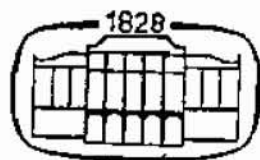


# MORE ON THE LARYNGEALS WITH LABIAL AND PALATAL APPENDICES

FRANCISCO R. ADRADOS

## I. THE LARYNGEALS TODAY



AKADÉMIAI KIADÓ, BUDAPEST  
PRINTING HOUSE OF THE HUNGARIAN ACADEMY OF SCIENCES  
VERLAG DER UNGARISCHEN AKADEMIE DER WISSENSCHAFTEN  
MAISON D'EDITIONS DE L'ACADEMIE DES SCIENCES DE HONGRIE  
ИЗДАТЕЛЬСТВО АКАДЕМИИ НАУК ВЕНГРИИ

## MORE ON THE LARYNGEALS WITH LABIAL AND PALATAL APPENDICES

FRANCISCO R. ADRADOS

### I. THE LARYNGEALS TODAY

1.1. In 1961, when I published my *Estudios sobre las laringales indoeuropeas* [*Studies on IE Laryngeals*] (which will henceforth be referred to as the new, enlarged edition of 1973: *Estudios sobre las sonantes y laringales indoeuropeas* [*Studies on IE Sonants and Laryngeals*]), the laryngeals were rejected by most scholars of Indoeuropean. In certain cases, this rejection was explicit and was at times expressed in somewhat violent terms: I do not see any need to quote details of names and texts. More often, there was simply disregard of interpretations on the strength of laryngeals: it will suffice to recall in this respect the praxis of H. Frisk's etymological dictionary of ancient Greek. Nevertheless, when looking back today, at the same time as one contemplates the current panorama, it may be said that things have changed almost completely. The scholar of Indoeuropean who explicitly rejects the laryngeals or does not use them is now extremely rare, whereas at the time of my book (and before, at the time of the paper of mine which anticipated this latter — Adrados 1956), to talk of laryngeals was to go against the current. Today, on the contrary, not to acknowledge and use them is to go against the current.

1.2. There are certainly differences of opinion as to the number of the laryngeals: between the sole laryngeal of Szemerényi (1967) and Lindeman's six (two series, voiceless and voiced), there are various proposals. There are also different points of view with regard to their phonological definition; the main opinions are collected in A. R. Keiler's book (1970). It may, however, be said that the predominant theory is that there were three laryngeals  $H_1$ ,  $H_2$  and  $H_3$  with results which are already common doctrine for non-Anatolian languages. With respect to the treatment of the laryngeals in Anatolian languages, there is still, however, a series of doubts: we shall return to this point later.

1.3. The situation is really characterized on the one hand, by the generalized acknowledgement of the three laryngeals (which are

sometimes multiplied in an attempt to offer satisfactory explanations of the Hittite data) and on the other hand by certain advances in details to which we shall refer. One further feature of this situation are the unsolved problems with regard to the Anatolian languages we have just mentioned. But above all, the theory of the existence of laryngeals with labial and palatal appendix, which enjoyed a certain vogue after an article by A. Martinet (1953) and which I developed to its logical consequences (Adrados 1956, 1961, 1963, 1975), today seems practically neglected. This has happened without this theory really having been made the object of sufficient criticism.

In view of the fact that the appendices only affect part of the results of the laryngeals, part of the laryngeal theory is still left intact when they are not taken into consideration. But I believe that this procedure considerably reduces the theory's usefulness in the reconstruction of Indoeuropean. This article is fundamentally intended to advocate the validity of the laryngeal theory which makes use of the appendices. I believe that now that the existence of the laryngeals is accepted by the general community of Indoeuropean scholars, this field of research is better prepared for the next step: the acknowledgement that the laryngeals under certain circumstances developed elements *i* (*i̯*) and *u* (*u̯*) which derived from their phonetic and phonological characteristics: that is, from the so-called palatal and labial appendices respectively.

Maybe it was logical in a first phase, that the acceptance of the laryngeals should have been limited to the phonetic evolutions common both series of laryngeals, namely, those with labial and those with palatal appendix: those evolutions which permitted one to deduce only three laryngeals  $H_1$ ,  $H_2$  and  $H_3$  with three different timbres. They are simplified results and easier to accept. But I believe the moment has come to pay attention to the rest. I refer of course to the formulation of the theory which, based on former research, I expounded in the papers I have just mentioned and which appeared from 1956 onwards, as likewise in publications by students of mine such as F. Villar (1974), A. Bernabé (1975, 1976, 1977), among others, and in as yet unpublished papers of mine and theirs. It is clear that as time goes by certain modifications and improvements on the original theory are being produced.

