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# IDEAS ON THE TYPOLOGY OF PROTO-INDO-EUROPEAN

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## 1. The term "Proto-Indo-European"

The term Proto-Indo-European is currently used as a sort of synonym for the older concept of Indo-European as a set of linguistic features which could be reconstructed on the basis of both the Anatolian languages and the others traditionally used in reconstruction. It really applies to an earlier phase, prior to the development of Indo-Greek and other linguistic branches, a phase, albeit, with verbal and nominal inflexion in which there were still laryngeals. W.P. Lehmann, for example, in his well-known work *Proto-Indo-European Syntax* (1) uses the term to refer to a specific community of the Kurgan culture of around 3.000 B.C.

To my mind, this usage does not seem correct. Whilst no problem arises when translating the traditional *Urgermanisch* of German scholarship (2) for Proto-Germanic, the case in question is quite different, for extensive evidence exist which suggests that the earliest phase of Indo-European in any way available to us is a phase which was still non-flexional. Various languages preserve traces of uninflected forms in root-words such as the first terms of compounds, in diverse grammaticalized forms within the nominal, pronominal and verbal inflexions, and in adverbs and numerals. This non-flexional phase is presupposed both by those scholars like myself who have tried to reconstruct the origins of Indo-European inflexions on the strength of the theory of the adaptation or grammaticalization of various extensions (with certain exceptions), and by those who, like F. Specht and W.R. Schmalstieg (3), have preferred to work with agglutinated pronominal elements.

I am therefore of the opinion that a Proto-Indo-European (PIE) or an *Urindogermanisch* should be understood as a non-flexional Indo-European. In several papers of mine (4), I have already discussed "Preflexional Indo-European," as have several other scholars. It would not, however, seem adequate to me to draw a distinction between pre-flexional Indo-European and Proto-Indo-European, as has at times been suggested.(5) I believe that it is more practical to make both terms more or less synonymous. This is the sense in which I use the term Proto-Indo-European in this paper.

The term "Proto-Indo-European" is in any case wider than the term "Preflexional Indo-European." It is more or less equivalent to "Frühindogermanisch" or "Early Indo-European," as used by W. Meid.(6) This is not only because the linguistic type to which we refer naturally contains a series of elements apart from the lack of inflexion, but also because the development of inflexion was gradual, and because in the oldest phases of Indo-European available to us, there are traces of flexional

elements, although they do not yet correspond, or only very partially correspond, to the system of categories and functions of classical Indo-European.

It is to the typology of that type of Indo-European assumed by most scholars, but which is rarely an object of study in itself, perhaps through mistrust of our possibilities of reconstruction, that I should like to devote the following considerations. The latter are meant to specify and enlarge upon others which have appeared previously in the above-mentioned publications.

## 2. PIE in the light of the later development of IE.

A paper of such limited dimensions as the present one can hardly be expected to supply detailed arguments in favour of the reconstruction which it postulates. It must needs be based on the author's views, which have been presented in other works. On the other hand, these views are not only the present writer's but correspond by and large to widely-acknowledged (albeit not strictly generally-recognized) currents of thought. It is, therefore, first of all indispensable to give some idea of the presuppositions on which the typological conclusions I wish to expound are based.

This means giving some idea of what the gradual development of Indo-European was like. Certain points of view should be mentioned in this respect:

1. Historically, PIE or Indo-European I (the pre-flexional Indo-European we are concerned with here) was followed by a monothematic flexional Indo-European preserved in the Anatolian languages and in diverse "fossils" outside the latter (Indo-European or IE II). Only at a later stage (Indo-European or IE III) was polythematic inflexion to be introduced, that is, the opposition of the masculine and feminine adjective, of the degrees of comparison in the adjective, of the tenses and moods in the verb. Within this stage, there would be a group, stage IIIa or Indo-Greek, which would have taken this tendency the furthest by elaborating the most coherent polythematic system without lacunae, whilst IIIb (Northern Indo-European) was not affected by certain developments and reduced the verb stems to two.

This staggered view of the history of Indo-European, based on the recognition of the archaic nature of Hittite, has been discussed by me in various articles and books from 1961 onwards.(7) With certain variants, the thesis of the archaic nature of Hittite has been accepted by authors such as Kerns-Schwarz, W.P. Lehmann, W. Meid, W. Cowgill, O. Carruba, E. Neu, W.R. Schmalstieg, W.P. Schmid and B. Rosenkranz.(8)

However, agreement among different linguists on this point, as well as other speculations on the origin of inflexion, such as those of Kuryłowicz, have not so far produced any explicit, generally accepted doctrine about the earlier phase—that of pre-flexional Indo-European or Proto-Indo-European. The most widespread doctrine, to be sure, is Benveniste's theory of the root (9), although it is also subject to dispute.

Such a doctrine is obviously based on too partial and insufficient data to establish a typology.

2. However that may be, this same chronological staggering of Indo-European II between I and III gives greater validity to the data which may be found for the reconstruction of the earliest Indo-European. If, as I believe, these ideas are correct, one should discard the existence in Proto-Indo-European of categories and functions such as the masculine and the feminine, the dual, the degrees of comparison, the moods of the verb (except for the indicative and the imperative), the aspects. This automatically entails that the values of certain suffixes, desinences and vocalic alternations must be considered as recent—more specifically, the long vowels *ē* and *ō* should be discarded from the older system. There is still more however. Hittite inflexion displays a high degree of defectiveness that shows its recent nature and its incomplete development. As is well known, number is frequently not marked in nominal inflexion, neither are the Nom. and Gen. singular, nor the noun and the adjective, nor the 2nd and 3rd pers. singular in the verb, among other things. All these factors point to the recent creation of these categories and oppositions. On the other hand, in Hittite, certain elements from Proto-Indo-European such as the laryngeals or various kinds of agglutination in as yet non-inflected oppositions in the pronouns, are on the decline and only partially represented (but in any case to a far greater extent than in the other languages). The same thing happens with heteroclysis in the noun. Conversely, certain very frequent and lively resources of Indo-European III, such as vocalic alternations (to be precise, the morphological use of the *e/o/∅* opposition), appear only in a very reduced form in Hittite.

All this leads one to think that the development of Indo-European morphology was gradual: its culmination, as I have said, is to be found in the Indo-Greek group.<sup>(10)</sup> Having related the staggered evolution of Indo-European to which I refer with new archeological findings, I have attributed the three stages of Indo-European: I (=PIE), II and III to different waves of Indo-European invaders, the earliest of which dates from the 5th millennium.<sup>(11)</sup> But these renewed invasions from East to West, which were doubtless far more complex than a simple system in three stages, and which involved settlement of people in territories which were already partially Indo-Europeanized, brought with them a more or less developed Indo-European, based on a linguistic stage similar to that of earlier invaders.

We cannot really establish any clear-cut or definite divisions. There is no exact point at which we could consider non-flexional Indo-European to be over. The Proto-Indo-European available to us certainly already showed some of the flexional elements, which characterize later stages.

3. Defectiveness of categories and functions in Hittite is not the only fact that sheds light on PIE. There are data common to Anatolian and the other languages which it would seem logical to extend to Proto-Indo-European. An archaism may be preserved in one way or another everywhere and may

crop up here and there; and a correspondence of forms where there is a divergence in functions usually betrays the recent nature of those functions which were created by the grammaticalization of the previous forms.

