The Hittite *aí*-stems

Some time ago I proposed that in addition to accounting for the Latin *í*-stems with nom. sg. *-ēs*, the derived nouns of the Latin fifth declension, the Baltic *ē*- stems and the Greek nouns in -ευς, -ως and -ω, inheritance of the cognates of the Hittite *aí*- and *au*- stems provides the basis for explaining the first arbitrary athematic feminines (Brosman 1984). According to the current version of this view, Anatolian and Indo-European inherited eight types of diphthongal noun consisting of *ēí*-, *ōí*-, *ēu*- and *ōu*- stems of each original gender. In Hittite phonological mergers within the long diphthongs reduced this number to four, the common and neuter *aí*- and *au*- stems. In Indo-European the loss of the second element of long diphthongs caused confusion between the *í*- and *u*- stems because of their resultant identity in the nominative singular, while identical forms in the oblique cases produced confusion between the *ē*- and *ō*- types as well as between the diphthongal nouns and the zero-grade *í*- and *u*- stems. Presumably because of the long vowel in their nominative singular, the diphthongal forms were transferred to the newly arisen pre-feminine gender, a development which required the inherited neuters to adopt animate forms of the accusative singular and the nominative and accusative plural and thus resulted in confusion between the original animate and neuter nouns.

Subsequently the diphthongal nouns were lost throughout most of Indo-European. Four principal methods were proposed for their elimination: conversion to zero-grade *í*- and *u*- stems, transfer to the distinctively feminine *ā*- stems, thematicization and the spread of the long vowel of the nominative within the paradigm. In addition to extending to the zero-grade forms the confusion between the *í*- and *u*- stems which had arisen among the diphthongal nouns, the conversions to zero-grade *í*- and *u*- stems were held to have produced the first arbitrary athematic feminines. It was recognized that prior to the occurrence of athematic feminines referring to females the conversion of pre-feminine or feminine diphthongal nouns would have resulted in animate (pre-masculine) or masculine zero-grade forms, since at that stage gender remained linked to form as it was in Hittite and the *í*- and *u*- stems of animate form belonged to the pre-masculine or masculine

gender. However, after the origin of athematic feminines with female referents had severed the link with form, the converted nouns would presumably have remained feminine and thus would have included the first feminines which were formally indistinguishable from masculines but did not refer to females. Thematicization following the transfer to the pre-feminine should usually have produced *yā-* or *wā-* stems. In Latin confusion between inherited diphthongal *ē(í)-* stems and *yā-* stem variants which they had acquired in this manner in Italic is considered to have resulted in the fifth-declension forms with nom. sg. *-íēs*. The fifth-declension forms of the type of *fidēs* and the Baltic *ē-* stems are held to have been produced by the spread of *ē* from the nominative. The occurrence in pre-Greek of spreads of a different sort in which the vowel disseminated was combined with the resonant rather than substituted for it is regarded as explaining the Greek nouns in -ευς, -ως, and -ω. The Latin *í-* stems with nom. sg. *-ēs* were alone in preserving an inherited diphthongal type essentially unmodified.

When the proposals summarized above were first made, one of two methods suggested for their verification was taking each of the nominal classes held to have preserved traces of an inherited diphthongal type and examining the cognates of every member throughout Indo-European. The other was similar studies of the *í-* and *u-* stems in the older Indo-European dialects. In the cases of the Greek and Latin types of proposed diphthongal origin the former has been completed (Brosman 1986; 1987; 1992; in press). The results indicated that each of the types examined was indeed diphthongal in origin, that the proposed change of gender took place and that confusion of every possible sort occurred among the diphthongal forms. It also appeared that the one type remaining unexamined, the Baltic *ē-* stems, could be included among those of diphthongal origin, since four of twelve Baltic cognates were *ē-* stems. Otherwise, although the evidence of the cognates appeared to provide support for each of the methods proposed for the elimination of the diphthongal nouns, that of conversion to zero-grade *í-* or *u-* stems seemed clearly the most important. Although indications thus were that the conditions under which the arbitrary athematic feminines were proposed to have originated indeed existed, little bearing more directly on this question was revealed.

Although the principal developments among the diphthongal nouns following the loss of the second element of long diphthongs appear to have largely been determined, there is much concerning them which

remains unclear, including virtually all of their history prior to the onset of confusion among them caused by the loss. In particular, their status immediately preceding the phonological change is not known. However, in the case of the diphthongal *í*- stems a second variety of evidence is provided by semantics. Although the extremely rare Hittite *au*- stems permit little in the way of semantic conclusions regarding their type (Kronasser 1966: 205), the *aí*- stems have long been held to have been associated with verbal abstracts to an appreciable but otherwise unspecified degree (Sturtevant 1937: 61–2; 1951: 69; Friedrich 1960: 39; Kronasser 1966: 204–5). Since it was found during the examination of the Greek and Latin types of proposed diphthongal origin that each of them presumed to have stemmed from diphthongal *i*- stems (all of those examined other than the Greek nouns in -ευς and -ως) displayed a quite close association with verbal abstracts, the semantic evidence was thus capable in their cases of confirming the indications of their cognates that they were diphthongal in origin. It also suggested that a comparison of the semantic characteristics of the Hittite *aí*- stems, which had yet to be precisely determined, and their counterparts in Indo-European could have implications concerning developments among the diphthongal *í*- stems before the loss of the second element of long diphthongs as well as later. It therefore appeared that, although virtually no evidence involving cognates could be expected, the Hittite *aí*- stems should be included before the examination of the nominal types potentially pertinent to the history of the diphthongal nouns could be considered complete. To provide such a survey is the purpose of the present article.