1.4. Really, if the theory of the laryngeals with appendices is today almost always silenced, this has not prevented an ever-increasing number of facts from coming to light which speak in its

favour. Scholars have also continued research on the phonetic problems which form the basis of the theory. But before going on to this subject one should briefly consider certain aspects of the laryngeal theory — those not related to the existence of the labial and palatal appendices — which are worth our attention.

## II. ADVANCES WHICH DO NOT AFFECT THE PROBLEM OF THE APPENDICES

2.1. As I stated above, there are just as many advances in this field as inadequacies. Among the former, one should count certain steps forward in the interpretation of the evolution of the groups with a laryngeal. The discovery of the existence of geminates proceeding from *consonant* or *resonant* + *laryngeal* groups is to my mind a decisive discovery. This was put forward by A. Bernabé (1973), supported by dense documentation, for the case of the *s* and the resonants. Then, independently, by C. Watkins (1975: 375 ff.) for the same phonemes and also for the occlusives. This is a discovery susceptible to morphological application: for example, to explaining a 3rd sing. *šakki* as containing a trace of the old *-H* which I believe was lost in this person and others, whilst it was kept in 1st sing. in order to draw a morphological distinction between 1st sing. / 3rd sing. (cf. Adrados 1973: 158).

It is worth noting that in Germanic an identical evolution has been discovered in the *resonant* + *laryngeal* group, with gemination of the former, cf. R. Lühr (1976): this result has influenced the controversy about the intervention or otherwise of the laryngeals in the *Verschärfung*, which I cannot go into here.

2.2. An object of further studies has been the suggested initial vocalization of the laryngeals which I dealt with fully in Adrados 1961: 32 ff., with the conclusion that the laryngeal may give a prothesis, but that the prothesis does not demonstrate the existence of a laryngeal. Apart from R. S. P. Beekes' study (1969), to which I refer in Adrados 1973: 383 ff., I would mention as highly detailed studies with important advances, those of H. Rix (1969) and A. Bernabé (1975).

2.3. Progress being made with regard to the  $\emptyset/\emptyset$  degree of disyllabic roots with a resonant is also of interest. This subject has been speculated upon for many years by a long series of linguists; the most important data are to be found in R. S. P. Beekes (1969: 216



ff.), J. Gil (1970), F. R. Adrados (1973: 207 ff.) and J. González Fernández (1979). In this case, the facts speak so clearly that despite neogrammatical tradition which demands absolutely uniform phonetic results, the existence of doublets *tără* and *tră* is commonly acknowledged as is that of other forms such as *tăr*, *tră* for a *TRH* group; although J. Kuryłowicz gives analogical explanations. My proposal is that the different treatments *tăr*, *tră*, *tără* depend on the diverse possible placings of the supporting vowel (*voyelle d'appui*), related in turn to displacements of the syllabic boundary; as for *tră*, it represents a sort of compensatory lengthening comparable to those of Slavonic (*ort* gives *orot* in Russian, in O. Slav., *rāt* > *rōt*: the starting-point is *orot*). In any case, other proposals finish by acknowledging the existence of phonetic doublets (although there may be at times analogical alterations). Thus, when Beekes (1969: 203 ff., 209) speaks of *ārā* and *rā* as representing a reduced degree and a  $\emptyset$  degree respectively (*Schwundstufe*), although the truth is that one cannot see what phonetic translation these terms have nor in any case what conditioning produces both degrees. In fact, the most common attitude is K. Strunk's (1970) when, following E. Schwyzer's and others' precedent, he leaves the explanation pending and simply accepts the facts.

