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When we recall that we have reached the centenary of Hermann Osthoff and Karl Brugmann's preface (strictly, the work of KB) to their Morphologische Untersuchungen auf dem Gebiete der indogermanischen Sprachen (I, 1878--), it may not be amiss to consider some of their lasting principles in the context of some problems which arise in the study of New World languages.<sup>1</sup> It will be remembered that Osthoff and Brugmann insisted on 1.) investigating live spoken language rather than just written forms; 2.) explaining the mechanisms of sound behaviour by appeal to psychological and abstract underlying criteria in addition to the physical mechanics of articulation; 3.) the accumulation of a case-book typology as well as detailed diachronic observation by the analysis of long unbroken written tradition as keys both to an understanding of the nature of language and to the reconstruction of languages; 4.) a prominent and principled place, following the formulations of Wilhelm Scherer, for the operation of analogic levelling; 5.) the setting of language in the behaviour of the speaker, and not as an abstract autonomous object; 6.) a strict recognition that ancient literary texts are not representative of colloquial, popular, dialectal speech;<sup>2</sup> 7.) a rejection of the claim that ancient man learned language in a discretely different fashion or with different mechanisms from what has obtained for recent men, or that ancient or "primitive" languages differ in kind from contemporary and observable forms; 8.) --doubtless their most famous pronouncement, credited directly to August Leskien-- the principle that sound change for all members of a linguistic community within a dialect, for all words showing the sound in the same defined context, applies in a fashion that can be formulated as a law admitting of no exceptions; 9.) a recognition that progress in their studies had been cumulative and that not all findings of the past were equally erroneous and needed to be rejected or dismantled.<sup>3</sup> It should further be recalled that the Neogrammarians were well aware of Johannes Schmidt's modification of the Stammbaum model (1872), which was later elaborated and enriched theoretically by Meillet and others; though this is not to say that the full purport of dialect geography had yet had the opportunity to register with historical and reconstructive linguistic study of that day.

It is true that problems of comparative and reconstructive linguistics occupy us that transcend in com-

plexity and subtlety most that the Neogrammarians successfully tackled in their day. After all, many of the more obvious problems accessible to them have been by now, or even long since, reasonably solved. But great numbers of problems of this more obvious order remain yet to be solved in language families less thoroughly explored than their Indo-European and familiar Eurasian territory. It is also a fact that different linguistic stocks emphasize and bring into prominence interestingly different situations which all at bottom call for an appeal to the same general principles.

While not neglecting the other principles mentioned above, it is instructive to consider once again a set of phenomena which rely for their understanding upon a strict observation of number (8) above. In our present problem we shall be occupied in each instance not with an individual sound, or segment, but rather with complex segmental units or clusters. It will become obvious as the argument proceeds why most of these correspondences must be considered clusters in the proto language. The configuration of these clusters is striking in the context of the phonological structures in which they are found, for the Panoan languages are generally very poor in consonant clusters and have a markedly (C)V syllabic structure. It will be seen that we arrive at a richer cluster inventory and frequency for the proto than in the case of any of the daughter languages; it must always be remembered that the typology of the parent does not necessarily determine that of the successor languages, and that consequently we should hold minimal or reserved expectations for the typology of our reconstruction when viewing that of our comparanda. Such a gap seems to be a recurring source of inadequacy in reconstructions, even though the oversight may be unwitting and contrary to explicit intent.

A further interest of this set of problems is that they can be and are solved on purely phonological criteria. There are, of course, many limited problems of Indo-European or Algonquian or Salishan or Otomanguean comparison that can be couched and solved in purely phonological terms. But these languages exploit vowel alternations, morpheme alternants, sandhi and fusion, suppletion, and contextually idiosyncratic derivation to such a high degree that pure phonology--pure Lautgesetz--reaches only a short distance in our reconstructive task.

In a generally very commendable pioneering reconstruction of Proto-Panoan (PP), revised from a 1965 Pennsylvania dissertation, Olive Shell (1975) has recognized the following correspondences of identity: (Abbreviations are A Amahuaca, Ch Chácobo, Cn Cashinahua,

Cp Capanahua, Csh Cashibo, M Marinahua, SC Shipibo-Conibo.)

A M Ch Cp SC  $\int$  : Csh  $\int$  : Cn  $\int$  --- PP  $\int$   
 $\int$  :  $\int$  :  $\int$  ---  $\int$

Then (60) properly segregating a near-identity, Shell recognizes on the basis of its occurrence in one daughter language (Cn) the presence of a sibilant cluster in PP:

A M Ch Cp SC  $\int$  : Csh  $\int$  : Cn  $\int\int$  -- PP  $\int\int$

The recognition of such a sibilant cluster then leads to the following formulation for another equation:

A M Ch Cp SC  $\int$  : Csh  $\int$  : Cn  $\int$  --- PP $\int\int$

However, Shell seems not to notice that the last two reconstructions lead to a paradox of phonetic reasoning in the most natural derivations for the observed reflexes --and this is particularly true for Cn. That is, if Cn  $\int$  resulted from PP  $\int\int$ , we should expect the same also from PP  $\int\int$ . Shell hypothesizes that  $\int$  went to zero before  $\int$  in Csh; but she neglects the fact that one must assume that PP $\int$  first was assimilated to become  $\int$  before  $\int$  was lost. To avoid this lapse in reasoning we might suppose that Cn  $\int\int$  was derived from PP  $\int\int$  by assimilation. But then we should be forced into the more complex assumption of assimilations in opposite directions for very similar clusters, and in a bleeding chronology without any unifying trend. Besides, another correspondence set (70) is relevant here:

A M Ch Cp SC  $\int$  : Csh s : Cn  $\int$  --- PP  $\int\int$

Shell recognizes the parallelism between this and the one she reconstructs as PP  $\int\int$ , but her reconstructions fail to capture this similarity in the sequence of type of sibilant and in the result for Csh against all the others.