The dictionary of Friedrich and its supplements apparently contain thirty-six nouns possessing *aí*- stem forms. Although only thirty-five of them are so identified by Friedrich, there appears to be no reason to question the additional inclusion of SAL *hazgara(í)*- 'a woman of a certain status or function', described by Friedrich (1952–66: 1.68) as of uncertain stem and inflection. The form is attested several times with each of the nominative plural endings *-aí*, *-a* and *-aya* and once in the dative plural as *hazgarayas* (Friedrich 1952–66: 1.68; Puhvel 1991: 280–1). The combination of an oblique form in *-aya*- with nominatives in *-aí* and *-aya* points to an original neuter *aí*- stem which may have become heteroclitic through the acquisition of what could be a secondary *a*- stem variant but may also have been retained unmodified. It is possible that *-a* as well as *-aí* is an inherited *aí*- stem ending, one which

resulted from the loss of *-y-* between like vowels in **-aya* in the same manner as *-a* became the regular ending of *í-* stem adjectives in the neuter plural (Kronasser 1966:202). It is also possible that *-a* is an analogical *a-* stem ending suggested by the occurrence of apparent *a-* stem forms in unattested oblique cases because of the same loss of *-y-*. In either case the presence of *-y-* in the attested oblique form and nom.-acc. pl. *-aya* must result from the analogical restoration which often took place in the same forms of the other *aí-* stems and the *í-* stem adjectives. What is remarkable about *hazgara(í)-* is not its apparent *aí-* stem inflection but that, though it is neuter in form, it possesses a referent which is indisputably animate. Although this seeming anomaly may have been a factor in Friedrich's uncertainty concerning its classification, since its forms are unambiguously neuter regardless of the declension to which they belong and the attestation of *suppal(a)-* 'an animal, head (of cattle)' (Friedrich 1952–66: 1.198; 2.19) shows that a Hittite neuter could have an animate referent, there seems to be no reason not to accept *hazgara(í)-* as an inherited neuter *aí-* stem.

Although *hazgara(í)-* is of obvious significance, its importance principally concerns a question much broader than those specifically involving the diphthongal nouns, since it combines with the original *l-* stem *suppal(a)-* to establish that in Hittite as in Indo-European the association of the neuter with inanimate referents was not absolute. However, it is worth noting that it is the only *aí-* stem of either gender with a referent certainly animate and thus is consistent with the occurrence of forms with such referents among the Latin *í-* stems with nom. sg. *-ēs* and the Greek nouns in -ω. It is also of interest from the present point of view that *hazgara(í)-* was neuter, since, as has been noted previously (Brosman 1992:334), its demonstration that diphthongal *í-* stems with animate referents could occur as neuter is sufficient to account for the asigmatic nominative of Skt. *sakhā* 'friend', which occurs alongside the sigmatic forms *panthās* 'road' and *manthās* 'stirring-stick' as one of three diphthongal relics found in Sanskrit. The citation of *sakhā* therefore cannot serve to prove that some of the animate diphthongal nouns originally possessed asigmatic nominatives without the support of additional evidence.

Depending on the history of *hazgara(í)-*, the number of heteroclitic nouns among the thirty-six possessing *aí-* stem forms was twelve or thirteen. In a single instance it seems likely that the inheritance of an *ai-* stem should be rejected. The forms involved were those of *har-*

nau/aí- 'birth chair', which occurred as a variable *au-* stem in nom. sg. *harnaus*, acc. sg. *harnaun*, nom. -acc. sg. *harnau*, gen.sg. *harnawas* and dat.-loc, sg. *harnawi* but is apparently attested at least once as a common *aí-* stem in acc. sg. *harnaín* (Friedrich 1952–66: 1.58; Kronasser 1966: 250; Puhvel 1991: 174–5), a spelling attributed by Puhvel to scribal error. Although Kronasser's statement that there was no basis for formal confusion between the two Hittite diphthongal types is not incorrect as far as is presently known, one cannot be certain that such was indeed the case, since the forms of the common *au-* stems, which are attested only in the paradigm of *harnau-*, have not been found in the plural. For example *-aus*, identical to the usual accusative plural ending of the *aí-* stems and the *í-* stem adjectives, is attested in the accusative plural of the *u-* stem adjectives (Friedrich 1960: 49, 51). Since the inflection of the *u-* stem adjectives resembled that of the *au-* stems in a fashion parallel to the similarities between the *í-* stem adjectives and the *aí-* stems, the possibility that a form such as acc.pl. **harnaus* occurred at least on occasion among the *au-* stems cannot be ruled out. However, whatever the cause of the apparent variation, it is unlikely that a common *aí-* stem would have been transferred to an otherwise unattested type. The relative frequency of its varying forms also supports the view that the noun was an original *au-* stem.