2.4. The progress which is being made lies in the fact that the existence of multiple results from one and the same group, that is results of a phonetic origin, is not only acknowledged but is being backed with new data contributions. I refer in the first place to two articles by K. Strunk (1970) (a) 1970 (b) in which he postulates  $\emptyset/\emptyset$  degrees in Greek not only of the type *thána-tos/é-than-on* but also of the type *póli-s, é-thor-on*. Without going into detail and keeping the discussion of the second syllable with *-i* for later, I would point out that the acceptance of *o* before a resonant as a phonetic solution in Greek should be considered in relation to what we know today of the evolution of the resonants (cf. Adrados 1973: 9 ff., and lately Bernabé 1977 (b)). I also refer to an article by J. González Fernández (1979) in which he supplies new material on the different solutions of the  $\emptyset/\emptyset$  degree, not only in Greek but also in Latin and several languages, strongly arguing in favour of an interpretation based on the existence of different syllabic boundaries.

2.5. I should also like to point out that this existence of different possibilities in syllabic boundaries has been acknowledged several times in relation to contexts with a laryngeal. Thus, for example,

by M. Mayrhofer (1964: 177, 187), who thus explains contrasts in O. I. such as *rayih/rāyáh*, *pūršú/purí*. However, one should add that for Mayrhofer, the syllabic boundary is conditioned by the context (before a consonant the *H* goes with the previous syllable, before a vowel it goes with the following and is lost). But the truth is that examples like these may be found as likewise their contrary and that the parallel of the various syllabizations of the *muta cum liquida* group (at times conditioned locally or temporally, at times alternative) encourages the idea that, at least in part, this is a case of free choice on the part of the speaker.

2.6. There are, among others, the advances which I referred to above. But at the same time, I also pointed out that the problem of relating the Hittite data to the Indoeuropean laryngeals has not brought about any progress in this period. From time to time there are attempts to explain the duality of *h/hh* or that of *h/ø* with the aid of differences of sonority or others among the laryngeals, the introduction of a fourth or even a fifth and sixth laryngeal, etc. But these are somewhat speculative attempts which are not backed by any exhaustive collection of data. This is what Gusmani (1979) criticizes quite rightly, although it is no less true that he himself in turn handles a minimum amount of material and makes rather surprising statements such as that the *h* of Hitt. *ešhar*, *hant*-, etc., does not seem to correspond to a laryngeal which has disappeared.

2.7. Certain contributions are to be found in an article by Th. V. Gamkrelidze (1968) in which he tries to explain *h* and *hh* as allophones conditioned by the context (*h* after *e*, *hh* after *a* or *u*) and the lack of *H* as an analogical fact: *eš/aš* would lack *h*- by analogy with the *ø* degrees of the plural in which *H*- vocalizes in *a*. In any case, he demonstrates that the data are not suitable for postulating different laryngeals as the basis of the different treatments in Hittite. This same conclusion is the one to be drawn from an article by Michelini, who admits, but does not explain, the occasional lack of Hittite *h*- in words with an initial laryngeal (Michelini 1974: 470).

In this way, Gamkrelidze gives a theoretical foundation (whether rightly so or not) to the procedure used by almost all linguists when they use laryngeals in reconstruction. They practically ignore the problems of representation of the laryngeals in Hittite and work with three traditional laryngeals *H*<sub>1</sub>, *H*<sub>2</sub>, *H*<sub>3</sub>, accepting similarly traditional results for the other languages.

2.8.1. One may say, however, that the problem of the representation of the laryngeals in Hittite is something of a weight on the conscience of Indoeuropean scholars. I personally believe — and with this I conclude this rapid review — that there is no reason to think along these lines. The data I collected in my article of 1970 and which supplement my former book, data which partly came from an unpublished paper by F. Mittelbeger for a symposium of Indogermanic scholars in Bonn in 1970 and partly from an also unpublished doctoral thesis by A. Bernabé on the Hittite laryngeals, seem sufficiently conclusive to me. I should like to recall them briefly here, adding a few discoveries.

2.8.2. The presence of both *h* and *hh* in Hittite cannot be attributed to the idea that they come from two different laryngeals, for they appear in the same roots and the same morphological elements; neither is there, in general terms, a complementary distribution. There is an alternation between a simple consonant and a geminate which for the rest is frequent in Hittite and which reflects two different syllabizations (cf. *watar/wattaru-*). Together with free usage (*arta(h)hi-*, *la(h)hanza-*, etc.), there are certainly some secondary fixations. These may be of a dialectal nature: Hitt. *huhha-* [Hier. Hitt. *huhadala-*, Hitt. *haddulahh-*] Luw. *hattulahhi-*; but others are morphological, and are destined to characterize a category formally: thus in the case of the 1st sing. pres. and pret. of *-hi* verbs, for example in *dahhi*, *dahhun*, in which the laryngeal, as I have suggested, is of radical origin. In 2nd and 3rd sing. there are traces of a simple *h*, thus in 2nd sing. *-ti* < *-tHi* < *-Hti*: on the 3rd. see above.