I therefore accept Shell's PP  $\int\int$  and  $\int\int$ , but I revise her  $\int\int$  to a PP  $\int\int$  instead.

We will now inspect clusters with t. Shell (56) has discerned set No. 489 as follows:

SC Ch  $\int$ t : Cp Cn A M  $\int$  --- PP  $\int$ t

This set is the unique example of  $\int$ t, yet it is set (56) beside other sets with partial resemblances in a way that fails to illuminate the totality of these perplexingly similar interplays of sibilants and t. Thus set No. 27 is reconstructed as PP  $\int$ isto- for the equation of SC  $\int$ isto-, Cp  $\int$ isto- 'correr', Csh  $\int$ istó 'rápidamente'; it would appear that Shell is undecided as to the correct assignment of Cn  $\int$ iču- 'saltar' and M  $\int$ ico- 'correr'. The last two, we see immediately, give the appearance of fitting in with PP  $\int\int$ , already recognized above; but then what would the rest of set 27 be? Shell moots the possibility that in these problematic sets we have reflexes of bi-morphemic words, but at best that means that we

must then devise yet another series of morphologically sensitive derivations for the small number of recalcitrant forms at issue; we shall find that by exploring resources at hand more diligently this will not be necessary. For the time being let us simply observe that only a portion of the forms that seem semantically to belong in set 27 find a reconstruction in PP st; that it would require a complex morphological assumption to convert this st into the apparent PP šč; that in any case the conversion of PP st into SC št requires one more added phonetic assumption.

Yet, worse than these last, the allotment of set 27 to PP st entails a contradiction to the clear, if sparse, evidence (55, fn.39) that all the languages here under discussion, including SC, Cp, and Csh, show a reflex s for what must best be reconstructed on the testimony of Atsahuaca, Arazaire and Yamiaka as PP st. We shall see that we do best to accept Shell's astute attribution of these last reflexes with s to PPst. The reflexes of set 27 must therefore be accounted for otherwise.

Set 144, discussed on p.61, is a problematic one, and remains so with the reconstruction proposed. This set, meaning a 'kind of ant', shows consonantisms of s throughout, except for A hišis, for SC, Cp, Cn, and M; Shell reconstructs (136) PP i[sč]is[t]i. Yet though the reconstruction of PP sč here is poorly explanatory, it seems to me that the notion of PP st here is particularly suggestive. If instead we start with PP ististi, to account simply for all the observed forms we have only to assume that a dissimilatory methathesis produced the divergent A č.

The seemingly most complex problem of all remains in sets 114 and 115, which, I believe we shall see, Shell needlessly proliferates into two sets; both mean 'charcoal'.

114. SC čisti, Cp čisti, Cn čišti, M čístí, Ch čístí ---  
PP [čisti]

115. Csh čiso, Ch čisto --- PP [č]is[t]o

We can solve these only by considering at the same time 113. SC čio, Cp čio, Csh čio, Cn či, A čio, M čió, Ch čio 'cigarra' for which Shell vacillates in reconstructing (61) PP č- (with special restriction before i) and (132) PP či-, and also

125. SC čif, Cp či?i, Csh čii, Cn či, A či?i, M či, Ch či?i 'fuego'

which Shell reconstructs, without adequate explanation, as PP či?i. The initial could of course, on the basis of our prior argument, be PP sč here.

It will be well if at this point we take a look at

the PP structure points which we have allotted, so that we may perceive the emerging pattern of our assignments and the possibilities not yet occupied. From the starting identities we have PP  $\phi$ ,  $\check{c}$ ; we also have  $s$ ,  $\check{s}$ . We then recognized PP  $s\check{s}$ ,  $s\check{c}$ , and  $\check{s}\check{c}$ . Note that PP  $s\check{s}$  and  $s\check{c}$  established systematically the characteristic Csh behaviour whereby in mixed clusters it favours the apical phonetic output. And then we have allotted PP  $st$  and  $\check{st}$ . Note that, generally speaking, in these clusters a blade groove prevails over an apical, a spirant yields to an affricate, and a  $t$  yields to a preceding sibilant. We see clearly now that the single set of possibilities within the pattern that remains unexploited is  $s\phi$  and  $\check{s}\phi$ .

If we now turn back to set 27 we find a reasonable solution for those baffling consonantisms in the last mentioned cluster. The Cn and M reflexes are easily derived from a proximate  $\check{s}\check{c}$ , and this again would be an assimilation product of PP  $\check{s}\phi$ . For SC, Cp, and Csh we presume first of all a dissimilation of the groove articulation, to yield proximate  $\check{st}$ , which expectably persists in SC but apparently assimilates in apicality to  $st$  in Cp; the outcome in Csh shows the expected apical feature. Set 27 therefore substantiates the cluster PP  $\check{s}\phi$ .