In each of the other heteroclitics, all of which will ultimately be identified here, the forms with which those of the *aí-* stems varied were either *í-* or *a-* stems. As far as can be told, the two types were of equal frequency, for of the eleven nouns other than the uncertain *hazgara(í)-*, *í-* stems were involved in five, *a-* stems in five and both in one. In these cases it appears that original *aí-* stems had been altered in one of two ways, transfer to the *í-* stems as a result of confusion between the *aí-* and *í-* stems similar to that which occurred in Indo-European or, as may have been true of *hazgara(í)-*, the acquisition of analogical *a-* stem forms on the model of apparent instances of such forms produced by the loss of *-y-* between like vowels (Kronasser 1966: 202–3, 206). It should be noted that the view of Kronasser (1966: 206) that confusion between the *aí-* stems and original *ā-* (> *a-*) stem abstracts served as an additional source of *a-* stem variants has been rejected here on the ground that the Indo-European *ā-* stems did not come into existence until after the separation of Anatolian. Although it seems obvious that the *a-* stem forms were secondary, in the case of the *í-* stems one must consider the possibility that their confusion with the

aí- stems could have produced transfers in either direction. Indeed, if confusion of this sort occurred prior to the loss of *-y-* between like vowels, it apparently cannot be ruled out that at that time *í*- rather than *aí*- stems could have been modified in a relatively few instances. However, even at that stage it may be presumed that it would usually have been the comparatively rare *aí*- stems which were transferred to the much more numerous *í*- stems. After the loss of *-y-* had caused confusion among the forms of the *aí*- stems, it seems safe to say that all of the transfers would have involved conversions of the latter to the *í*-stems, whose paradigm alone remained intact. That approximately a third of the thirty-five apparently original *aí*- stems were heteroclitic indicates that the *aí*- stems were in the process of being eliminated.

In gender twenty-three of the nouns other than *harnau/aí*- were common, nine neuter and three variable. Of the twenty-three common nouns, nine may apparently be identified as verbal abstracts with considerable confidence, since they occurred alongside verbs from which they presumably had been derived. The pertinent pairs of forms are as follows: *zahhaí*- 'fight, battle' beside *zahh(iya)*- 'strike, fight', *wastaí*- 'sin' beside *wasta*- 'sin', *maniyahhaí*- 'government' beside *maniyahh*- 'govern', *lingaí*- 'oath' beside *link*- 'swear', *kurkuraí*- 'injury (?)' beside *kurkuriya*- 'injure (?)', *istarningaí*- 'sickness' beside *istarnink*- 'sicken', *ishamai*- 'song' beside *ishamai*- 'sing', *hurtai*- 'curse' beside *hurta*- 'curse' and *halluwaí*- 'dispute' beside *halluwaí*- 'fight, dispute' (Friedrich 1952–66: 1.256–7, 248–9, 135, 129, 118, 92, 85, 76–7, 48). An almost equally certain tenth example is *hullanzaí*- 'battle (?)', the abstract nature of which is indicated by its two presumed synonyms *hullanzatar* and *hullanzessar* (Friedrich 1952–66: 1.74). Although the abstracts in *-(a)tar* and *-essar* could be derived from nominal forms as well as verbs, there is no evidence that the same was true of the *aí*- stems. With varying degrees of lesser certainty it appears possible, largely on the basis of semantics, that three other forms, *zashaí*- 'dream, vision', *sagaí*- 'omen' and *saklaí*- 'rite, custom', should also be included here. The case for *zashaí*- seems the strongest, for it can apparently be supported by the attestation of acc. pl. *zashimus* (Friedrich 1952–66: 1.260). Although Friedrich considers *zashimus* to be a form of *zashaí*-, the accusatives in *-mus*, which are almost entirely confined to the *u*- stems, do not otherwise occur among the *aí*-stems. It therefore seems more plausible that *zashimus* belongs instead to an abstract in *-ima*-, which occurred beside *zashaí*- as did *kur-*

kurima- beside *kurkuraí-*, as well as *maniyahhatar* beside *maniyahhai-* and, presumably, *hullanzatar* beside *hullanzaí-*, through the use of different alternatives available for the derivation of verbal abstracts (Friedrich 1952–66: 1.118, 135). *Sagaí* occurs beside the related forms *sakiya-* 'reveal' and *sakiyassar* 'giving of an omen' (Friedrich 1952–66: 1.176). The suggestion that it is also connected in some manner to *sak(k)-*, *sek(k)-* 'know' (Kronasser 1966: 124) appears improbable, for in all three of the forms mentioned first the medial stop is consistently written singly. The relations among the latter are not entirely clear. Although it appears possible that both *sagaí-* and *sakiyassar* were derived from the verb *sakiya-*, it seems equally likely that *sakiya-* stemmed from *sagaí-* and that the abstract *sakiyassar*, which in this instance differs in meaning from the *aí-* stem, was alone in being derived from the verb. In the case of *saklaí-*, the only reason for including it as a possible verbal abstract is its intangible meaning, for no related forms of any sort are found (Friedrich 1952–66: 1.176).