This does not merely refer to the above-mentioned fact that in all or practically all the Indo-European languages, traces can be found of older root-words, or, in any case, of pure stems without inflexion which only became defined secondarily, within the new systems created; they became singular nominatives, singular locatives, 2nd pers. imperatives, singular or plural accusatives of the personal pronouns, etc. It also points to such facts as the following:

a) As I have indicated elsewhere, the multiplicity of functions of the *-s-* or the *-ē-* or the *-ā-* or the stem vowel (among other formants) clearly shows that their use to differentiate such categories as the present and aorist, the indicative and subjunctive, the masculine and feminine, is secondary, as the categories involved belong to IE III and are also certainly secondary. But it so happens that the same thing occurs with other forms from IE II. For oppositions of the *-ti/-t* type to contrast present/preterite, represents a recent phenomenon: there are all kinds of examples of secondary desinences used as primary ones. The use of a "stem" vowel *-e/Ø* to mark the middle voice is likewise an innovation, for, in other instances, the same vowel is used in the active voice or in forms such as the old perfect in *a < -H<sub>2</sub>o*, which was ascribed to the middle voice only secondarily.<sup>(12)</sup> In other words, all this gives us a series of clues to see how the inflexion of IE II was created from inflexional elements which were previously undifferentiated. This must needs have been a gradual phenomenon and one which began within PIE.

b) On the other hand, certain developments appear in IE II and also, in IE III, although on the decline in the latter, which would be logically considered to come from IE I or PIE. For example, the habit of systematically opposing two verbs, considering one of them as derived or as a deverbative, is surely at the root of the later development which consisted of opposing several stems within one and the same verb.<sup>(13)</sup> What is remarkable is that we cannot construct an exact model from which everything may have derived: *-s-*, *-sk-*, forms with *-H<sup>i</sup>*, are all used with different meanings according to the different languages; and in the historic era the whole system is on the decline, except for Tocharian and Indo-Iranian. It seems that an old system of "coupling" of verbs, which was purely lexical at the beginning, was very freely imitated all over. Or consider the system which consists of placing the determiner before the referent, which has been discussed by Lehmann (14); this must have appeared chronologically before the morphological specification of the modifiers (whether nouns in apposition, nouns in the genitive, adjectives, or recently created sentences). That is, it came from PIE. For if the latter lacked inflexion, determination must have been expressed in some way, doubtless through word-order although it might be postulated (see below) that a determining formant existed which was as yet undifferentiated from the adjective/genitive apposition.

On the strength of these and other considerations such as those referring

to the mechanisms of grammaticalization for extensions, on the basis of various features referring to the evolution of certain phonemes such as the laryngeals, one may draw certain conclusions with regard to the stage of linguistic development with which we are dealing here.

It is quite clear that one's conclusions may vary to a certain extent according to the positions adopted as to the points of reference. For if, as seems highly plausible, the suffixes and endings, except for well-known exceptions, generally came from grammaticalizations of former extensions, one may therefore suppose, for example, that there could be alternance in PIE of a pure root *R* in nominal function and two extended forms of the same *R-m*, *R-s*, which would then be grammaticalized as Acc. and Nom. respectively. One might even extend to the phase the beginnings of grammaticalization, and so on analogously in the verb. On the other hand, if *-s* and *-a* are pronominal elements which were added secondarily with the clear aim of case differentiation, things will be quite different. In the same way, our view of PIE will not be the same if the perfect is considered as having been derived from a noun (an idea of Kuryłowicz's and Watkins', among others), as if nouns and verbs in general are considered as two different functional values of the same roots, with the intervention of a formal differentiation which might have operated from PIE, etc., etc.

Even so, there will still be a series of consequences, in any case, for the typology of PIE. More than anything else, this is a matter of shades of meaning. The same may be said of the influence of the laryngeal theory adopted for the description of PIE. For example, if the theory of the existence of six laryngeals (three with a labial appendix and three with a palatal one) is adopted, not only will certain nominal and verbal stems in *-ā* and *-ē* show themselves to be archaic root-words or analogous structures along the same model, but also forms in *-āu*, *-ōu*, *-ēu*, *-ā*, *-ī* and others, sometimes alternating with the former forms without *-i* or *-u*. Other versions of the laryngeal theory simply yield a lower number of such root-words.

Thus, our view of PIE may be more or less detailed and may present different shades of meaning. But I feel there are certain general principles which may be taken for granted. I am going to work, with all due caution, mainly with the latter without considering other more problematic aspects of the question. On the other hand, it is quite clear that the chronological depth of PIE as we conceive it is impossible to specify. PIE is also doubtless full of dialectal differences which are by no means easy to pinpoint. For this reason, we take the risk that the picture given here may be considered rather as a diasystem than as a system in the strict sense of the word, that is, as a well-defined language.

To give a couple of examples: the so-called disyllabic roots are certainly the result of an extension with a laryngeal (16), that is, they were only felt to be morphological units at a relatively recent date; and this differentiation was marked at a given moment by a special formal marker, apart from word-order (see below), this marker must needs have been a secondary

development.

### 3. Typological features of IE II and III.

As far as its morphosyntax is concerned, the Indo-European known to us as from stage II, could definitely be defined in general terms by a series of typological characteristics which would basically be the following:

1. The whole system of IE II and III is dominated by the word, which is habitually inflected—whether it consists of a root (root-word) or a root plus other elements added to it to make up the word; a second root, lengthenings, suffixes, vocalic alternances, characteristic accent placings.

2. The above-mentioned elements characterize the four classes of inflecting words: noun, adjective, pronoun and verb, as likewise a series of sub-classes of same. In general terms, there is formal differentiation.

3. The words are incorporated into the systems of categories and functions by means of endings, vocalic alternation and characteristic placement of the accent; word-order plays a highly unimportant part. This characterization applies to both IE II and III, but one should add for the latter the definition of categories and functions by means of opposition of stems. Although there is also generally formal differentiation to this respect, there nevertheless exists a high degree of defectiveness and there are instances of syncretism, amalgams, redundancy and the purely proportional definition of the forms.

4. IE II had the opposition of gender (animate/inanimate), of case (highly defective and variable, without reaching the stage of 8), and number (sing./plur.) in the noun, adjective and pronoun (also in the participle); of number (sing./plur.), person, voice (active/middle) and tense (pres./pret.) in the verb. IE III added a more complex case system, the dual (only in certain languages), the future (id.), aspect and the moods (id.).

5. Together with inflecting words, IE II and III kept a series of non-inflecting words. Except for the numerals from 5 onwards, these are words with deictic, adverbial or sentential value which are organized into more or less defined classes.

6. The use of word-compounding and agglutination in general is somewhat scant, operating differently for nouns, the pronoun and the verb: this is one more device for differentiating these forms and for marking certain categories (the present tense by *-i*, the preterite by augment in Indo-Greek, aspect by the pre-verbs, probably the plural by means of the final *-i* in the nominative of nouns and thematic pronouns, etc.).

7. There is no systematic opposition of stem and non-stem forms, neither, in general, are there unique morphological characteristics (there is a good deal of allomorphy).