2.8.3. In a similar way, the data available to us present alternation of this same *h* or *hh* with *Ø* forms in the same root or characteristic. Fluctuations such as *tannattawwanzi/danattahhwanzi*, *ša-an-zi/ša-an-ah-zi* clearly show that the *h* of Hittite was being lost and that it was at times kept in spelling (doubtless even geminated by a conscious reinforcement), and at times not. There are numerous parallels to this process in several languages: there is nothing strange about it neither does it go against the regularity of phonetic evolution, it is simply that we are dealing with a moment at which the process of loss of the laryngeals had begun but was not yet completed.

However, in this case there also exist tendencies to the fixation of both *h* (or *hh*) and *Ø*. At times there is a dialectal basis for this

(Luw. *para-*/Hitt. *parh-*, *parahh-*); at others there are phonetic phenomena (assimilation in *aššu-*, *šakki*), coexistence of consonantic and vocalized forms (*daḥḥi*/*danzi*); in even other instances there is lexical fixation (*damašzi*/*damešhas* 'violence', with metathesis; *antš* 'hot'/*ḥandaiš* 'heat', etc.). One should note the importance of the levellings destined to create morphological distinctions, such as that related to the distinction of the persons of the verb mentioned above. In fact, in verbs with radical *-H* we find oppositions between 1st and 3rd sing. such as *memahḥi*/*memāi*, *daḥḥi*/*dāi*: it is clear that in the third persons the *H* was lost. Later, *-(h)ḥi* and *-i-* were taken as endings and were transferred to various verbs. But there is a trace of *H*, as I have said, in the 2nd and 3rd persons singular. On the other hand, the existence of a suffix *-ah* (and *-nah*) with generalized *h* is well-known in the Hittite verb.

2.9.1. This theory, so simple and suited to the Hittite data, does not appear to have had much repercussion. But recently published data in relation to Palaic and Luwian, seem to confirm it definitely. Independently of each other, Georgiev (1974) and Watkins (1975) concentrated on the Luwian abstracts in *-aḥi* or *-aḥit* and they have compared them with both the Indoeuropean abstracts in *-ā* (first declension) and the neuter plurals, which are in fact etymologically the same. If we compare the Hittite nouns in *-aiš* and the neuter plurals in *-a* and adduce even further the Palaic neuter plurals both in *-aga*, *-aa* and *-a*, Watkins' conclusion (1975: 367) seems clear that this is a "sound change in progress", with the laryngeal lost in Hittite and preserved in Luwian (as *h*, and in Palaic (as *g*). This does not mean that there was a special laryngeal in Hittite which was lost, but that this loss was not counteracted in this case by morphological or other reasons. Luwian and Palaic show themselves to be more conservative.

2.9.2. Watkins' article gives even further data of analogical interpretation. Thus the vacillating spelling in Palaic of the *-na-*verbs: with *-na*, *-na-a* and *na-a-ga*. Moreover in other verbs: thus in *ták-ka-wa-ga-ti* alongside *ták-ka-wa-a-ti* which correspond to a Hittite verb in *-aizzi*, without a trace of either *g* or *h*. This latter is to be found in Luwian in verbs of the same class (3rd sing. pres. *i-li-il-ha-a-i-ti*, etc.).

2.10. It is, therefore, in Anatolian that the Indoeuropean *H* was lost; and Hittite is precisely the language which most evolved in this respect. However, there was not a total loss of *H*: it could be



preserved to mark lexical or morphological distinctions, above all; and moreover, the *-H* may have been geminated and used for the same purpose. Other vacillations, into which I do not wish to go, are the preservation of consonantic *h* alternating with its vocalization, generally in *a*. At other times the intermediate stage *ah* is preserved (although at times one may doubt whether the *a* is phonetic or whether it is merely graphic).