The ten remaining common *aí-* stems are *aí-* 'an unpleasantness of some sort', *eraí-* 'a part of the liver', *muhraí-* 'a body part of a sacrificial animal', *sankuwaí-* 'fingernail', *tuhuraí-* 'a pastry' ^{GIŠ} *zahraí-* 'a holy symbol (?)', *lelhundaí-* 'a container', *tuhhuwaí-* 'smoke, steam', *istaggaí-* 'bow-string' and *wattaí-* 'bird (?)' (Friedrich 1952–66: 1.17, 42, 144, 183, 227, 257, 227, 90, 249; 2.14; 3.17, 18, 25). *Wattaí-* is of some interest, for it supplies a possible second example of an *aí-* stem with an animate referent. However, from the point of view of the question of verbal abstracts, which is principally of concern at the moment, there is little to suggest that additional examples can be identified. Although Kronasser (1966:205) considers *lelhundaí-* and *tuhhuwaí-* to have been original abstracts stemming from *lelhuwaí-* 'pour' and *tuhhaí-* 'gasp, be out of breath', for formal reasons alone it is clear that the *aí-* stems could not have been derived directly from the verbs cited. His suggestion that *tuhhuwaí-* owes its form to analogy with *halluwaí-* is not convincing, for there appears to be little reason for the two words to have been closely associated.

It seems safe to say also that none of the nine neuters was an abstract. In addition to *hazgara(i)-*, the forms were *hasuwaí-* 'a plant', *sisaí-* 'tooth (?)', *tallaí-* 'a container', *zalhaí-* 'a container', *uwaí-* 'woe, plaint', *hastaí-* 'bone', *zapzagaí-* 'glass'and *hupuwaí-* 'pot (?)' (Friedrich 1952–66: 1.64, 194, 206, 258, 239, 63, 260, 76). *Hastaí-*, which corresponds to the *í-* stem seen in Skt. *ásthi*, *Av. astí* and found in themati-

cized form in Gk. ὀστέον (Pokorny 1959: 783), is noteworthy as the only *aí*- stem with a known Indo-European cognate. That the Indo-European forms are also neuter indicates that in this case the conversion of the diphthongal noun to zero grade occurred prior to the loss of the second element of long diphthongs or at least to the transfer to the pre-feminine. Since confusion between the diphthongal and zero-grade forms did not depend directly on the phonological change, it is plausible that such a development took place on occasion, as is shown by its occurrence in Hittite, where the diphthongs remained intact. However, that neuter as well as animate forms participated in the change of gender is indicated by the cognates of the neuter *au*- stem *tanau*- 'fir', the only other Hittite diphthongal noun known to possess such forms, which corresponded to the *wā*- stem OHG *tanna* 'fir, oak' and the masculine *u*- stem Skt. *dhánu*- 'bow' (Neumann 1961: 77–8).

The only possible example of an *aí*- stem action noun which did not occur consistently as common was the variable form *hukmaí*- 'exorcism', for the two other variable *aí*- stems, *hakkunaí*- 'container for oil' and *luttaí*- 'window', may presumably be set aside with confidence (Friedrich 1952–66: 1.73, 46, 131). Although Kronasser (1966:206) has suggested that *luttaí*- was an original abstract in **-tā*- or **-ti*- derived from the verb *luk(k)*- 'become bright, dawn' and then transferred analogically to the *aí*- stems, his proposal appears unacceptable. The objection to the reconstruction of *ā*- stem abstracts has already been stated here, while Benveniste (1962: 89–95, 105–6) has shown that the suffix **-ti*- did not occur in Hittite. Moreover, the phonology on which the etymology depends is dubious, for the only example of it which Kronasser (1966: 102) cites is *luttaí*- itself. It may be added that it appears improbable that a noun entering the *aí*- stem abstracts through analogy would have been partially neuter. From what has been seen here, if the basis for the transfer to the *aí*- stems was its abstract meaning, the form should be expected to have joined the common *aí*- stems. The case of *hukmaí*-, however, is more uncertain. The word is apparently an abstract of some sort related ultimately to *hwek*-, *huk*- 'exorcise'. However, the source of its *-m*- is not clear. The only related form containing it which is attested is *hukmatalla*- 'priest who performs exorcisms'. Contrary to Sturtevant (1937: 61), this form does not establish that *hukmaí*-, whatever it etymology, was a verbal abstract. Although Sturtevant (1951: 77–8) believed the agent nouns in *-(a)talla*- to have been derived from verbs alone, it is now recognized that they

could be formed from nouns, abstract or concrete, as well (Friedrich 1960: 39; Kronasser 1966: 176). It thus is possible that Kronasser (1966: 206) is correct in regarding *hukmatalla-* as derived from *hukmaí-*. The latter he explains by again proposing a verbal abstract which became a secondary *aí-* stem, in this case a derivative of *huk-* containing the suffix **-mo-* (or **-mā-*) > *-ma-*. However, as he states elsewhere (Kronasser 1966: 177), *-ma-* does not certainly occur in Hittite without a preceding vowel, usually *-i-* but occasionally *-a-*. It should also be noted that the abstracts in *-ima- and -ama-* were exclusively common. Therefore, instead of accounting for the variable gender of *hukmaí-*, Kronasser's explanation again raises the question of why an abstract entering the *aí-* stems through analogy would not have been transferred to the common *aí-* stems. Although Kronasser's proposal thus appears too uncertain for acceptance, its outright rejection also seems unwarranted, for the variable gender of *hukmaí-* would require an explanation if it was a verbal abstract of any origin and there appears to be no other means of accounting for its *-m-*. At any rate, whether one rejects *hukmaí-* as an additional example of an action noun, original or secondary, or accepts it and regards its gender as an unexplained aberration, it seems clear that it was the common *aí-* stems, not the *aí-* stems as a whole, which were associated with verbal abstracts. Among the forms to which it was restricted, however, the association was well established, for it has been seen that the number of verbal abstracts among the common nouns fell between a minimum of ten and a maximum of thirteen or included roughly half of the total of twenty-three. Although it will be seen later that it was less close than the similar association found among the related Indo-European forms, additional evidence of its existence is supplied by the occurrence beside the secondary verbs *maniyahh-* and *istarnink-* of the further derivatives *maniyahhaí-* and *istarningaí-*, which indicates that not far long before the attestation of Hittite *-aí-* functioned as a living suffix for the derivation of action nouns.