8. Sentences of several kinds (affirmative, expressing commands, interrogative, exclamative) are opposed by means of several devices (particles, verbal forms, word-order, intonation). All these sentences cover two classes: the predicative sentences and the nominal ones. The former, save exceptions, tend to have two constituents; the latter invariably so, with the verb habitually missing. There are no traces of a system of subordination

which goes back to IE II; this was created later by different branches and languages.

9. Some old pure stems (vocative and imperative) have been morphologized and have an impressive value. There are others which perform the same function secondarily.

To sum up, IE II and III relate a series of inflecting words within the syntagm and the simple sentence; these inflected forms are organized into classes and sub-classes and carry within themselves the markers of their relationships, being almost invariably headed by the semantic morpheme followed by the grammatical one (sometimes, the function of one morpheme extends into another, however). The invariable words are a secondary support to this system and are less clearly organized. Grammatical morphemes usually lack autonomy and independence, roots may be clear semantically.

Generalizations like these can not always be accurate, of course. An adjective may be formally identical to a noun and may only be differentiated by distribution. There are even formally identical nominal and verbal forms (a vocative and a thematic imperative, for example), etc. There are sentences consisting of one constituent. These and other data, such as the one mentioned above with regard to the order of determiner and referent, are really a legacy from IE I or PIE.

Another problem which arises immediately when discussing the typology of PIE, and which really crops up in any typological study, is whether the existence of the morphosyntactic system presupposes that of the phonological system, and vice-versa. Many opinions have been put forward on this issue. As far as IE I and II are concerned, a few points may be noted, for example:

The existence of four phonemes  $\check{e}$ ,  $\check{o}$ ,  $e$ ,  $o$  is closely related to the system of alternation, used to differentiate grammatical oppositions, classes and sub-classes of words, even the words themselves. However, certain problems exist: there is a far more restricted use of the system in IE II than III, and the system is particularly obscured by the evolution of the laryngeals. Likewise, the system of the sonants, with their possibilities of occupying open position (vocalic) or closed position (consonantic) in the syllable, is related to the same morphological data. But one should observe that, even at the point of greatest development, the system of alternation never became anything more than a subsidiary one, as a morphological tool used for extensions, suffixation, etc. The same may be said of the variability of accent placement, which is also related to morphological data.

As far as the consonants are concerned, it should be said that neither the  $-s$  nor the stops are morphologically systematized. The  $-m$ ,  $-s$  and  $-t$  are the phonemes of widest morphological use, but this use is different in the noun and the verb, even when (as in the case of number) it could be the same. The role of complex IE stops (which present certain problems of their own) and only one fricative ( $s$ ) within IE morphology is not at all clear. And if certain combinations of phonemes do not occur in the roots, this is an

archaism in IE II and III which comes from PIE, which also needs further clarification.

Having discussed these preliminaries, we may now go on to the central question of this essay.

#### 4. Typology of PIE: Phonological System.

As an introduction, I have a few things to say about the phonological aspect of the system. I will not go into details here as regards the *s* or the earlier inventory of stops, except to point out that the voiceless aspirates do not belong to PIE, while the use of gemination for expressive purposes should be attributed to it by virtue of the fact that it exists in all the derived languages. I will not touch on the problem of dating the voiced aspirates and the labiovelars, although I will point out the extremely scant morphological use of each, which rather seems to support the idea of their recent origin. These are really problems which affect IE II and III as well as PIE.

On the other hand, the important but varied morphological function of the *s* and the *t* in IE II and III very probably dates back to PIE (see below). And of course, attention should be drawn to the distributional restrictions on the stops and *s* (and on consonants in general) in the IE root. (18)

The system of vowels and sonants, including the laryngeals, is of great interest on account of its connection with morphology. If we leave aside the vowels whose timbre or lengthening was due to a laryngeal in IE II and/or III, as well as those vowels which come from the vocalization of sonants and laryngeals, and those vowels which develop before a consonant, a sonant or in medial position, etc., then the range of vowels which is left in PIE is quite reduced. It really consists of the sole vowels *e* and *o*, without any relevant phonological difference in quantity.

The phoneme *a*, which has so often been said to be non-Indo-European or not belonging to the normal system of Indo-European, plays no morphological role and cannot be reconstructed (if, I repeat, one leaves aside forms of secondary origin), except in pronominal and adverbial forms which, curiously enough, belong to a separate system (see below). It is not even certain that the expressive and demotic *a* discussed by Meillet (19) should be accepted, nor its status as a loan, put forward by Kuryłowicz. (20)

As far as the *e* and the *o* are concerned, as long as their quantity is not due to a laryngeal, they almost always appear in forms with *vṛddhi*, perfects and deverbatives typical of IE III: there are no data on their presence in IE II. This implies that the *e*, *o* which we reconstruct as short vowels were not actually short in the era in which there was no opposition between short and long *ē*, *ō*. Doubtless, the fluctuation of quantity, formerly non-phonological, was used to morphological ends: to distinguish the nominative singular from the vocative in consonantal stems, the nominative plural from the singular in stem inflexion, etc. It is quite plausible that it was precisely the creation of long vowels on the basis of the group Vowel + Laryngeal which brought about the split of the older vowels into short and long ones.

Such a conclusion cannot be drawn with regard to the opposition of timbres *e/o*, however. For, although it is true that this opposition was used extensively to express morphological oppositions of IE III (oppositions of case in the noun, person in the verb, etc.), it must also have been used at an earlier date to denote other older distinctions.

The existence of one sole vowel has at times been postulated for older Indo-European, for example, by C. Hj. Borgström.(21) But this would seem highly improbable, at least in the period for which we have evidence. If we leave aside general criticism such as that of Jacobson (22), we can accept the premise put forward in two important articles, one by Hilmarsson (23) and another by J. Kuryłowicz (24), which firmly established that the starting-point for the *e/o* alternation lies in the previous existence of both vowels. I believe that this should be maintained as a firm contribution, whatever the hypothesis one supports for the later development of apophony with morphological functions.

In effect, Indo-European forms exist with non-apophonic *o*, which must go back to PIE (25), as likewise others with *e*. But certain apophonic, or rather, morphological uses should be attributed to PIE. This applies not merely to *e/o*, but also to their zero (=  $\emptyset$ ) degree.

The *e/o/∅* alternation was maximally exploited in IE III, as is well-known. Authors disagree about how the process of spreading of apophony came about; they are not certain whether the accent of neighbouring phonemes was the decisive factor or whether morphology was more important. In any case, this apophony is not lacking in IE II, and even extends back to PIE times.

Such oppositions must have been used in PIE, at least in the later stages, to formally characterize already-existing functional or semantic differences: that of the verb and the noun; that of heteroclitic noun forms of this latter with *-r/-n*; that of two verbs in a "deverbative" relationship (26); perhaps that of *-e* in the 2nd and 3rd sing. of the indicative and of the imperative as against more general *-o*; that of certain sub-classes in the noun; the *o* in the second term of a compound, etc. This use of apophony in Anatolian could quite well come from PIE, and the same may be said of certain zero grade forms of the type of Hitt. *aiš/iššaš* "mouth," *tekan/tagnaš* "earth," *pir/parnaš* "house." In these cases, there was similar treatment of the root  $\emptyset$ -grade and the accent of the ending (to judge from data from IE III, which are doubtless old).