### III. THE LARYNGEALS WITH APPENDIX: ORIGIN AND FIRST JUSTIFICATION ON THE THEORY

3.1. The fact that we were able to speak of evolutions of the laryngeals common to all of them except as far as their influence on the timbre of vowels in contact is concerned, does not in any way mean that we advocate the existence of a series of laryngeals without appendix alongside two others with labial and palatal appendices respectively. This is what Ruijgh (1968: 415) has understood, doubtless on account of a somewhat inattentive reading of my expoundings of the theory. In actual fact, when I write *H*, I refer to any laryngeal, to the extent that they all have common traits and results. When I write *H*<sub>1</sub>, *H*<sub>2</sub>, and *H*<sub>3</sub>, I add reference to the timbres they give to the vowels in contact, namely *e*, *a*, *o* respectively; and when, within each of these spellings, I distinguish one variant *H*<sub>1</sub><sup>u</sup> from another *H*<sub>1</sub><sup>i</sup>, and the same goes for the other timbres, I add the fact that a laryngeal takes either a labial or a palatal appendix and that they have results which one should refer to these appendices: in general terms, the labial laryngeals give results with *u* (*u*) and the palatals with *i* (*i*). This is all. *H*, *H*<sub>1</sub>, *H*<sub>2</sub>, *H*<sub>3</sub> do not denote independent laryngeals but features common to them all (*H*) or to two with two different appendices (each of the others). *H*<sup>u</sup> and *H*<sup>i</sup> denote in parallel fashion simply labial and palatal laryngeals respectively, with abstraction of the timbres.

So far, I have done no more than to take from the results of the laryngeals those traits which are not related to the appendices. For those who reject these latter, this really means the whole of the results: for me, only part of them. Really, features derived from the appendices have appeared in my examples which I have disregarded.

3.2.1. It may be advisable to sketch the theory of these laryngeals very roughly, above all in order to demonstrate the huge difference



which exists between the formulation of a series of authors and my own, which, although derived from the former, is far more comprehensive. I shall call them Theory I and Theory II (my own). A brief exposition will show that it is a grave error to identify them, as Sze-merényi does (1968: 173 "similarly Adrados . . ."). Also that criticisms which apply to Theory I, such as that the hypothesis on *w*, *y* as coming from the laryngeals "are all based on the interpretation of a few scattered facts" (Lindeman 1970: 77), are not at all suited to Theory II. I shall deal below with the criticisms levelled specifically against this latter.

3.3.1. Theory I postulates one laryngeal  $H_3$  with a labial appendix and one  $H_1$  with a palatal appendix: the appendices are correlative to the timbres. Really, the linguists who postulate one or another laryngeal are different, with exceptions. The founder of the theory of  $H_3^u$  (and therefore a forerunner of that of  $H_1^i$ ) is A. Martinet in his above-mentioned article of 1953. He thus explains doublets such as that of Lat. *octō/octāvus*: these are two treatments, one preconsonantic and the other prevocalic respectively, and he believes that to postulate  $H_3^u$  with correlation of timbre and appendix, is a phonologically correct reconstruction. The most one can criticize in this is that the doublet  $\bar{o}/\bar{a}u$  is rare and in practice exclusive to Latin; and that on the other hand both within Latin and outside it, the doublets  $\bar{o}/\bar{o}u$ ,  $\bar{a}/\bar{a}u$ ,  $\bar{e}/\bar{e}u$  among others, are extremely frequent, a fact which must of necessity be explained analogically. This is far too narrow a basis.

My theory, Theory II, is based precisely on the phonetic, and not analogical origin of these doublets.

3.3.2. Theory I, however, has enjoyed a certain vogue for some time. The year prior to my article of 1956 came Hamp's (1955) although I did not know of it when my article was written, but I quoted it in 1961: 164. Then came Schmalstieg (1956), Rosén (1957), Puhvel (1960), Erhart (1970: 20 ff. he admits  $H_1^i$  and  $H_3^u$ ), García Teijeiro (1970: 73 ff.), González Fernández (1972: he admits  $H_2^u$  and  $H_3^u$  but not  $H_1^u$ , that is, *amāui* and *gnōui* would be phonetic, but not *plēui*). See on Puhvel, my criticism collected in 1973: 369 ff.