We may now return to 114 and 115, which without further ado I reconstruct as PP  $\phi is\phi i \sim \phi is\phi o$ ; for the final  $-o$  cf. set 113 in relation to 125. We then note the change of  $s\phi$  to  $st$ ; in SC and Cp this may be the same feature change as we have observed in set 27, but it may also be, as it surely is in M and Ch, a dissimilation against the initial. For Cn we must assume a contamination with set 125, yielding  $\check{c}is\phi i$ , then  $\check{c}i\check{s}\phi i$  by assimilation, and finally (too late for the assimilation in set 27)  $\check{c}i\check{s}ti$  by a groove dissimilation by now familiar to us. Csh must have dissimilated its affricate otherwise, and then expectably reduced the geminate in the resulting  $\phi isso$ . Note that none of the above steps, taken singly, is unparalleled, and each is phonetically natural.

113 shows a perfect PP  $\phi$  as the initial, except for Csh and Cn. For Cn I see a simple semantic contamination from 125, as in 114. For Csh I see no principled solution on the present evidence.

#### NOTES

- <sup>1</sup>For a similar theme in an Indo-European context, see CIS14
- <sup>2</sup>This and No.2 constituted a partial, if faulty, recognition of the social rôle of language.
- <sup>3</sup>This last point seems to me important, as ever, in our present work, and I have raised it before now in relation specifically to the Neogrammarians.

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Some Observations on Relatives and Demonstratives  
in Greek and Sanskrit

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In this paper we will discuss some of the functional similarities between demonstratives and relatives which permit demonstratives to be used as relatives in Homeric Greek and Vedic Sanskrit. We will then present two mechanisms of change by which the inherited preposed relative clauses became postposed in these languages, and discuss how the use of demonstratives as relatives interacts with these mechanisms.

D. B. Monro (1891:231-2, see also Chantraine 1953:166ff., Monteil 1963:25-38) maintained that in Homeric Greek the clause initial 'definite article', at that time actually a demonstrative, can be used as a relative pronoun. Some typical examples are:

1.  $\epsilon\tilde{r}\alpha\theta$ ' ho geraiòs / Apóllōni ánakti,  $\tau\acute{o}\nu$   $\epsilon\tilde{\upsilon}\kappa\omicron\mu\omicron\varsigma$  téke  
prayed the old man to Apollo lord that fair-haired bore  
Létō (Il. 1.35-6)  
Leto  
'The old man prayed to Lord Apollo, whom fair-haired Leto bore.'
2. autíka d'égno / oulén,  $\tau\acute{\epsilon}\nu$  poté min súš élase  
straightaway and she knew scar that once him boar inflicted  
(Od. 19.392-3)  
'And straightaway she knew the scar, which once a boar  
inflicted on him.'
3. éban kérukes ágontes / kouérēn Brisēos,  $\tau\acute{\epsilon}\nu$  moi dósan  
came heralds leading daughter of Briseus that to me gave  
húies Akhaiōn (Il. 1.391-2)  
sons of Achaeans  
'Heralds came leading the daughter of Briseus, whom the sons  
of the Achaeans gave to me.'
4. lázeto d'égkhos / brithù méga stibarón,  $\tau\acute{o}\iota$  dámnēsi  
she took and spear heavy long stout with that she tames  
stíkhas andrōn (Il. 8.389-90)  
ranks of men  
'And she took the spear, heavy, long, and stout, with which  
she tames the ranks of men.'

Conditions on this usage, according to Monro, include the requirement that the relative clause be postposed and that the relativized noun be definite, with the relative clause simply 'adding something further', that is, nonrestrictive.

A similar usage of demonstratives is found in Vedic Sanskrit, as illustrated by examples (5) through (7):

5. árcanta éke máhi sáma manvata /  $\tau\acute{\epsilon}\nu\alpha$  súryam arocayan  
singing some great chant thought of with that sun they made  
(RV 8.29.10) to shine

'Singing, some thought of a great chant, with which they made the sun to shine.'

6. prajāpates tráyastr̥śád duhitára āsan, tāḥ sómāya  
of Prajapati thirty daughters were those to Soma  
rājñe 'dadāt ... (TS 2.3.5.1, cited in Delbrück 1888:213)  
king he gave  
'Prajapati had thirty daughters, whom he gave to King Soma ...'
7. tām sá mátsya upanyā puḥluve tásya śṛṅge nāvāḥ páśaṃ  
that the fish near to swam that one's horn ship's rope  
práti mumoca (ŚB 1.8.1.5, cited in Delbrück 1888:213)  
to he bound  
'To whom (=Manu) the fish swam near, on whose (=the fish's)  
tail he bound the ship's rope.'

Although such Sanskrit examples have not been called relative sentences, they clearly show the same structure as the preceding Greek examples and are subject to the constraints listed by Monro for Homeric Greek.