It is precisely this other point which deserves mention: the existence, extending back to PIE, of a free pitch accent which was used to achieve both lexical and grammatical oppositions. For example, the final accent we are discussing belongs not only to the genitive of the noun, but also to the adjective in general. This points to an older function than the two derived ones of genitive and adjectives.(27) Doubtless, this means a purely determining function which could be expressed by means of various resources: a final *-s* common to both genitive and adjective, final accent, word-order which placed the determiner first, as we stated above when we

quoted Lehmann. However, these conclusions concerning the accent need to be specified: when the referent is a personal verb, it would seem that the older usage is the non-accented, enclitic one, the verb being supported by the tonic determiner which precedes it.(28) One should also add certain archaic uses, apart from those of the accent, for example, the retraction of the accent in the impressive-expressive use of the noun (later, vocative).

To return from this digression on the accent, and continue our analysis of morphosyntax, we shall now go on to discuss the sonants, including the laryngeals. To my mind, one should attribute to the oldest phase of IE, the following:

a) The six traditional sonants, (28\*)  $r$ ,  $l$ ,  $n$ ,  $m$ ,  $i$ ,  $u$ , with their different possibilities of syllabification. Thus, one should note how  $i$ ,  $u$  are frequent in pronominal-adverbial roots (enclitic  $-i$ ,  $-u$ , pronominal roots  $teye-$ ,  $eje-$ , etc.), while they seldom appear in nominal-verbal ones. I have, in any case, pointed out examples such as  $ei-$  "to go,"  $trei-$  "three,"  $lei-k-$  "to leave," in which the non-presence of alternant forms with a long vowel is proof that we are not faced with derivatives of  $H^l$  (or  $H^h$ ). There are also other examples with  $-i$ ,  $-u$  in roots expanded precisely with laryngeals. However, original  $i$  and  $u$  have no morphological usage in PIE (In IE there is scant usage of them:  $-i$  in Nom. plur.,  $-u$  in Imperative, etc.). As far as  $r$ ,  $l$ ,  $n$  and  $m$  are concerned, these are frequently used in the noun and adjective to form stems; in the verb only  $n$  is used at this level. In the system of endings, the noun takes  $m$ , the verb  $m$  and  $r$ , but there is doubt as to the antiquity of the phenomenon.

An interesting problem is determining at which moment forms with a supporting vowel  $o$ ,  $r$ , etc., began to be used alongside  $r$ ,  $l$ ,  $n$ ,  $m$ , which are the basis of later vocalizations. There are traces of these everywhere, even in Indo-Iranian,(29) and it is becoming clearer and clearer that the fixing of the accent in the various languages was secondary.(30) I believe that this should be interpreted to mean that the supporting vowels were already occasionally found in PIE, depending on the various possibilities of syllabification, the tempo of articulation, etc. I would also say the same for the highly plausible earlier existence of doublets  $i/i$ ,  $u/uu$ . Nevertheless, cases in which  $i$  and  $u$  come from a laryngeal are clearer. At any rate, one should note that the zero grade forms which condition these phonetic realizations must still have been rare in PIE: full development of these and of the  $e/o$  apophony is tied up with the morphological innovations of IE II and, above all, III.

b) With regard to the laryngeals, if we attribute the occasional loss of these phonemes to IE II (and the total loss to III), we can perhaps postulate their full preservation in PIE with the forms  $H_1^l$ ,  $H_2^l$ ,  $H_3^l$ ,  $H_1^h$ ,  $H_2^h$ ,  $H_3^h$ . However, the loss of the appendices at the beginning of words, which we postulated for IE II, may well come from PIE. In this case, the resulting laryngeal  $H$  (really  $H_1$ ,  $H_2$ , and  $H_3$ ) had a demarcating value, as its presence (with certain exceptions in groups with consonants) indicated the beginning of a word. On the other hand, the laryngeals (in this case, with preservation of the

appendix) played an important part at the end of disyllabic roots, in which they originally represented an extension, almost always after a sonant. On the other hand, no morphological value can be attributed to them in PIE; only later would these phonemes or their reflexes come to denote diverse verbal and nominal forms. We cannot, in effect, speak of a 1st sing., a middle voice, a perfect, a preterite, a neuter plural, etc., marked by laryngeals in PIE. At the most, they would constitute the endings of certain pure stems (extended root-words).

The following point is quite remarkable: no traces of laryngeals are to be found in the pronominal-adverbial roots. This is one more datum on the phonetic differences between these roots and the nominal-verbal ones.

Like the sonants, laryngeals must have had variant forms for use in connection with syllabification, and this special realization of laryngeals must have gone back to PIE; not only must they have been occasionally pronounced with supporting vowels (which were later to produce full vowels of diverse timbres), but also on occasion with gemination. Abundant traces of this are to be found in Anatolian and the rest of Indo-European.

Thus, Proto-Indo-European should definitely be considered as a language with a fairly complete system of stops (although, most certainly, less than later IE, this being currently under investigation), to which an *s* and a series of sonants *l*, *r*, *n*, *m*, which were habitually consonantal, and another series of six—also habitually consonantal—laryngeals were added. The vocalic element was supplied by the *e* and the *o*, the *a* present in the pronominal-adverbial roots and the supporting vowels which had arisen above all in the context of the sonants and laryngeals, but only as phonetic realizations in certain syllabifications, and without any phonological value. The sonants included *i* and *u* (most frequent in the above-mentioned roots), as well as the above-mentioned sonants and laryngeals in their secondary vocalized form, due to morphological exigencies.

PIE is therefore a language with a highly developed consonantal system and a much less developed vocalic one, which was extended thanks to the secondary vocalic use of certain consonants used habitually for morphological ends and for those of lexical differentiation. It added a free and distinctive pitch accent, both for lexical and grammatical purposes.

It has become clear that during the last phases of PIE, a tendency toward a better balance between the consonantal and vocalic components of the phonological system had developed, and that an intermediate one, that of the sonants in various syllabic functions, had begun to arise. Furthermore, there was an increasingly wider use of the vocalic and sonantic elements (and of accent) in the flexional morphology being created. This tendency culminated in IE II and in III, although from a given moment onwards, the notion of the unity of the sonants was shattered, and there was a return to a generalized opposition between vowels and consonants.

In PIE, the use of these phonemes had been quite different. In the first place, there was a clear distinction between nominal-verbal roots and pronominal-adverbial ones. The consonantal system of each was

substantially the same, although voiced aspirates are rare in the latter. The designation "consonantal" here refers to *l, r, n, m*, as well. However, in the pronominal-adverbial roots, *i, u* and *a* are more frequent (they are practically absent from the nominal-verbal ones), while, on the other hand, the laryngeals are missing.