This is as far as the laryngeal  $H_3^u$  is concerned. The laryngeal  $H_1^i$  was postulated by W. Diver (1959), a mention of which I introduced to a new footnote in the proofs to my book of 1961 (XIX, n.2) in which I postulated the whole series  $H_1^i$ ,  $H_2^i$ ,  $H_3^i$ . It is to be found again in Risch (1955), who postulates a Hittite result *ai* from  $eH_1$  and

$eH_2$ , and an  $i$  coming from both laryngeals in the  $\text{Ø}$  degree, but leaves many loose ends in Hittite and does not touch the rest of Indoeuropean (cf. Adrados 1961: 169). Also Liebert (1957) admits sporadic results with  $i$  from the laryngeals in general, it seems.

As may be seen, sometimes scholars go further than admitting one laryngeal with a palatal appendix, but display no ambition to build a coherent system for the whole of the laryngeals. As in the case of  $H_3^u$ , and with certain exceptions, a phonetic evolution is postulated which produces a resonant and leaves a wide margin for analogy as well as many phenomena not taken into account.

3.3.3. These are in fact extremely fragmentary theories. However, the criticisms levelled against them, thus those of Polomé (1965: 33 ff.) and Crossland (1958), were quite insufficient for although as I have said it is true that to postulate an alternation  $\bar{o}/\bar{a}u$  for Indoeuropean offers no guarantee at all, it is even less certain to argue that when  $-H-$  was lost between vowels it left a sort of antihiatic  $-\bar{u}-$  (in *gnōui*, etc.). The fragmentary and isolated nature of the data, the inadequacy of the theory to explain without resort to arbitrary analogies vast series of in fact parallel data is, certainly, the reason why Theory I has little by little been abandoned. Schmitt-Brandt's criticism (1967: 36 ff.) is specifically based on these points of view. I shall return to this below.

3.4.1. With this, I shall go on to Theory II, that which I myself proposed: from 1956 for  $H^u$  (with its three timbres), from 1961 for  $H^i$  (also with its three timbres). An extensive exposition would certainly be out of place here. The theory postulates the existence of two series of laryngeals:

Labial series:	$H_1^u$ , $H_2^u$ , $H_3^u$
Palatal series:	$H_1^i$ , $H_2^i$ , $H_3^i$

which in certain positions lose the appendix without leaving any trace of it, whilst in others precisely leave traces of the appendix. The "traditional" results of the laryngeals are, therefore, those in which no trace is left of the appendix: for example, in initial position before a vowel or  $u$ ; in medial position before  $i$ ,  $u$  or an occlusive (except in the case of anaptyxis or vocalization); before non-laryngeal  $-i$  (Hitt. *dahi*); when there is vocalization in  $-a-$ .

I do not believe in fact that phonological reasons account exclusively for a labial appendix in the case of the laryngeal  $H_3^u$  (nor for the palatal appendix to  $H_1^i$ ): the combination of the labial appendix

and the different timbres of the laryngeals may be compared to the existence of a whole series of labiovelars; perhaps the results *kt* and *ks* in several Indoeuropean languages (Gr. *árktos*, O. I. *rk̥sas*, etc.) in turn reveal the existence of a complete series of Indoeuropean palatovelars, as has on occasion been suggested.

3.4.2. In any case, the important thing is the data. The starting-point is that alongside vowels of the three timbres, there appear in certain roots *u* or *u̥* elements, in others *i* or *i̥* elements, which can by no means be explained as lengthenings, nor as coming from an Indoeuropean *u* (*u̥*) or *i* (*i̥*), for in this case there is no phonetic possibility whatsoever of explaining why these phonemes sometimes appear and sometimes do not in one and the same root.

A good example of the group  $V-H_3^u$  would be the series:

- |                  |                     |          |                                       |                          |
|------------------|---------------------|----------|---------------------------------------|--------------------------|
| 1: $\bar{o}-C$ : | Gr. <i>éplōsa</i> , | OIce.    | <i>flōd</i>                           | 'tide'                   |
| 2: <i>eu-V</i> : | Gr. <i>pléwō</i> ,  | O. Slav. | <i>plovq</i> and OInd. <i>plávate</i> | 'to swim'                |
| 3: $C-u-C$ :     | Gr. <i>plytós</i> , | OInd.    | <i>uda-prut</i>                       | 'who swims in the water' |