Yet another type of sentence which we feel should be classed with those discussed by Monro is illustrated by examples (8) through (11), where the demonstrative refers not to a preceding nominal, but to an entire preceding clause or sequence of clauses:

8. prá tád Viṣṇuḥ stavate víriṇa (RV 1.154.2)  
for that Vishnu is praised by heroic power  
'For which Vishnu is praised by (virtue of his) heroic power.'  
(Tád refers to a series of accomplishments listed in the preceding stanza.)
9. tád vo divo duhitaro vibhātír / úpa bruva  
for that you of heaven daughters shining ones pvb. I address  
úśaso yajñáketuḥ / vayám siāma yaśáso  
dawns having sacrifice as banner we would be famous  
jáneṣu / tád dyáus ca dhattām Pṛthiví ca deví  
among men that heaven and grant Prithivi and goddess  
(RV 4.51.11)  
'For that I, having sacrifice as banner, O daughters of heaven, address you the shining ones, O dawns; we would be famous among men; that let heaven and goddess Prithivi grant.'
10. mēte sú g' Áreā tó ge deídithi (Il. 5.287)  
not you ptc. Ares that ptc. fear  
'Which you should not fear Ares for.' (Monro 1891:129 'Fear not Ares as to this.')
11. allá tá g' ouk egénonto: tò kaí klaíousa  
but these things ptc. not happened that even lamenting  
tétēka (Il. 3.176)  
I pine away  
'But these things did not happen: lamenting which, I pine away.'

In these sentences there is no question of nominal modification. It seems that whole clauses can be nominalized and referred to by a demonstrative pronoun, which can be interpreted as a relative in much the same way as the pronouns in (1) through (7).

The use of demonstratives as relatives raises the question: What functions do demonstratives share with relatives? We will limit our discussion of demonstratives to endophoric demonstratives (see Halliday and Hasan 1976:33), that is, demonstratives which refer to something in the text. We suggest that demonstrative pronouns or adjectives in sentence initial position which refer to items -- nominals or clauses -- in the immediately preceding text usually serve two functions. First, they are anaphoric and therefore mark the sentence in which they appear as connected to the preceding text. Second, they usually introduce sentences whose purpose is to add information about their referent or head noun; that is, they serve as, or mark the topic of the sentence in which they appear. An example from English will illustrate these usages; that functions as sentential topic both in (12a), where it refers to a preceding nominal, and in (12b), where it refers to a preceding clause:

12. We're going to visit Athens.  
 a. That's where my father was born.  
 b. That's been a dream of mine for years.

It should be noted that topics are usually sentence (or clause) initial in the languages under consideration in this paper.

Relative pronouns in postposed relative clauses, by the traditional analysis, introduce subordinate clauses which function as adjectives to modify preceding nouns. A comparison of (12a,b) with (13a,b), however, will lead to observations which are more useful for a discussion of the data presented in (1) through (11):

- 13a. We're going to visit Athens, which is where my father was born.  
 13b. We're going to visit Athens, which has been a dream of mine for several years.

Postposed relative pronouns, like demonstratives, are anaphoric and therefore connective. Furthermore, they serve as the topic of the relative clause (Ickler 1977): the very purpose of a relative clause is to add information about the referent of the relative pronoun. Finally, although according to the traditional analysis relative pronouns refer only to nouns, sentence (13b) shows that they can refer to clauses in the same way as the demonstrative pronoun in example (12b). It seems, then, that relative pronouns in postposed relative clauses and sentence initial endophoric demonstratives function very similarly. The main difference between them, apparently, is that relative pronouns introduce clauses dependent on the preceding sentence, while demonstratives introduce independent sentences -- often a rather subtle distinction,

as illustrated by a comparison of examples (12) and (13). It is not difficult to imagine, then, how in Greek and Sanskrit demonstrative pronouns came to be used as nonrestrictive relative pronouns, especially since demonstratives already played a role in the inherited relative clause construction, as will be discussed below.

In this respect it is significant that while Homeric Greek and Sanskrit form relative clauses with the demonstrative pronoun, Hittite does not. To understand why this should be so it will be necessary to examine the relative sentence structure inherited from proto-Indo-European and the changes it was undergoing in each of these languages.

Preposed relative clauses can be reconstructed to proto-Indo-European on the evidence of Hittite, Sanskrit, and Greek relative sentences like the following:

14. nu-mu NAM.RA ku-in pa-ra-a pí-i-e-er na-aš  
 conn.-to me prisoners which over they gave conn.-they  
 4 LI-IM NAM.RA e-eš-ta (KBo III 4 III 19f.)  
 4,000 prisoners were  
 'And which prisoners they gave over to me, they were 4,000 prisoners.'
15. nu-mu ku-iš DINGIR-IA i-na-an pa-iš nu-mu gi-en-zu  
 conn.-me which god-mine sickness gave conn.-me pity  
 [da-ú] (KUB XXX 10 rvs 3)  
 let take  
 'Whatever god of mine gave me the disease, let him take pity on me.'
16. apám bílam ápihitam yád ášit / Vṛtrám jaghanvāñ ápa  
 waters' opening covered which was Vritra slaying prev.  
 tád vavára (RV 1.32.11)  
 that he opened  
 'Which opening of the waters was covered, slaying Vitra, that he opened.'
17. yó vām rátho, nrpatī, ásti volhá / trivandhuró  
 which your chariot O lords of men is vehicle three-seated  
 vāsumāñ usráyāmā / á na ená, Nāsatyā,  
 possessing wealth going at dawn to us with that O Nasatyas  
 úpa yātam (RV 7.71.4)  
 pvb. come  
 'Which chariot is your vehicle, having three seats, possessing wealth, going at dawn, with that come to us, O Nasatyas.'
18. hós ke theóis' epieíthētai, mála t' ékluon autoũ  
 who ptc. gods obeys very much ptc. they hear him  
 (Il. 1.218)  
 'Who obeys the gods, they listen to him.'

