOV, Vjačeslav Vsevolodovič (ed.)
1959. Тохарские языки. Сборник статей.
Moscow: Izd. Inostrannoj Literatury.

JASANOFF, Jay
1983. The IE "*ā*-preterite" and related forms. IF 88.54-83.
1988a. PIE **ĝnē-* 'recognize, know'. Bammesberger (ed.) 1988: 227-39.
1988b. The sigmatic aorist in Tocharian and Indo-European. TIES 2.52-76.

JOSEPH, Lionel
1982. The treatment of *CRH- and the origin of CaRa- in Celtic. Ériu 33.31-57.

KIMBALL, Sara
1990. The origin of the Greek κ-perfect. Unpublished ms.

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

KRAUSE, Wolfgang, and Werner THOMAS
1960. Tocharisches Elementarbuch. Band I. Grammatik. Heidelberg: Winter.

KURYŁOWICZ, Jerzy, et al. (edd.)
1974. Studia indoeuropejskie. Festschrift for Jan Safarewicz. Wrocław: Polska Akademia Nauk.

LANE, George Sherman
1953. Imperfect and preterit in Tocharian. Language 29.278-87.
1959. The formation of the Tocharian subjunctive. Language 35.157-79.

1962. Review of Krause and Thomas 1960. GGA 214. 115-28.

LEUMANN, Manu
1952. Morphologische Neuerungen im altindischen Verbalsystem. Mededelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afdeling letterkunde, Nieuwe reeks, Deel 15, No. 3.

LÉVI, Sylvain
1928. Notes on manuscript remains in Kuchean. Stein 1928: 1029-30 (= Appendix G) with Plate CXXIII.

LINDEMAN, Fredrik Otto
1972. Bemerkungen zu dem tocharischen *s*-Präteritum. Die Sprache 18.44-8.

MARGGRAF, Jürgen
1970. Untersuchungen zum Akzent in Tocharisch B. Dissertation, Karl-Albrechts-Universität, Kiel.

MARTINET, André
1974. Observations sur l'évolution phonologique du tokharien. Kuryłowicz et al. (edd.) 1974: 129-34.

MATHIASSEN, Terje
1969. On the problem of lengthened ablaut degree and the Slavic sigmatic aorist. Scando-Slavica 15. 201-14.

NARTEN, Johanna
1964. Die sigmatischen Aoriste im Veda. Wiesbaden: Harrassowitz.

NUSSBAUM, Alan J.
1986. Head and horn in Indo-European. Berlin: de Gruyter.

PAGE, Denys L.
1962. Poetae melici graeci. Oxford: Clarendon Press.

PEDERSEN, Holger
1941. Tocharisch vom Gesichtspunkt der indoeuropäischen Sprachvergleichung. Kgl. Danske Videnskabernes Selskab, Historisk-filologiske meddelelser 28, No. 1.

PETERS, Martin
1980. Untersuchungen zur Vertretung der indogermanischen Laryngale im Griechischen. Vienna: Österreichische Akademie der Wissenschaften. (= Sitzungsberichte der ÖAW, Philosophisch-historische Klasse, Bd. 377.)

RINGE, Donald A., Jr.
1987a. A closer look at Tocharian *e* and *o* and the Indo-European mediopassive. TIES 1.98-138.
1987b. 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.
Forthcoming (a). Evidence for the position of Tocharian in the Indo-European family? To appear in Die Sprache.
Forthcoming (b). Laryngeals and Sievers' Law in Tocharian. To appear in Indo-European studies V (Harvard, ed. Calvert Watkins).

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

SCHINDLER, Jochem
1967a. Das idg. Wort für "Erde" und die dentalen Spiranten. Die Sprache 13.191-205.
1967b. Tocharische Miszellen. IF 72.239-49.
1975. Zum Ablaut der neutralen *s*-Stämme des Indogermanischen. Rix (ed.) 1975: 259-67.

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.

SCHMIDT, Gernot
1971. Altirisch *ro-fitir* und Verwandtes. ZVS 85: 242-72.

SCHMIDT, Klaus T.
1985. Beiträge zur Kenntnis der tocharischen Verbalmorphologie. Schlerath and Rittner (edd.) 1985: 424-34.

SCHMITT-BRANDT, Robert (ed.)
1971. Donum indogermanicum. Festgabe für Anton Scherer zum 70. Geburtstag. Heidelberg: Winter.