Everything indicates that type 1 and 2 are full degrees, and that type 3 is a  $\emptyset$  degree. One cannot postulate an element *-u* added to the root because all the efforts of generations of linguists to discover phonetic laws which explain evolutions  $\bar{o}u > \bar{o}$ ,  $\bar{a}u > \bar{a}$ ,  $\bar{e}u > \bar{e}$ , have failed: see J. Gil (1970) for the oldest history of this problem, and see below on some recent attempts. Neither can one imagine this *u* to be a morphological element (lengthening or suffix) added or not arbitrarily and given very diverse meanings or none at all according to each case. On the other hand, one can explain a full degree  $\bar{o}$  only as from a laryngeal. Then  $\bar{o}$  comes from  $eH_3$ , according to the traditional laryngeal theory; but really, it comes from  $eH_3^u$ , with loss of appendix before a consonant. The same full degree before a vowel gives *eu* because the  $H^u$ , as it belonged to a different syllable to the preceding vowel neither lengthened this latter nor contaminated it with its timbre. In the  $\emptyset$  degree the vocalization  $H^{\bar{u}}$  gives  $\bar{u} > u$ , no more nor less than  $k^{\bar{u}}$  gives *ku* in numerous examples of the various Indoeuropean languages.

3.4.3. If this were an isolated case, one might not give too much importance to it. But there are hundreds of parallel cases which give series:<sup>1</sup>

<sup>1</sup> I give the references to my lists of roots in Adrados 1973.

- A 145  $\bar{a}$ -C/eu-V/C-u-C (OInd. *snāti*, Gr. *nāsos*, *nān*; Gr. *néwō*; OInd. *snutá*-)  
 A 130  $\bar{a}$ -C/eu-V/C-u-C (Lat. *sēmen*, OHG *sāmo*; Hitt. *šeḫur*).  
 B 25  $\bar{o}$ -C/ei-V/C-i-C (Gr. *kōnos*, Lat. *cōs*; OInd. *śitá*-).  
 B 10  $\bar{o}$ -C/ei-V/C-i-C (Gr. *thēsato*, Lat. *fēmina*; OInd. *dhāyati*; Mir. *del* from -*ī*-).  
 B 6  $\bar{a}$ -C/eu-V/C-i-C (Gr. *dāmos*, Hitt. *damaiš*; OInd. *dayate*).

The presence of long vowels in places in which, according to our knowledge of Indoeuropean, full, non-lengthened degrees are required, is the main proof that a laryngeal intervenes here, as for the rest it is commonly acknowledged. Moreover, it seems obvious that on this laryngeal are based solutions of the type *eu-V*, *ei-V* (also *ou-V*, *oi-V*, by apophony), without lengthening or change of the vowel timbre. The only alternative is to suppose that one and the same root alternatively gets *H* (with the three timbres), *u* or *i* lengthenings: in fact numerous attempts to explain  $\bar{a}$  as a reduction of  $\bar{a}u$  or  $\bar{a}i$  by means of a phonetic process, have always failed, as I have already stated.

3.4.4. However, the following reasons, among others, corroborate the idea that the long degree with change of timbre, on the one hand, and the *u* or *i* on the other, are different expressions of the same older phoneme (a laryngeal):

a) *u* (*u*) and *i* (*i*) appear in different roots, in the same way as the three timbres also appear in different roots. In both cases, there are only a few deviations from the norm which are obviously secondary. Therefore, a specific timbre and the development of a specific resonant, *u* (*u*) or *i* (*i*), are implied. Timbre and resonant are combined as characteristic of one root. There are six combinations, corresponding to the laryngeal series  $H_1^u$ ,  $H_2^u$ ,  $H_3^u$ ,  $H_1^i$ ,  $H_2^i$ ,  $H_3^i$ .

b) The regularity of oppositions of the type *dhē-C/dhei-V* (before the themantic vowel to be precise) does not fit in with the idea that these are arbitrarily added lengthenings and have all the aspects of a phonetic evolution.

On the other hand, there is even less possibility that these are lengthenings with their own, semantic or grammatical meaning. Whenever this latter exists, it is to the contrary the result of a secondary process on the basis of the creation of oppositions and of the subsequent spreading of the elements ( $\bar{e}$ ,  $\bar{a}$ ,  $\bar{i}$ , *u*, etc.) thus



charged with meaning. See below. The very multiplicity of these meanings is witness to their secondary nature.