These relative sentences all have the same structure: the relative clause contains a relative adjective (formed from a reflex of IE \*k<sup>u</sup>i/o- or io-) and (optionally) its head noun, to which the main clause refers by a personal or demonstrative

resumptive pronoun. The relative adjective, like any other adjective, can be substantivized when it has no head noun, that is, in so-called 'indefinite' relative sentences like example (18). The type of relative sentence illustrated by (14) through (18) is regular for Hittite, comprises just under half the relative sentences in the Rig Veda (Avery 1881), and represents a definite archaism in Homer; in Vedic Sanskrit and Homeric Greek it competed with postposed relative sentences of the type:

19. apó devír úpa hvaye / yátra gávaḥ píbanti naḥ  
waters divine prev. I invoke in which cows drink our  
(RV 1.23.18)  
'I invoke the divine waters, in which our cows drink.'
20. epei oukh homogástrios Héktorós eimi / hós toi  
since not of the same womb as Hektor I am who your  
hetaíron épephnen (Il. 21.95-6)  
companion slew  
'Since I am not of the same womb as Hektor, who slew your  
companion.'

Sentences in these languages with postposed relative clauses differ from those with preposed relative clauses not only in word order, but also in the role of relative and other 'phoric' words. In the typical postposed relative clause, which does not contain the relativized noun, the relative word functions as a pronoun; in the typical preposed relative clause, which does contain the relativized noun, it functions as an adjective. Furthermore, in sentences with postposed relative clauses the bond between the clauses is often only anaphoric: the relative clause is marked as connected to the preceding clause by the relative pronoun which refers back to the relativized noun, but there is often no formal indication in the main clause that a relative clause is to follow. In sentences with preposed relative clauses, on the other hand, both cataphoric and anaphoric reference operate to mark the relative clause and the main clause as parts of a larger unit. The relative adjective in the preposed relative clause designates its head noun as coreferential to the topic of the main clause (the resumptive pronoun), and thus as fulfilling its communicative function only within that larger context.<sup>2</sup> Pronominalization of the relativized noun in the following main clause connects it to the preceding relative clause through anaphora.

This type of 'double bonding' in sentences with preposed relative clauses has a number of interesting consequences. First, each clause has all its grammatical slots filled, but neither can stand as a complete text without the other. The relative clause contains an adjective which points to the existence of a following clause having as its topic a pronoun referring back to the relativized noun. The main clause, like any other clause containing an anaphoric pronoun, cannot occur discourse initially. Thus the relative and the main clause in such a relative sentence are in one sense independent and in another sense interdependent, but it is not the case that one of the two clauses is clearly

subordinate to the other. This impression of nonsubordination is heightened by the optional use of sentence connectives to introduce both clauses. As Sturtevant (1930:149) pointed out for Hittite, 'both the relative clause and the main clause are regularly introduced by sentence connectives, just as if they were completely coordinate.' The replacement of this 'double-bonded' type of relative construction by one which has a more clearly subordinate structure (that is, which modifies a noun syntactically independent of the relative clause) may be responsible for part of the impression of a shift from 'parataxis' to 'hypotaxis' in Indo-European sentence structure.<sup>3</sup>

A second feature of this type of relative construction is that it obviates the need for center embedding of relative clauses. In the language types investigated by S. Kuno (1974), relative clauses (with or without relative pronouns) are positioned in relation to their head nouns. This procedure obligatorily results in the center-embedding of relative clauses in some sentence types in both SOV and SVO languages. In Hittite and the other early Indo-European languages which preserve the inherited Indo-European relative clause structure, the necessity for center-embedding does not arise, because the relative clause (containing an occurrence of the relativized noun) as a whole is preposed to the main clause, no matter what the function of the relativized noun in the main clause.

A third consequence of the use of both relative and resumptive forms is that the order of the two clauses with respect to each other is not crucial for the interpretation of the relative sentence. Since both clauses are grammatically complete, and since the relationship between them is marked in each clause, clause order could at least potentially be manipulated either to convey other sorts of information or for stylistic effect.<sup>4</sup> Of course, the reversal of clause position also entails a reversal of phoricity for the relative and resumptive words: the resumptive becomes annunciatory and the relative word anaphoric, referring back to the annunciatory pronoun. This situation is illustrated in example (21):

21. séd            ugró astu Marutaḥ sá śuṣmī yām mártiyam  
 that-ptc. strong let be O Marut the powerful which mortal  
 ávātha (RV 7.40.3, cited in Delbrück 1888:558)  
 you help  
 'May that one be strong, O Marut, the powerful, which mortal  
 you help.'

Or the relativized noun moves into the main clause (with or without an annunciatory adjective) and the relative word functions as a pronoun:

22. ná hí tásminn agnáu māṃsām pácanti yásminn áhutīr  
 not for in that fire flesh they cook in which áhutis  
 júhvati (MS 1.4.8, cited in Delbrück 1888:563)  
 they offer  
 'For they do not cook flesh in that fire in which they offer  
áhutis.'