SCHWYZER, Eduard
1939. Griechische Grammatik. Erster Band. Allgemeiner Teil, Lautlehre, Wortbildung, Flexion. Munich: Beck.

SIEG, Emil, Wilhelm SIEGLING, and Wilhelm SCHULZE
1931. Tocharische Grammatik. Göttingen: Vandenhoeck & Ruprecht.

STEIN, Sir Aurel
1928. Innermost Asia. Oxford: Clarendon Press.

STRUNK, Klaus
1985. Flexionskategorien mit akrostatischem Akzent und die sigmatischen Aoriste. Schlerath and Rittner (edd.) 1985: 490-514.

SZEMERÉNYI, Oswald
1960. Studies in the Indo-European system of numerals. Heidelberg: Winter.

THOMAS, Werner
1964. Tocharisches Elementarbuch. Band II. Texte und Glossar. Heidelberg: Winter.

VAILLANT, André
1966. Grammaire comparée des langues slaves. Tome III. Le verbe. Paris: Klincksieck.

VETTER, Emil
1953. Handbuch der italischen Dialekte. I. Band: Texte mit Erklärung, Glossen, Wörterverzeichnis. Heidelberg: Winter.

WATKINS, Calvert
1962. Indo-European origins of the Celtic verb. I. The sigmatic aorist. Dublin: Institute for Advanced Studies.

WATKINS, Calvert (ed.)
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.

WINDEKENS, Albert Joris Van
1944. Morphologie comparée du tokharien. Louvain: Muséon.
1976. Le tokharien confronté avec les autres langues indo-européennes. Vol. I. Le phonétique et le vocabulaire. Louvain: Centre International de Dialectologie Générale.
1982. - - -. Vol. II, 2. La morphologie verbale. Louvain: Centre International de Dialectologie Générale.

WINTER, Werner
1965. Zur Vorgeschichte einiger Verbformen in Tocharisch A. ZVS 79.203-10.
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.

[no editor]
1954. Asiatica, Festschrift Friedrich Weller. Leipzig: Harrassowitz.

Latin *festīnāre*, Welsh *brys*

POKORNY's treatment of the etymology of Latin *festīnāre* 'to hurry', *cōnfestim* 'at once' is representative of the *communis opinio* regarding the history of this etymon (Indogermanisches etymologisches Wörterbuch (IEW), Bern 1949-59, 143). He reconstructs a root **bheres-*. *Festīnāre* is considered to be a denominative verb, based on a *ti*-derivative **festi-* < **bhersti-*, which is reflected in the adverb *cōnfestim*. The intermediate stage is supposed to be an *n*-stem **festiō*, oblique **festīn-* 'haste' (thus WALDE-HOFMANN and ERNOUT-MEILLET ad loc.).

Outside Latin, POKORNY compares MIr. *bras* 'schnell, stürmisch' < **bhr̥sto-* and Welsh *brys* id. < **bhr̥sto-*, MBret. *bresic, brezec* 'eilig'. WALDE-HOFMANN gives the same forms, ERNOUT-MEILLET only *brys*. This connection goes back to OSTHOFF (Indogermanische Forschungen 5, 1895, 291 ff.). The doubtful Baltic and Slavic cognates will be discussed below.

POKORNY's lemma calls for a few remarks. In the first place these concern a precision of the derivation of *festīnāre*. It is hardly open to doubt that the basic *ti*-derivative is attested in *cōnfestim*. The development of PIE. *ti*-forms into Latin *tiōn*-forms is well known and widely attested (see LEUMANN, Lateinische Grammatik 1977, 366 for examples). It is a reasonable supposition that such a *tiōn*-stem served as the basis of *festīnāre*, as all dictionaries say. But how does a form *festīn-* (not **festiōn-*) fit in with the paradigm of *tiōn*-nouns? ERNOUT-MEILLET, WALDE-HOFMANN, POKORNY and LEUMANN assume the existence of (Italic) *tiōn/tīn*-stems, also in connection with *festīnāre*. LEUMANN, Lateinische Grammatik 1977, 366-7 notes that Italic **-īn-* may reflect **-ien-*. But he continues by saying that this alternation *-iōn : -īn-* cannot be the result of a regular ablaut (he probably means in PIE., in contradistinction to Italic). The reconstruction of the