In addition, the two types of root have different functions and distributions of the phonemes. Only the nominal-verbal ones use the alternance of the *e/o/Ø* type, and even this is poorly represented. The nominal-verbal roots also have distributional constraints which are lacking in the others; they possess a monosyllabic type and another disyllabic type with *Schwebeablaut* which is typical of them, and they use laryngeals as demarcators. Their sub-classes also use similar procedures as well as accent placement to differentiate themselves. And it is probable that the expansions which they add, above all *-s, -m* and *-t*, may have already taken on certain morphological values which we shall discuss later. The pronominal-adverbial roots do not seem to oppose *e* and *o* (nor *a*) grammatically and sometimes display a full/full grade (*eme*, etc.) without *Schwebeablaut*. Neither do they seem to subdivide into clearly defined sub-classes (the opposition of adverb and preposition, of adverb and pronoun, of adverb and particle appear, insofar as they occur, to belong to IE II). Apart from the above-mentioned features, these roots are phonologically characterized by other means which oppose emphatic and non-emphatic variants, "expressive" differences of quantity (*nū/nũ, de/dē*), alternances between accented and non-accented disyllabic and monosyllabic forms (*emé/me*), and gemination of consonants.

##### 5. The typology of PIE: the morphosyntactic system.

It is quite clear that PIE is a language which functions on the strength of root-words in which word and morpheme are equivalent and which, in principle, lack inflexional elements. As we have already said, these root-words are divided into two sub-classes which possess a partly different structure and partly different phonological elements.

We have already discussed these phonological elements; we have also discussed the structure, but shall add a few points. With regard to the nominal-verbal roots, it was Benveniste's *Origines de la formation des noms en indo-européen* which laid the foundation for study and interpretation of the nominal-verbal roots. This fundamental theory has often been discussed. I myself have suggested that, however many secondary analogous extensions there may have been, the early existence of not only forms of the *(C)VS* type, but also of the *CSVC* and *(C)VSC* types should be postulated.<sup>(31)</sup> Still, many forms of these latter types are obviously secondary: those which add a consonant after *i* (there are no *CVI* roots) and those which add *-eH*. This means that the inventory of nominal-verbal root-words must have increased with time.

On the other hand, these root-words undergo extensions, not in principle different to those which turned monosyllabic roots into disyllabic ones.

When we find *tr-em*, *tr-es*, *tr-ep*, etc., alongside *ter* "to tremble," or *welp-*, *weld-*, etc., alongside *wel* "to hope," what we are actually observing is an expansion which takes on either a lexical or a semantic value, developing according to the changing value of the oppositions, as we have already stated for *-e*, *-H<sub>1</sub>*, *-s*, etc.

The differences between nominal-verbal words and the pronominal-adverbial ones is evident not only in the above-mentioned phonological features, but also in morphological ones: the existence of full/full grade forms (of the type of Lat. *ille*, O.Slav. *onŭ*, Gr. \**εκε-ενο* > *ἐκεῖνος*, and so on), frequent agglutinations (which is a very different thing from extensions). But above all, they differ in semantic value from the nominal-verbal roots, for these pronominal-adverbial roots display values which one might call deictic: values of locational or temporal positioning, of restriction, connection, etc.

IE II and III to a large extent obliterated this fundamental division when they incorporated roots from both origins into their non-inflecting forms, and when they began to inflect many pronominal-adverbial roots like pronouns. But the difference is fundamental in PIE. Its syntax, in effect is based on (a) the relationship of words from both classes and (b) the relationship, within this scheme, of the nominal-verbal words among themselves.

At times, words from class II (pronominal-adverbial ones) are agglutinated to those from I (nominal-verbal ones). I have already given examples in which *-i* creates a plural or a present tense, *-u* an imperative, although it is doubtful that this procedure goes back to PIE. In any case, the use of class II words as determiners, not only of class I words, but also of sentences, is very old, and has at times led to secondary agglutination (cf. preverb plus verb).

Even without agglutination, certain pronominal roots placed next to other nominal-verbal ones, characterize the latter as verbs without further marking, and are used to define person and number more precisely. The forms are what were to become the personal pronouns. The same process must have occurred at an earlier stage with the noun when it was placed next to a quantifier. Other roots, which later became demonstratives, indefinite pronouns, etc., also define words as nouns. Furthermore, if we are guided by Anatolian, which, together with Celtic, best preserves the particles belonging to the old class of words discussed here, then we can assume that such roots were used as phrase initiators, direction indicators, modals, negatives, and emphatic words.(32) They not only differentiated nouns and verbs, but also introduced classifications and differences in emphasis within both nouns and verbs, helped define the connection of all the words in the phrase, and added information about the very nature of the sentence (interrogative, negative, etc.).(33)

But beneath this large general division there are sub-classifications of both groups, whether lexical or functional. Both may or may not be formally marked at the word level, by segmental or other markers.

The relationship between the words of class I (the nominal-verbal class) is sometimes of the determining type and sometimes predicative. A nominal/verbal opposition (and within the former, a nominal/adjectival one) is set up as are other internal and subordinate ones. Sub-classes of words are created which are to a large extent the basis of later categories and functions. In order to establish all this, PIE possessed other resources than those derived from combining classes I and II. The same may be said for the establishment of types and classes of sentences and for the syntagmatic relationships between them.

The difference between the noun and the verb is basically functional, but it is supported by the fact that there are some forms which could not by any means be verbs (*ped-* "foot," *kuon-* "dog," etc.) and others which could under no circumstances be nouns (*ei-* "to go," *H<sub>2</sub>eg-* "to lead," etc.). Sometimes, defining features are added directly: the verb may be enclitic, certain extensions may pertain to one or another of the two classes, only certain nominal-verbal roots may be combined, etc. There are also indirect features: the verb can take two "actants," the determiner of the noun or the verb is a noun (or adjective) etc. Gradually, other markers must have been introduced, such as that which opposes verbal *e* and nominal *o* (*pher-* "to take" / *phor-* "thief").

The possibility of relationship or non-relationship between a verb and a noun (subject or complement) is subject to a series of conditions. Both noun and verb can take determiners: in principle, the noun can take only one and, the verb as many as two. There are, however, nouns which are not suitable for the role of subjects (inanimate) and verbs which are not apt to take a complement (intransitive). This leads us to another point: that of the creation of verb and noun sub-classes, functionally conditioned and, from a certain moment onwards, formalized. I shall return to this later.

As I have stated above, the noun determiner precedes its referent in PIE.(34) It can either form a word with it or not. When it does not, it may well be seen as a precedent of the genitive and the adjective, both of which preserve common features (frequently, the ending in *-s* and an oxytonic nature), and both of which are at times difficult to distinguish (or are indeed indistinguishable)(35) and are used interchangeably.(36)

It is worth noting that the endings of the genitive, *-s* and *-m*, are the same as those which characterize the nominative and accusative. In other papers of mine, I have stated that this coincidence may be explained from a value of *-m* and *-s* in PIE as determiners either of the noun or the verb. With nouns, they would either yield a genitive or (later), an adjective, and would be distributed thus: *-s* for the gen. sing., *-m* for the plural, although Hittite data (and even the gen. sing. *-w* from Cyprian) prove that the distribution is secondary. With verbs, they would produce the nominative and the accusative respectively, as the verb has two determiners of "actants." Of course, the determiner could also take the characteristic  $\emptyset$ , as it would have for certain verb forms and for neuters in the accusative. (There was no problem of ambiguity, for these inanimates

in principle had no nominative.) Genitives identical to the nominative in the noun (cf. the second Hittite declension) would also have been created.