One might suspect that because of their semantic unity the verbal abstracts would have been more resistant to elimination than the words of more varied meanings. It thus appears possible that the forms attested give an exaggerated impression of the association with action nouns in existence prior to the start of the process of attrition among the *aí-* stems. However, as far as can be told from the limited evidence available, such seems not to have been the case. Of the eleven or

twelve *aí*- stems reported to have varied with *í*- and/or *a*- stems, eight were common, three of which varied with *í*- stems, four with *a*- stems and one with both. The three with *í*- stem variants included a presumably certain abstract, *zahhaí*- 'fight, battle' and a possible one, *saklaí*- 'rite, custom', in addition to *tuhhuwaí*- 'smoke, steam'. The four which varied with *a*- stems were evenly divided between the abstracts *hurtaí*- 'curse' and *hullanzaí*- 'battle (?)' and the concrete nouns *istaggaí*- 'bow-string' and *sankuwaí*- 'fingernail'. Since *maniyahhaí*- 'government', the only noun with both *í*- and *a*- stem variants, was an abstract, the total number of abstracts among the eight heteroclitics was four or five (Friedrich 1952–66: 1.257, 176, 227, 77, 74, 90, 183, 135; 3.25; 4.23). Thus the action nouns, which included roughly half of the common nouns, also supplied at least half of such forms with variants. The results are similar if one bases the figures on the *aí*- stems as a whole rather then the common nouns alone. Since the *aí*- stem abstracts numbered ten to fourteen with the addition of the uncertain variable noun *hukmaí*-, they included very roughly a third of the thirty-five forms assembled here other than *harnau/aí*-, a proportion which is more or less parallel to that of four or five heteroclitic abstracts within a total of eleven or twelve heteroclitics altogether.

As implied by the figures given above, gender may apparently also be excluded as a factor affecting the susceptibility of the *aí*- stems to elimination. The three or four remaining forms with variants were all exclusively neuter. Since the occurrence of three or four heteroclitics among a total of nine neuters was approximately the same proportionally as that of eight among the twenty-three common nouns, it appears that the attrition taking place among the *aí*- stems was not in the process of altering the picture presented concerning the relative frequency of the neuters. One of the neuter forms, *hupuwaí*-, varied with an *a*- stem, as the uncertain heteroclitic *hazgara(í)*- may have done. The other two, *zapzagaí*- and *hastaí*-, had *í*- stem variants (Friedrich 1952–66: 1.76, 260, 63). It should be noted that, although *hastaí*- was attested consistently as an *aí*- stem when occurring alone, it was included here because it appeared with equal consistency as an *í*- stem in the compound ^{UZU} *danhastí*- 'twinbone' (Friedrich 1952–66: 4.31). That *hastaí*- apparently belonged among the forms with *í*- stem variants is conceivably significant, for it was seen here earlier that it also possessed *í*- stem correspondences in Indo-European. Since the conversion of diphthongal nouns to zero grade took place in both Hit-

tite and Indo-European, one must consider the possibility that it originated prior to the separation of Anatolian. Although it is possible that no more than coincidence is involved, the evidence concerning *hastaí-* would be consistent with such a development. In particular, the inheritance by Proto-Indo-European of an *í-* stem variant already in existence alongside the cognate of *hastaí-* could help explain why the conversion of that form apparently took place relatively quite early, prior to the transfer to the pre-feminine. However, it does not yet seem possible to determine whether the conversions in Hittite and Indo-European had a common origin or arose independently.

Since the Hittite common *aí-* stems and each of the Indo-European classes stemming from diphthongal *í-* stems, including types in both *-ē-* and *-ō-*, were associated with verbal abstracts, it seems clear that at some stage prior to the separation of Anatolian the animate *ēí-* and *ōí-* stems were productive in the derivation of such forms. The evidence of *maniyahhaí-* and *istarningaí-* that the *aí-* stems were still productive in this fashion in pre-Hittite indicates that the productivity continued beyond the time of the separation.