It is significant that of the three languages under consideration, Hittite is fairly rigidly OV, Vedic Sanskrit is less strictly OV, and Homeric Greek represents a word order type transitional to VO. It is no coincidence that Hittite has nearly all preposed relative clauses, as one would expect for an OV language, Vedic Sanskrit has about half preposed and half postposed, and Homeric Greek has nearly all postposed relative clauses, as one would expect for a VO language. These three languages, then, represent three stages of word order change in general and of change in relative and main clause order in particular. We propose that flipping the order of relative and main clauses was a mechanism of word order change made possible by the 'double-bonded' structure of early Indo-European relative sentences.

A second mechanism of clause order change, we propose, was triggered by a complementary process, loss of the resumptive in the main clause and a subsequent reanalysis of clausal constituency. For purposes of illustration we will take Hittite as representing the inherited Indo-European preposed relative clause structure. In Hittite the relative adjective can either precede or follow the relativized noun, as shown in examples (14) and (15). W. Held (1957:111ff.) proposes that relative adjectives in Hittite precede indefinite relativized nouns and follow definite relativized nouns. Whatever the semantic distinction, we are concerned here with the structure in which the relative adjective follows the relativized noun, the structure illustrated in example (14). Relative clauses with this ordering outnumber relative clauses with adjective-noun ordering by eighteen to one (Held 1957:29). Such relative clauses are also possible in Greek and Sanskrit, although they are quite rare (in these languages the relative is built on the stem \**io-*):

23. *barhišádo yé svadháyā sutásya /*  
 sitting on grass who with funeral offering of pressed  
*bhájanta pitvás, tá ihágamišṭhāḥ (RV 10.15.3)*  
 partake drink they here-most coming  
 'Who sitting on the grass partake of the pressed drink  
 with the funeral offering, they come here most.'
24. *ulokó yás te adriṇa / índrehá táta á*  
 place which yours O arrow-bearer Indra-here from there pvb.  
*gahi (RV 3.37.11, cited in Delbrück 1888:558)*  
 come  
 'The place which is yours, O Arrow-bearer, come here from  
 there, O Indra.'
25. *phulakàs d'hàs eíreai hérōs / oú tis kekriménē*  
 guard ptc.-which you ask about hero not one chosen  
*rhúetai stratōn oudē phulássei (Il. 10.416-7)*  
 protects army nor guards  
 'The guards which you ask about, hero, not one, being chosen,  
 protects nor guards the army.'

26. *něs hósai prōtai eirúatai ágkhi thalássēs /*  
 ships as many first are hauled near sea  
*hélkōmen, pásas dè erússomen eis hála dían (Il.14.75-6)*  
 let us take all ptc. let us drag to sea shining  
 'As many ships as first are hauled up near the sea,  
 let us take (them), and drag all (of them) to the shining sea.'

It should be noted that the resumptive pronoun in the main clause following a preposed relative clause, though it usually occurs, is not obligatory, as is shown by examples (27) through (29):

27. *ku-i-ša-at hu-ul-li [-iz-zi] U<sup>[RU]</sup> Ne-e-š]a-aš LÚ<sup>[KUR-ŠU]</sup> e [-eš-tu]*  
 who-it breaks of Nesa enemy let be  
 (Anitta Vs.35, Neu 1974:12)  
 'Whoever breaks it, let him be Nesa's enemy.'
28. *ZAG-an-na ku-iš pár-ši-ia 1 UDU 10 NINDA<sup>[HI.A]</sup> 1 DUG KA.KAK*  
 boundary-and who violated 1 sheep 10 loaves 1 jug beer  
*pa-a-i (KBo VI 26 I 48 f., Held 1957:10)*  
 gives  
 'Who violated the boundary, he gives 1 sheep, 10 loaves (and) 1 jug of beer.'
29. *DINGIR-LIM-tar ku-it SIXSÁ-at kat-ta a-ri-ia-u-en*  
 deity which was determined prev. we determined by  
 (KBo II 2 II 21 f. Held 1957:24) oracle  
 'Which deity was determined, we determined by oracle.'

We propose that the non-occurrence (or elimination) of the resumptive pronoun in such sentences could have led to a structural reinterpretation. What was originally the relativized noun (for instance *DINGIR-LIM-tar* in example (29)) in the relative clause would be reanalysed as part of the matrix clause, with a shift in case if necessary. The original relative adjective would then be reinterpreted as a relative pronoun introducing a postposed relative clause followed by more material from the main clause. Such postposed center-embedded relative clauses are possible in Greek and Sanskrit:

30. *kourēn hēn ára moi géras éxelon huēs Akhaiōn /*  
 girl whom ptc. to me prize chose sons of Achaeans  
*dourì d' emoi kteátissa (Il.16.56-7, cited in Monteil 1963:58)*  
 spear ptc. my I gained  
 'The girl whom the sons of the Achaeans chose (as) prize for me I gained with my spear.'
31. *tvāṃ divo duhitar yā ha devī pūrvāhūtau*  
 you of heaven daughter who ptc. goddess at early invocation  
*mahānā darśatā bhūḥ (RV 6.64.5, cited in Delbrück 1900:304)*  
 with might visible became  
 'You, O daughter of Heaven, who (are) a goddess, became visible at the early invocation with might.'

In Hittite the resumptive is absent most often in sentences where

the relativized noun is nominative, and where the resumptive would have been in the same case, that is, where the relativized noun could be construed with both the verb in the relative clause and the verb in the main clause (cf. examples (27) and (28)). according to Held (1957:24) the resumptive (and the sentence connective) may also be omitted if the resumptive would be the object of the main verb and if the 'relative sentence consists of very short clauses' (cf. example (29)). If the omission of resumptives in a different grammatical function from their coreferential nouns were extended to more complex sentences, this would provide a basis for the reinterpretation described above.