If this is true, one may postulate that from PIE on, this extension of the noun had, so to speak, become converted into an ending which redundantly indicated the determining of the noun and, not so redundantly, the two (actants) of the verb. It is clear that the verb was usually determined by a preceding noun (the future accusative), but determining the word order of the subject is more problematic, since it could be unexpressed or expressed by a highly specialized pronominal form.

This is the schema of Indo-European determination, which also included other roots, as we have seen—either nominal-verbal ones or pronominal-adverbial ones. It gravitates around the axis of two sentence types: noun-verb and noun-noun (or adjective). The use of pauses and pitch probably differentiated the latter type of noun phrase. It also distinguished the exclamative or one-member impressive forms (vocative and imperative), and marked the differences between various types of sentences by means of particles, word-order and intonational curves.

Furthermore, although the noun/adjective apposition was most plausibly not a feature of PIE, there must have been sub-classes of the noun class. We have really already pointed out the inability of certain nouns (the inanimates) to function as subjects of the verb. It is remarkable that, while all nouns, insofar as semantics allows, may be noun determiners or determiner-complements of the verb, a large number of them cannot be subject-determiners of the verb. This purely functional sub-class is fundamental to the creation of a grammatical opposition, that of nom./acc. The sub-class of words which admit the function of subject must not originally have any formal characterization. Any accusative could consist of the pure root alone; thus, the neuters, like the subjects remained unmarked in this early period. When, at a later date, any word could become a subject (at which time the concept of subject was radically changed), the inanimates adopted the same form as the accusative for this purpose. By this indirect means, the *-s*-extended forms became the nominative and those extended by *m* became the accusative, while in both cases pure root forms were left with a secondary distribution.(37) These developments characterize IE II.

That is to say, gender originated as a sub-class of the nouns. It was the verb, on the other hand, which, introduced a distinction between the determiners (between the genitive on the one hand and the nominative and accusative on the other) to distinguish its two "actants." There is evidence

which leads us to think that this outline of the case system (as likewise of the vocative) was already formally marked in PIE, while the outline of the gender system was not.

Some nouns were not suitable to be subjects of verbs, just as some verbs could not take complements and/or a subject (the meteorological verbs, for example). The functions of the verb would have been constrained in certain "lists" of nouns. The noun/verb opposition was not so radical as it was to be later. The verb without a subject (i.e. the one-member sentence) must have been an extremely frequent phenomenon; such sentences would still have included a pronominal word. On the other hand, noun-determination by a noun or adjective in the nominal sentence is not so totally different from the determination of the subject by the complement by means of the verb: the nominal predicate performs the function of the verbal predicate.

The creation of a complex (later even more complex) system of cases on the basis of the concept of determination and of the gender system (also completed later) on the strength of noun sub-classes, are phenomena which were to a certain extent predicted, though not realized, in PIE.(38) The same is true for the creation of the number oppositions, which also must have had sub-classes since traces were later to be found in *pluralia* and *singularia tantum* and even in the neuter plurals in *a* and *-a*. Plurality as a category did not come into being until a singular and a plural of the same word could be opposed (and the same is true for gender, in which the adjective acted as a catalyzer). It was apparently the combination of the pronominal-adverbial words and the numerals that set up the necessary conditions for the numeral opposition to be created at a later stage, an opposition which was formalized either by means of recent topicalizations (sing. *-s* / plur. *-es*, sing. *-es*, plur. *-es*) or by adverbial additions (sing. *-es* / plur. *es*). The same happened in the verb, in which the future personal pronouns had different forms, from early times, for the singular and the plural. But pluralization in the verb also appears highly secondary.(39)

On the other hand, it is possible that an opposition within the verb, between a 1st and a 2nd/3rd person, goes back to PIE: the first person had either an *-m* or pure stems (the spread of forms with a laryngeal must be considered as recent) and the 2nd/3rd had either *-s* or *-t*. The older non-differentiation of 2nd and 3rd pers. is a well-known fact, on which there is no need to quote bibliography: the difference arises if one starts, as I do, with grammaticalized extensions, or, as others such as Schmalstieg (40) do, with agglutinated pronominal forms. In any case, it is quite clear that the verb and the noun could use the same extensions with different functions (although they also use other different ones). The fact that Anatolia and the rest of Indo-European show the same developments, and that the *-m* and *-s* were already grammaticalized in PIE, implies a parallel grammaticalization in the verb.

Finally, the phenomenon of "coupling" of two verbs using independent though partially similar formal features, is general throughout Indo-European. This is very probably a legacy of PIE and must have served

as the model for the later opposition of stems within each verb.

If all this is true, PIE was a monosyllabic language which organized determining groups and simple sentences by means of the combination of its 1st and 2nd word-classes and certain resources such as word-order, accent placement and the specialization of extensions. But the key is to be found in the sub-classes of class I—in the first place, the noun/verb opposition—and in others of class II (we might consider them to be the seed of the personal pronouns, of prepositions, etc.—sub-classes defined by their position in the phrase in relation to those of class I). Then, in the sub-classes of the noun and the verb, fundamentally semantic differentiations: nouns which do not act as subject, verbs which do not admit a complement, nouns or verbs with special meanings. These sub-classes—sub-classes of sub-classes—would to a certain extent be formalized even by means of phonological features, as we have stated, although they are fundamentally functional, and their formalization by means of vocalic alternation and extension, insofar as they exist, is a recent phenomenon within PIE.

The most remarkable thing in the picture we have sketched so far here is the existence of categories which seem to surpass the concept of sub-classes of word: that of person in the pronoun and the verb, and that of determination in the noun and the verb. Although the determination of the noun may be considered to a certain extent as the equivalent to a sub-class of words, a determining or adjectival class, the fact that one and the same word should have several functions (even more if they are formally marked), makes the designation "case" seem appropriate, although it would have been in germinal form.

## 5. Conclusions

If we now compare this outline with the one sketched above for IE II and III, the differences are worth noting, both with reference to grammatical devices and to the means of marking them formally.

It is no longer a case of insisting upon the non-existence within PIE of well-known grammatical features of IE III, which have been traditionally assigned to Indo-European without further ado. It is that, even with regard to IE II, the differences are quite remarkable, even if one acknowledges the presence, albeit germinal, in PIE—perhaps in its last phase—of elements which were later to undergo wide developments.

As I stated above, the difference between the two fundamental word-classes I and II, the axis around which the whole of PIE grammar turned, was obliterated in IE II and III. The same is true for the monosyllabic root-word: we now have polysyllabic words in which the root is a mere abstraction, words which, on the other hand, are organized into sub-classes which tend to be well formalized with the aid of suffixes and verbal characteristics.

The fundamental resources of PIE grammar are not suffixes, but rather word-order, placement of the accent, and the interplay of classes and sub-classes of words. There is little formalization of the differences between

these sub-classes, whatever their type. Within the formalization, resources were used only very tentatively which were later to become omnipresent, such as vocalic alternation, or, as I have said above, certain endings. Even so, these resources had begun in PIE and the bases were already set on which gender, number, case and the stem oppositions were later to be created. The classes and sub-classes of PIE were highly deficient as a system of categories: they were irregularly and defectively formalized, being based only to a slight extent on the end-inflexion of words. Even the scant traces of inflexion which did exist give the impression of belonging to the last period of PIE. For, as I began by saying, it is not easy to trace precise lines of time or place, and we would rather venture to have traced a diasystem which includes recent elements that are the starting-point for IE II and even III. The same happens with regard to phonology, which is partly interconnected with the morphology: while the system is certainly far-removed from that of IE II and III, hints of future developments can already be found.