In Hittite it presumably was the loss of *-y-* between like vowels which caused the *aí-* stem abstracts to cease to be productive and at the same time initiated the elimination of the *aí-* stems as a whole. Although the *í-* stem variants among the *aí-* stems were perhaps as numerous as those belonging to the *a-* stems, the loss of *-y-* probably was involved in the origin of forms of both types. As was noted here earlier, it seems safe to say that the confusion with the *a-* stems was caused by the occurrence among the *aí-* stems of apparent *a-* stem forms produced by the loss. In addition, whether or not confusion between the *aí-* and *í-* stems had existed to some extent prior to the change, it is likely that by disrupting the *aí-* stem paradigm in this manner the loss of *-y-* also encouraged the conversion of the *aí-* forms to *í-* stems as an alternate means of restoring regularity and thus, if it did not originate such conversions, accelerated the pace at which they occurred. It therefore is plausible that among the Hittite *aí-* stems the effect of the loss of *-y-* resembled that of the loss of the second element of long diphthongs among the diphthongal nouns of Indo-European.

In Indo-European the loss of the second element of long diphthongs obviously provides an adequate explanation for the failure of the diphthongal *í-* stem abstracts to remain productive. However, since there appears to be no evidence to suggest the occurrence of an

earlier development which would have contributed to the same result, it is possible that their productivity continued largely undiminished until the disruption of their paradigms by the loss. It is true that in matters of this sort a precise explanation in the form of a specific event, such as a phonological change, is not required, for the productivity of a suffix can be reduced or halted by, for example, increased competition from one or more other suffixes fulfilling the same function. Nevertheless, there appears to be no reason to hold that the diphthongal *í*- stems did not remain productive in Indo-European immediately prior to the loss of the second element of long diphthongs. The evidence which has been seen elsewhere concerning the pertinent diphthongal types suggests that such was indeed the case, for as was mentioned earlier, the association with verbal abstracts was greater in Indo-European than in Hittite.

Ernout (1965: 24–5), who assembled a complete collection of the Latin *í*- stems with nom. sg. *-ēs* and examined it without reference to the present question, held that approximately two-thirds of such forms were original verbal abstracts. When the same forms were later investigated as the first step in verifying the proposals concerning the diphthongal nouns, no reason was found to question his conclusions in this regard, for his views concerning the semantic developments involved seemed convincing and almost all of the words identified as action nouns had a related verb preserved beside them in Latin (Brosman 1986: 342). In addition to the nouns found by Ernout to have certainly occurred as *í*- stems, the more recent investigation included also the fifth-declension forms with nom. sg. *-ēs*, since it was clear that they hardly had an existence except as variants of the similar *í*- stems. Indeed the only noun of the type of *fidēs* unquestionably attested exclusively as a fifth-declension form was *fidēs* itself. Nine or ten others included eight certain variants of *í*- stems with nom. sg. *-ēs* and, since it is attested as both a fifth-declension noun and a zero-grade *í*- stem, perhaps an additional such variant in *plēbēs*, *plēbis*, *plebs* 'common people'. The possible tenth example was *facēs* 'light, flame, torch', which is attested only in the nominative singular and thus cannot be identified as an *í*- stem or a fifth-declension form (Brosman 1986: 341). Since the forms gathered by Ernout numbered forty exclusive of duplication in compounds, the addition of the three words required by the inclusion of the nouns of the type of *fidēs* would hardly have affected the proportion of abstracts even if none of the additional forms had been an action noun.

However, since *fidēs* (cf. *fīdō*) was obviously a verbal abstract and *facēs* may have been, it affected it perhaps not at all.

The fifth-declension nouns in *-íēs* were much more closely associated with abstracts than the other Latin forms, for within a total of forty-eight exclusive of duplication in compounds, they included only five nouns which appeared to have originally been concrete in meaning. However, they differed from the forms mentioned first in that the abstracts among them were not confined to action nouns but included twenty-two qualitative abstracts derived from adjectives, all but three of which had been formed by means of the compound suffix *-(í)tiēs* rather than *-iēs* alone (Brosman 1987: 330–1). A further difference, which was noted as early as Brugmann (1906: 221), is that unlike the *í*-stem and fifth-declension forms with nom. sg. *-ēs*, which were clearly on the wane in pre-Latin and Latin, the nouns in *-iēs* had been moderately productive for a while. That the qualitative abstracts stemmed from the period of productivity, as was to be expected from the other evidence seen here, was apparently confirmed by the fact that none of them possessed a possible cognate. The twenty-six forms left after exclusion of the qualitative abstracts included twenty-one original action nouns, a proportion of such forms that remains much larger than seen heretofore. However, since it is probable that some of the verbal abstracts were also formed during the period of productivity, about all that can be said concerning this question is what was stated when these forms were first investigated: That the inherited etyma of the nouns in *-iēs* were original verbal abstracts to at least the same extent as the *í*- stems in *-ēs* (Brosman 1987: 331–2).

The Greek nouns in -ω were the Indo-European type with the smallest proportion of action nouns. Apparently it should be described as approximately a half. Among all attested forms, which numbered thirty-eight exclusive of duplication in compounds, slightly under a half, or sixteen, were verbal abstracts. However, since two or three of the concrete nouns were loan-words and two other similarly small groups suggested that the nouns in -ω were slightly productive in the narrow semantic fields of specters and onomatopoetic terms, it is possible that slightly over half of the forms inherited as diphthongal were action nouns (Brosman 1992: 321, 323, 325).