Viewed in this light, such Greek sentences as

32. eis dè hèn aphíkonto kómēn megálē ñn (X.A.4.4.2)  
 to ptc. which they came village large was  
 acc. acc.  
 'Which village they came to was large.'
33. hōn hoi theōi philōusin apothnēiskei néos  
 whom the gods love dies young  
 'Whom the gods love dies young.'

have the same structure as the Hittite examples (28) through (30): they contain preposed relative clauses but have no resumptive pronouns. The standard Greek grammars (eg. Kühner-Gerth 1904:413ff.) usually group together sentences of the structure of examples (32) and (33) with those of the structure of examples (25) and (26) under the label attractio inversa, that is, attraction of the 'head noun' into the case of the relative. These sentences, however, merely preserve the inherited Indo-European relative construction. The 'attraction' which they supposedly exhibit the inverse of is the attraction of the relative into the case of the head noun:

34. hópōs ésesthe ándres áxioi tēs eleutherías hēs  
 so that you will be men worthy of the freedom which  
 gen. gen. gen.  
 kéktēsthe (X.A.1.7.3, cited in Kühner-Gerth 1904:407)  
 you possess  
 'so that you will be men worthy of the freedom which you  
 possess.'

This type of attraction seems to be restricted to post-Homeric texts (see Kühner-Gerth 1904:406ff.). The fact that both types of 'attraction' are found after Homer can be viewed as evidence for a certain level of confusion as to the proper case function of the relative and the relativized noun. Such confusion can be explained as one result of the reinterpretation of relative clause structure described above.

Discussion to this point has concerned the structure of early Indo-European relative clauses and changes in that structure. Relevant to this paper, however, are not only the formal properties of relative clauses, but also their functions. Functionally,

relative clauses are traditionally divided into restrictive and nonrestrictive, that is, into relative clauses which define or delimit the relativized noun and those which simply add information about the relativized noun or move the narration forward. Three English examples will illustrate this difference; sentence (35) contains a restrictive relative clause, and sentences (36) and (37) contain nonrestrictive relative clauses:

35. They gave the medal to the runner who came in first.
36. They gave the medal to John, who came in first.
37. They gave the medal to John, who presented it to his mother.

Discussions of restrictive vs. nonrestrictive relative clauses are usually based on a consideration of postposed relative clauses. We propose that this distinction does not apply to preposed relative clauses of the type found in Hittite, Greek and Sanskrit; however, it seems that most preposed relative clauses in these languages can be translated into languages which do make this distinction (such as English) as restrictive relative clauses. That is, the purpose of the Indo-European preposed relative clause is to establish or delimit the topic of the main clause, not to add extraneous information about that topic, and obviously not to continue the narration beyond the information conveyed by the main clause. On the other hand, postposed relative clauses in Greek and Sanskrit could be either restrictive or nonrestrictive, though at least in writing this distinction was not usually formally marked.

The change in relative clause order from preposing to postposing, then, involved not only structural changes, but also changes in the functions of relative clauses. Both these factors are relevant to the use of demonstratives as relatives in Greek and Sanskrit. Structurally, the postposing of relative clauses changed the role of the relative word from that of a topicalizing adjective to that of an anaphoric pronoun, that is, it brought the function of the relative word much closer to that of endophoric demonstrative pronouns. It is significant that demonstrative pronouns are used as relatives in Greek and Sanskrit, which have postposed relative clauses with the inherited relative word, but not in Hittite. Presumably postposed relative clauses first became possible through inversion or reinterpretation, as proposed above, and this structural change entailed a functional change. After they became postposed, relative clauses no longer functioned to define or restrict the domain of the main clause topic; rather, they served to add information in some way about a preceding noun. The purpose of this information may have at first been to restrict the reference of that noun, but postposed relative clauses in the languages under consideration could also be used to simply say something more about a noun whose reference was already clear. It is significant that demonstratives in Greek and Sanskrit were used as relatives only in the latter, nonrestrictive function. That is, they were interpretable as relatives only after relative clauses came to be used nonrestrictively.

## Notes

<sup>1</sup>These pronouns are the standard third person anaphoric pronouns: Greek ho hē tó, Sanskrit sá sã tád. They typically occur in clause initial position. E. H. Sturtevant (1929:34-5) believed that ultimately they could be derived from a sequence of sentence connective and enclitic anaphoric pronoun, as in Old Hittite ta-aš 'and he' ta-an 'and him' etc., and that their connective function survived in their use as relatives in Homeric Greek.

<sup>2</sup>For Indo-European \*io- in Sanskrit, Jan Gonda (1954:13) has observed that 'Often the ya- clause when opening the sentence contains a central complex idea, the theme of the utterance ... . Or it may be said that the ya- clause constitutes an essential introductory part of the utterance, the succeeding demonstrative clause containing the expression of a correlate, a consequence, a new event of the same order etc.'