The scope of typological variation in Indo-European is surprising and is confirmed by later developments in the different branches and languages leading at times to typological systems which are extremely different from one another and are, of course, far-removed from the kind of system seen in Greek and Sanskrit, which evolved furthest. It even seems as if we were faced with a regression today which will once more lead these languages back to systems with scant morphology, with a loss of categories and functions, and at times with a return to monosyllabism and to the resources of word-order and accent. That is, to something which vaguely recalls old PIE.

## 6. General outline of the proposed evolution of the Typology of PIE.

In order to allow a clearer insight into the views presented above on the evolution of PIE, a sketch of the two proposed stages of PIE is provided:

### I. PIE IN ITS EARLIEST STAGE. 1. Phonological System.

a) A large system of stops not studied here in detail. Voiceless aspirates not yet existent, voiced aspirates and labiovelars probably not yet existent.

b) *s*.

c) *e*, *o*, *a* (quantity not phonologically relevant).

d) *r*, *l*, *m*, *n*, *i*, *u* (and *r̥*, *l̥*, *m̥*, *n̥*, *i̥*, *u̥* as variants)

e)  $H_1^1$ ,  $H_2^1$ ,  $H_3^1$ ,  $H_1^2$ ,  $H_2^2$ ,  $H_3^2$  (> *H* in initial position and in some groups).

f) Free, musical accent.

### 2. Its morphological conditioning.

a) *s*, *t*, *m* used as enlargements and determiners (*p*, *k*, *d*, *g*, *n*, *r* only as enlargements) in the nominal-verbal class of root-words (NVC). Some distribution restrictions of stops and resonants in these roots.

b) *e/o/∅* marking several oppositions within the NVC, which lacks *a*.

c) *a* in the pronominal adverbial class of root-words (PAC).

d) *i*, *u* seldom in the NVC (but cf. *trei-*, *ei-*, disyllabic roots), frequently in the PAC.

- e) Laryngeals non existent in the PAC, used as markers of the end ( $H-$  of the beginning) of the roots of the PAC.
- f) Grammatical function of accent and word order (WO).

### 3. Word Classes (WC) and Word Subclasses (WSC).

- a) There are two non flexional WC (word = root, enlarged or not): the NVC (a semantic class) and the PAC (a deictic class). See supra on their formal characteristics.
- b) The NVC includes monosyllabic forms with "Schwebeablaut". "Disyllabic" and enlarged roots are monosyllabic too ( $genH_2$ ,  $gneH_2$ ;  $trep$ ,  $ters$ ; etc.)
- c) The PAC includes monosyllabic and disyllabic forms ( $tu$ ,  $teue$ ;  $ke$ ,  $ka$ ,  $eke$ ; etc.), sometimes homonyms to the NVC ( $ei$  'this' and 'go').
- d) There are some SWC: the most important, the noun and the verb within the NVC. Their homonymy is solved by the function; sometimes, it is also solved by lexical means ( $kuon$ ,  $ped$  are nouns,  $ei$ ,  $H_2e$  verbs) or by grammatical ones (the vowel timbres  $e$  and  $o$ , certain enlargements, the accent, etc.) Both noun and verb lack flexion and the categories of IE II and III.

### 4. Determination and phrase structure.

The combination of the different WC and WSC as well as the use of enlargements and of facts of WO and accent make the creation of word groups and phrases possible. For example:

- a) The determiner is placed before the determined word, has end accent and determining enlargements, such as  $-s$ ,  $-m$ ,  $-t$ .
- b) Certain NVC roots, if added to the verb or preceding it, distinguish it from the noun and mark the person, the number, etc.
- c) The verb has two actants or determiners, the noun only one. The actants of the verb correspond to two types of determination (subject and complement). They are distinguished by WO and other means.
- d) Certain nouns (the inanimates) are unable to function as subjects.
- e) There accordingly exist three types of phrases, which combine non-flexional nouns and verbs: N - N, N - V, V. Each element admits one determiner as well as duplications (asyndetic or with PAC markers).

## II. PIE IN ITS LATER STAGE.

### 1. Phonological System and its morphological conditioning.

There now exist, as new elements:

- a) Labiovelars, voiced aspirates, but without morphological use.
- b)  $r$ ,  $l$ ,  $m$ ,  $n$  with "voyelles d'appui" ( $o_r$ ,  $r_o$ ) when they function as vowels, according to syllable pronunciation, "tempo", etc.  $j/ij$ ,  $g/ug$  as variants.
- c) Further specialization of determining stops and resonants, see below.

### 2. Word Classes and Word Subclasses. Phrase Structure.

- a) There is a tendency to obliterate the difference between NVC and PAC. The NVC forms become sometimes disyllabic ( $geneH_2$  type).
- b) The noun determiner becomes an adjective, but also a genitive is created.

Within this set, *-s* later tends to specialize as singular, *-m* as plural marker.

c) The verb determiners specialize as nominative (with *-s*) and accusative (with *-m*).

d) So a nucleus of the case system (with nominative, accusative, genitive and vocative) is created. But as the original nominative is an agent, only animate nouns can function as nominatives. On the other hand, the use of uninflected nominal and verbal forms, with contextual and oppositive definition, also survives.

e) In the verb system, other innovations come to being: the opposition between the first and the second/third person, the coupling of pairs of verbs (the coupling is sometimes formalized by lexical, sometimes by grammatical means, such as apophony and enlargements), the imperative, etc.

f) The two main types of phrase, N – N and N – V are in this way more and more formalized. The phrase without a subject tends to disappear, once all nouns have a nominative.