Since the verbal abstracts, which included roughly half of the Hittite common *aí*- stems, comprised approximately two-thirds or more of the forms in two of the three Indo-European groups and half of those

in the other, it seems clear that the diphthongal *í*- stems were more closely associated with action nouns in Proto-Indo-European than in Hittite. Moreover, in Indo-European the totals to which the fractions refer were not restricted to inherited animate forms as in Hittite but included at least a few original neuters. Presumably all of the Indo-European diphthongal nouns, neuter as well as animate, in existence at the time participated in the transfer to the pre-feminine. However, for reasons that will shortly be made clear, a significant comparison between the proportion of verbal abstracts among the Hittite *aí*-stems as a whole and the figures found among the Indo-European types is apparently not possible.

Since the common *aí*- stems seem certainly to have been productive in the formation of verbal abstracts in pre-Hittite and the related Indo-European nouns surpassed them in the degree of their association with such forms, it appears probable that the diphthongal *í*- stem action nouns remained productive in Proto-Indo-European until the loss the second element of long diphthongs and that, contrary to later appearances, the diphthongal *í*- stems consequently were at least fairly common at the time of the phonological change. Although the possibility of a greater rate of productivity in Indo-European could account for the additional closeness of the connection there, a similar degree of association would have seemed sufficient to suggest that the Indo-European forms continued to be productive as long as their paradigms remained intact. Since the status of the abstracts has been stated here in relative terms, the productivity, or lack of it, of the diphthongal *í*- stems with referents of other sorts is another factor possibly involved in producing the attested results. In this connection it should be noted that in Proto-Indo-European the neuter forms preseumably were not productive because of confusion affecting the athematic neuters as a whole. As has been pointed out elsewhere (Brosman 2000: 11–2), before initial syllabics the loss without a trace of the laryngeal plural suffix may be held to have produced within every athematic declension neuter plural forms identical to those of the singular. Since among the *o*-stems the neuter plural was wholly distinct from the singular, thematicization provided a simple remedy for the resultant confusion among the nominative-accusative forms of the athematic neuters. The originally rare neuter *o*- stems were therefore expanded appreciably as the consequences of the confusion among the athematic neuters were reduced by reducing, primarily through thematicization, the number of

such forms (Brosman 2000: 16). Since the neuter diphthongal forms were athematic, one thus should apparently assume that prior to the loss of the second element of long diphthongs those of both the *í*- and *u*- stems not only failed to be productive but were reduced in number to at least some degree. It is because, for reasons having nothing specifically to do with their diphthongal nature, the number of neuter diphthongal *í*- stems was presumably reduced to an uncertain extent in Indo-European, that one cannot compare the proportion of verbal abstracts among the Hittite *aí*- stems as a whole to the figures found among the Indo-European forms. However, as indicated by the correspondence between Hittite *tanau*- and OHG *tanna*, it is safe to say that the Indo-European diphthongal neuters were not entirely eliminated. It therefore remains true that the comparison seen here earlier of the figures for the Indo-European types to those for the Hittite common nouns understates to at least some extent the greater closeness of the association with verbal abstracts in Proto-Indo-European.

One must also consider again the possibility that the verbal abstracts were more resistant to elimination then the diphthongal forms of other meanings once their paradigms had been disrupted. Although, as far as could be told, this appeared not to be true of Hittite, one cannot for that reason assume that it did not apply to the separate developments taking place in Proto-Indo-European. However, in the case of Indo-European, one can be much more confident that no such resistance occurred. The principal reason for this view is the origin there of an association between verbal abstracts and the zero-grade *í*-stems. Although the *aí*- stems were associated with verbal abstracts in Hittite, the *í*- stems were not. However, in Indo-European the *í*- stem forms of both types were closely associated with action nouns. As has been pointed out previously (Brosman 1994: 351), since conversion to zero grade was the most important means employed in the virtual elimination the diphthongal nouns as a whole, the zero-grade *í*- stem abstracts of Indo-European presumably originated through the conversion of diphthongal abstracts to zero-grade forms. In view of the evidence that diphthongal *í*- stem abstracts were converted to zero grade on a scale large enough to reproduce among the zero-grade *í*-stems the association with verbal abstracts which had existed among the diphthongal forms, it seems clear that the abstracts among the diphthongal nouns were eliminated fully as frequently as the words of other meanings. Moreover, since Brugmann (1906: 167–70) indicates

that a large majority of the *í*- stem nouns consisted of verbal abstracts, it also appears that at the time of the loss of the second element of long diphthongs the diphthongal *í*- stems were not only fairly common but perhaps more numerous then the zero-grade forms. Such an apparent state of affairs implies that the diphthongal *í*- stem abstracts indeed remained productive until the occurrence of the phonological change. Another implication of the evidence concerning the zero-grade abstracts is that the animate diphthongal *í*- stems without abstract referents had at best been no more then slightly productive. Although allowance must be made for the possibility that the zero-grade *í*- stem abstracts themselves became productive after the association between the zero-grade forms and action nouns had been established, it was for this reason that the relative frequency of the two types of *í*- stem was stated here as vaguely as it was. Otherwise the diphthongal forms would have been held to have been considerably more numerous.