C. Justus (1976) makes a similar point regarding the use of ku-iš in Hittite. Referring to Hittite relative clauses containing an indefinite (new information) relativized noun, she says, 'those modifying a focus which becomes a subsequent theme locally use ku- to mark the initial occurrence of the shared noun phrase' (215), and later, 'In its clause, ku- singles out a noun as a center of attention which will have a role in subsequent part(s) of the construction' (235). Two notions here require comment. We would like to point out, first, that nominal modification is not an appropriate description of the function of Hittite and other early Indo-European preposed relative clauses. If anything, the relative clause might be said to contain a focus, but we do not understand how it could be said to modify anything. Second, although we agree that the \*k<sup>u</sup>i- marked noun in the relative clause is coreferential with the theme (or topic) of the next clause, we wonder whether it can always be said to be the focus of its own clause. Justus implies that these relative clauses in Hittite always contain new information relativized nouns; however, she does not discuss any examples in which the relative adjective follows the relativized noun, a construction which according to Held (1957:11ff.) marks the relativized noun as definite, and which outnumbers constructions of the type she does discuss, in which the relative adjective precedes the relativized noun, by eighteen to one.

If the resumptive pronoun is the topic of the postposed main clause (the main clause in a sentence containing a preposed relative clause), then main clauses in such sentences have a topic structure very similar to that of postposed nonrestrictive relative clauses. Each contains a topicalized pronoun referring back to the preceding clause -- though the pronoun in the postposed main clause refers back to a noun which was set up in advance, in the relative clause, just so that it could be referred back to, while the relative pronoun in a postposed nonrestrictive clause refers to a noun existing for independent reasons in the immediately preceding context. The similarity in the function of resumptive and relative pronouns no

doubt contributed to the use of demonstratives as relatives in the languages under consideration, since it was often the demonstrative pronoun which functioned as a resumptive.

<sup>3</sup>Parataxis has been used in at least two distinct meanings in the literature on Indo-European syntax (Delbrück 1900:416): on the one hand, it has been used to describe the simple juxtaposition of sentences, without formal marking of their relationship, and on the other, it has been used to describe syntactic patterns which give an impression of linearity and which favor full (coordinated) clause structures rather than participial or other reduced constructions. The second type is usually considered to be intermediate between the first type and full-blown hypotaxis, and it is also considered as evidence for the prior existence of the first type (see for example Porzig 1923 for this type of analysis of Vedic relatives). Although certain subordinated constructions must have had a paratactic origin (in the first sense), it is clear that others must have been marked as (inter)dependent from the earliest times. Aside from speculation about 'primitive languages', the principal reason for regarding paratactic constructions (in the second sense) as providing evidence for parataxis (in the first sense) has been the difficulties inherent in reconstructing morphologically consistent markers of (inter)dependence to proto-Indo-European. Thus, E. Hermann (1895) set up a list of twelve formal criteria for subordinate clauses in Indo-European languages and concluded that there was not sufficient evidence to reconstruct subordinate clauses to proto-Indo-European. Delbrück (1900:405ff.) and Meillet (1937: 373ff.), however, believed that relative clauses had to be reconstructed to proto-Indo-European despite the morphological difficulties.

<sup>4</sup>A. Minard (1936:42-58) has isolated a number of stylistic and rhetorical factors which account for the inversion of the 'diptyque' consisting of a clause containing yáthā, yátra, yadā, or yádi (all built on the relative stem) and a clause containing a ta-resumptive in Vedic prose. These factors can easily be extended to the relative proper.

<sup>5</sup>J. Haudry (1973:155) remarked for Latin that the insertion of a pause between the relativized noun and a following relative adjective in a preposed relative clause could have led to a resegmentation of the type described here, and that consequently the relationship between the relative and the correlative would be secondary, with the possible subsequent loss of the correlative. The resegmentation is better accounted for by our suggestion that these changes occurred in the opposite order: first, loss of the correlative, and then a reanalysis of clausal constituency, marked by a pause after the relativized noun.

<sup>6</sup>As is shown by this example and by example (30), enclitic pronouns and sentence particles (which normally occupy the second

position in the sentence, after the first tonic element) may be placed after sequences of noun plus \**i*o- in Indic and Greek, in spite of the fact that both elements in this sequence are accented. This peculiarity may also have played a role in the reanalysis of clause boundaries described here, since such a reanalysis would have as one result the normalization of enclitic placement in these sentences: # *Ń i*o- E ... #  $\Rightarrow$  # *Ń* # *i*o- E ... #. Example (30) is structurally ambiguous, since the relativized noun can function as an accusative object in either clause.

<sup>7</sup>E. A. Hahn (1949) examined 390 relative clauses in Hittite and pronounced approximately 80% (including all 43 of the early Hittite relative clauses in her sample) to be unquestionably restrictive. Of the remaining 79, she interpreted fourteen as unquestionably nonrestrictive. Of those fourteen, five (her examples 40, 41, 42, 77, and 78) seem to us better interpreted as restrictive, and the interpretation of one (76) is problematic. The remaining eight examples, where the relativized noun is a city or personal name, all come from different redactions of the same text, the Annals of Mursilis. Regarding these eight examples, Hahn says that only one could be (though need not be) viewed as a 'fully-developed' nonrestrictive relative clause. She remarks that 'it is a basic characteristic of the fully-developed non-restrictive relative clause that the antecedent [that is, the relativized noun] should stand not only before, but definitely outside, the clause' (354). That is, 'fully-developed' nonrestrictive relative clauses, as well as their use on any scale, would become possible in Indo-European languages only after relative clauses were postposed.

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