## NOTES

- 1) Austin: University of Texas Press, 1974, p. 5.
- 2) For example, in *Toward a Grammar of Proto-Germanic*, by F. van Coetsem and H. L. Kufner, Tübingen: Max Niemeyer, 1972.
- 3) See his *Indo-European Linguistics*, University Park: The Pennsylvania State University Press, 1980.
- 4) "Ensayo sobre la estructura del indoeuropeo preflexional," *RSEL* 2, 1972, pp. 45-81; "El sistema del nombre del indoeuropeo preflexional al flexional," *RSEL* 3, 1973, pp. 117-142; furthermore, in my *Lingüística Indoeuropea*, Madrid: Gredos, 1975, and in later papers, which I shall quote below.
- 5) Cf., for example, Julia Mendoza, "Las clases de palabras en el indoeuropeo preflexional y en el flexional," *RSEL* 51, 1975, pp. 149-163.
- 6) "Räumliche und zeitliche Gliederung des Indogermanischen," *Flexion und Wortbildung*, Wiesbaden: Reichert, 1975, p. 212.
- 7) Cf., above all, "Hethitisch und Indogermanisch," *II. Fachtagung für Idg. Sprachwissenschaft*, 1962, pp. 145-161 (communication read in 1961); *Evolución y estructura del verbo indoeuropeo*, Madrid: C.S.I.C., 1965 (2nd ed., 1974); *Lingüística Indoeuropea*, Madrid: Gredos, 1975; "Arqueología y diferenciación del Indoeuropeo," *Emerita* 49, 1979, pp. 261-282; "Perfect, Middle Voice and Indoeuropean Verbal Endings," *Emerita* 49, 1981, pp. 27-58; "Indoeuropéen, slave, baltique: quelques notes typologiques" (forthcoming in the *Acts of the First Congress of Bulgaristics*, Sophia); "The archaic structure of Hittite: the crux of the problem" (forthcoming in *The Journal of Indo-European Studies*); "Indoeuropean -s Stems and the Origins of Polythematic Verbal Inflection" (forthcoming in *IF*).
- 8) See the history of the problem in the above-mentioned article "The archaic structure of Hittite ...," and prior to that, in F. Villar, "Hittite e Indoeuropeo," *Emerita*, 47, 1979, pp. 171-188. See also by this author: *Origen de la Flexión nominal indoeuropea*, Madrid: C.S.I.C., 1974.
- 9) *Origines de la formation de noms en indo-européen*, Paris: Maisonneuve, 3rd. ed., 1962.
- 10) Cf. my "Sanskrit and Indoeuropean," *Proceedings of the First International Sanskrit Conference*, Volume II, Part 1. New Delhi, 1975, pp. 436-444.
- 11) Cf. "Arqueología y diferenciación del indoeuropeo," cit., as likewise its German translation, "Die räumliche und zeitliche Differenzierung des Indoeuropäischen im Lichte der Vor- und Frühgeschichte," in *Innsbrucker Beiträge zur Sprachwissenschaft* (Vorträge, Nr. 27), Innsbruck, 1982.
- 12) All this has been developed in my above-mentioned articles, above all in "Perfect, Middle Voice ...." and "Indoeuropean -s Stems ...."
- 13) Cf. B. Rosenkranz, "Archaismen im Hethitischen," *Hethitisch und Indogermanisch*, Innsbruck, 1979, p. 227.
- 14) Op. cit. p. 57 ff.
- 15) Apart from my *Estudios sobre las sonantes y laringales indoeuropeas*,

2nd. ed., Madrid: C.S.I.C., 1973, I would refer to two recent papers: "Further Considerations on the phonetics and morphologizations of  $H^1$  and  $H^2$  in Indo-European," *Emerita*, 49, 1981, pp. 231-271, and "More on the Laryngeals with Labial and Palatal Appendices," forthcoming in *Folia Linguistica Historica*.

16) Cf. op. cit. "Ensayo sobre la estructura .....", p. 55 ff.

17) Cf. F. Villar, "El problema de las sordas aspiradas indoeuropeas," *RSEL* 1, 1971, pp. 128-160.

18) See O. Szemerényi, *Introducción a la Lingüística Comparativa*, Madrid 1978, p. 134 ff., and my "Ensayo sobre la estructura.....," cit. p. 53 ff.

19) Cf. on this my *Lingüística Indoeuropea*, cit., p. 171 ff.

20) "Phonologisches zum indogermanischen  $a$ -Vokalismus," *Studies in Greek, Italic and Indo-European Linguistics offered to Leonard R. Palmer*, Innsbruck 1978, p. 127-133. Against the suggestion of an older PIE vocalism  $a$   $i$   $u$  by Schmitt-Brandt ( $o$  would come from  $u$  and  $e$  from  $a$ ), see J. Gil, "La apofonía en Indoeuropeo," *Estudios Clásicos* 40, 1978, p. 97 ff., and A. Bernabé "A Critical view of some interpretations of the IE long diphthongs," *Archivum Linguisticum*, N.S., 7, p. 172 ff; and against Wyatt's (that IE  $a$  derived under certain circumstances from  $a$ ), F. Villar, *Emerita* 40, 1972, p. 517 ff. When the 5-vowel system is postulated for IE (as in the case by O. Szemerényi, "The New Look of Indo-European", *Phonetics*, 17, 1967, pp. 65-99), this is merely on account of a reaction (for the rest justified) against the reduction of the Indo-European vowels to a single one. For further details, I would refer to an article by Julia Mendoza on the subject. ("La /a/ en indoeuropeo," in *Emerita* 50, 1982).

21) *NIS* 15, 1949, 137 ff., 16, 1950, p. 136 ff. On this and other related theories, see J. Gil, op. cit., p. 77 ff.

22) See M. Leroy, "Les tribulations du vocalisme indoeuropéen", *Linguistique Contemporaine. Hommage à Eric Buyssens*, Brussels, 1970 p. 129.

23) "On Qualitative Apophony in Indo-European", *NIS* 29, 1975, pp. 174-203.

24) Above-mentioned, no. 20.

25) Cf. a list in Hilmansson, p. 175.

26) See on this point my "Perfect, Middle Voice .....", cit., p. 43, etc.

27) See *Lingüística Indoeuropea*, p. 409 ff., before "Ensayo sobre la estructura .....", p. 74 ff.

28) "Ensayo sobre la estructura .....", p. 75 ff., *Lingüística Indoeuropea*, pp. 994 ff., 1002 ff.

28\*) [Editor's note] The author uses the term "sonant" according to European usage where American linguists would use "resonant." As a consequence, he represents the phonemes /y/ and /w/ by "i" and "u" and uses the symbol "S" where "R" would usually be expected, e.g., in the description of the root-structure (p. 000). 29) Cf. *Estudios sobre las sonantes y laringales indoeuropeas*, 2nd. ed., Madrid 1973, p. 36 ff.

30) Cf. apart from my books, A. Bernabé "La vocalización de las sonantes indoeuropeas en Griego", *Emerita* 45, 1977, pp. 269–296, with the bibliography quoted.

31) Cf. "Ensayo sobre la estructura .....", cit., p. 55 ff.

32) Cf. B. Rosenkranz, *Vergleichende Untersuchungen der altanatolischen Sprachen*, The Hague: Mouton, 1976, p. 95 ff.

33) Cf. also Julia Mendoza, "Las clases de palabras .....", cit.

34) Cf. W. P. Lehmann, op. cit., and "Proto-Indo-European Compounds in relation to Other Proto-Indo-European Syntactic Patterns", *Acta Linguistica Hafniensia*, 12, 1969, pp. 1–20.

35) The well-known case of Hittite, cf. *Linguística Indoeuropea*, cit., p. 414.

36) Cf. for Anatolian, H. Mittelberger, "Genitiv und Adjektiv in den altanatolischen Sprachen", *Kratylos* 11, 1966, pp. 99–106. The Greek and Latin data are well-known.

37) Cf. "El sistema del nombre .....", cit., p. 120 ff.

38) Although the possibility that certain "adverbial" cases, some with agglutinated suffixes, may already have begun in PIE cannot be denied. The traditional image of the 8 cases present since early times in IE should be discarded; the languages very imprecisely reorganized quite multiform materials. Cf. lately, F. Villar, *Dativo y locativo en el singular de la flexión nominal indoeuropea*, Salamanca, 1981. The question is clearer, if such is possible, with regard to pronominal inflexion.

39) Cf. F. Villar, "Las desinencias indoeuropeas de 1a y 2a persona de plural," *RSEL* 4, 1974, pp. 391–409.

40) Op. cit., p. 92 ff.