In his discussion of the zero-grade *í*- stems Brugmann (1906: 167–9) includes a lengthy list of verbal abstracts illustrative of his statement that most of the *í*- stem substantives were action nouns. That approximately two-thirds of the forms were feminine is consistent with the proposed diphthongal origin of the arbitrary athematic feminines and of the zero-grade *í*- stem abstracts. The occurrence of roughly a third of the abstracts as masculine need not be considered surprising, for it was noted at the outset that prior to the origin of athematic feminines referring to females the conversion of pre-feminine or feminine diphthongal nouns to zero grade should be expected to have resulted in masculines. That such forms indeed existed to at least some extent has already been indicated by an examination of the almost exclusively feminine *ti*- abstracts in Gothic, which apparently included a minority of forms inherited by Proto-Germanic as masculine (Brosman 1994: 357–8). However, the rather substantial proportion of masculines among the nouns assembled by Brugmann is of interest because of its possible implications concerning the relative dates of developments among the diphthongal nouns. Although the proportion of presumed original masculines among the Gothic *tí*- forms was perhaps coincidentally almost the same, their absolute number, five or six, was so small as to be statistically unreliable as a basis for conclusions concerning the comparative frequency of the genders otherwise. Since Brugmann's list was not intended to be complete and was presumably compiled without attention to the gender of the forms placed on it, it does not

provide a suitable basis for specific conclusions either but can serve only as a large random sample of *í-* stem abstracts. Therefore all that one seems entitled to say at present concerning such forms is that they presumably included a majority of feminines but apparently also contained a masculine minority of appreciable, but otherwise uncertain, size. That the number of masculines among the originally diphthongal *í-* stem abstracts was appreciable suggests that an interval of appreciable duration occurred between the transfer of the diphthongal nouns to the pre-feminine and the extension of the third gender to include athematic nouns referring to females or at any rate between the loss of the second element of long diphthongs and the extension. Since one must assume at least a brief interval between the phonological change and the transfer to the pre-feminine, it is possible that some of the masculines were produced by the conversion to zero grade of animate forms prior to the transfer. Regardless of their precise manner of origin, the evidence concerning the masculines indicates that when examining the cognates of the *í-* stems in the older dialects one should expect to find substantial proportions of masculines among the forms of apparent diphthongal origin. Since the relative frequency of the masculines presumably was related to the length of the period during which they would have been produced, this is the second of the conclusions reached here which should be applicable to the *u-* stems as well. Among the *í-* stems it also appears that masculine abstracts should probably be identified as original diphthongal nouns even in the absence of supporting evidence in the form of cognates. Although the zero-grade abstracts may have become productive in their own right to at least some extent, the masculines, which arose first and were less frequent than the feminines, were not likely to have participated in such productivity. At any rate, since zero-grade *í-* stem abstracts were not inherited, later productivity was the only alternative to diphthongal origin in the case of the abstracts of either gender.

On the basis of the evidence seen here it appears possible to propose in its major outlines a history of the diphthongal *í-* stems prior to the loss of the second element of long diphthongs and to make an additional suggestion concerning developments among them following it as well. It seems clear that at the time of the separation of Anatolian the animate *í-* stems were productive in the derivation of verbal abstracts. In pre-Hittite the productivity continued to at least some extent for a while but later ceased, presumably because of the loss of *-y-* between

like vowels, following which the diphthongal *í*- stems as a whole began to be eliminated. In Proto-Indo-European the animate *í*-stem abstracts apparently remained productive on an appreciable scale until their expansion was halted by the loss of the second element of long diphthongs. Although the animate forms of other meanings seem not to have been especially productive, they presumably were retained at more or less their inherited strength. The neuter diphthongal nouns, on the other hand, were already being reduced to at least some degree at this stage because of confusion affecting the athematic neuters in general, though they were not wholly eliminated before the transfer to the pre-feminine. As a result of the productivity of the verbal abstracts the animate diphthongal *í*-stems apparently had become at least as numerous as their zero-grade counterparts by the time of the loss of the second element of long diphthongs. At this point there began the developments described here at the outset. That one of them, the conversion of diphthongal nouns to zero grade, produced first masculine zero-grade forms and then feminines had already been indicated. However, the proportion of masculine to feminine forms was uncertain. Although considerable uncertainty remains, it now seems to have been substantial. It thus appears that the length of the interval between the loss of the second element of long diphthongs and the origin of athematic feminines referring to females was also substantial, though it is unclear at what point within it the transfer to the pre-feminine occurred.

It was also noted that the conclusions concerning the *í*-stems applied to the diphthongal *u*- stems as well in two cases, the reduction in the number of athematic neuters prior to the loss of the second element of long diphthongs and the proportion of masculines occurring among the zero-grade forms of diphthongal origin. Although much about the *í*-stems remains unclear, it should be possible to render some of the conclusions reached here more precise. In addition to contributing to verification of the proposed origin of the arbitrary athematic feminines, the examination of the cognates of the *í*- stems in the older dialects should be capable of verifying most of the proposals made here and of permitting more specific conclusions concerning the relative frequency of the original diphthongal and zero-grade forms. Although it would also have a bearing on the question of the proportion of masculines among the forms produced by the conversion of the diphthongal nouns to zero grade, because of the possible productivity of the zero-grade *í*- stem abstracts the evidence of the zero-grade *u*-

stems might in this case turn out to appear more reliable. In any event, it seems reasonable to hope that in one way or another it will be possible to determine more about all of the developments suggested here with the apparent exception of that involving the neuters.

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