c) The *u* and *i* which appear in these roots alternating with long vowels as full degrees are different to those which appear in other instances in which they do not alternate with long vowels or even give forms of the type *āi*, etc., except in the case of lengthened degrees (*Dehnstufen*) with a morphological purpose and of recent origin. I refer above all to roots of the type *leik<sup>u</sup>* 'to leave', *dheugh-* 'to be successful', *ei-* 'to go', *trei-* 'three'; or others doubtless lengthened from this type with the addition of a laryngeal: disyllabic roots of the type *g<sup>u</sup>iH<sup>u</sup>* / *g<sup>u</sup>eiH-* / *g<sup>u</sup>ieH-* 'to live'; and to roots with initial *H<sub>u</sub>-*, *H<sub>i</sub>-* (with loss of appendix, the same as before a consonant), thus *H<sub>u</sub>eH<sub>1</sub><sup>i</sup>* 'to blow', *H<sub>i</sub>eH<sub>3</sub><sup>u</sup>* 'to join'. We are here faced with old *u* (*u*), *i* (*i*), this is guaranteed by the difference in phonetic treatment. The same goes in the case of deictic *i* and *u*, before which precisely, the appendices are dropped, cf. *supra*, 3.4.1.

Certain oppositions *i/ī*, *u/ū*, which may be explained by displacement of syllabic boundary (Lat. *uir*/OInd. *uīras* < *ui-Hro-/uīH-ro*, Goth. *sunus*/OInd. *sūnū-* < *\*su-Hn-/suH-nū*, cf. Bernabé 1976: 175) are further proof of old independent *u*, *i*.

d) The forms with *u* (*u*) or *i* (*i*) and those which offer the traditional solutions of the laryngeals are still implied in the same roots in phonetic solutions which may only be explained by resorting to laryngeals with appendix within a regular evolution.

3.4.5. This fourth point will take up a moment. In effect, by exemplifying with the laryngeal *H<sub>2</sub><sup>u</sup>*, alongside the three fundamental results described above, that is:

$$\begin{array}{lll} \text{Full degree:} & eH_2^u-C > \bar{a}C & e-H_2^uV > euV \\ \emptyset \text{ degree:} & CH_2^u-C > C\bar{u}C & \end{array}$$

and alongside the parallels with other laryngeals (*ō/eu/u*, *ā/eu/i*, etc.), we find far less frequent variants which, once more exemplifying with *H<sub>2</sub><sup>u</sup>*, are of the following type:

$$\begin{array}{lll} \text{Full degree:} & eH_2-H_2^u C > \bar{a}uC & eH_2-H_2^u V > \bar{a}uV \\ \emptyset \text{ degree:} & C^o H_2-C > C\bar{a}C & C^o H_2^u C > CauC \end{array}$$

That is to say that occasionally and minoritarily we have, in full degree positions, a new result which joins the long vowel and the



altered timbre, and this both before a consonant and before a vowel. Moreover, in  $\theta$  degree positions, we have the solutions  $\check{a}$ ,  $au$  ( $\check{a}$ ,  $ai$ ) alongside  $\check{i}$  ( $\check{i}$ ). Cf. in the roots exemplified above A 145 OInd. *snauti*, Gr. *nēus* (from *nāus*), Lat. *nāto*, Gr. *nārós* < *nāwe*-; A 130 Lat. *sēui*, OEngl. *sawan*, Lat. *sātus*, OIce. *saurr*; B 25 Lat. *cātus*, OIce. *hein* < *-ai-*; B 10 OInd. *dhāyū*, Lat. *dēju*; B 6 Gr. *ādātos*, Goth. *dails*.

3.4.6.1. If we begin with the variations  $\check{u}/\check{a}/au$  and  $\check{i}/\check{a}/ai$ , it is infinitely clearer and easier to explain them, rather than by alternative lengthenings, by turning to what occurs in the treatment of the resonants where we find both  $\check{a}$ , and  $\check{i}$ ,  $\check{u}$  vocalizations (and even others). The timbres depend on the phonetic context, although later there are usually levellings which lead to the generalization (rarely absolute) of one in each language. On the other hand, there are very clear traces that the vocalization took place both in the syllable before the resonant, in the following one, and in both at once, that is, there were  ${}^{\circ}R$ ,  $R^{\circ}$  and  ${}^{\circ}R^{\circ}$ , to exemplify with  $R$ . I have studied all this since 1958 (Adrados 1958, 1959, 1959 bis, collected in 1973: 3 ff., also 1969, collected in 1973: 359 ff.) and there is a wide bibliography on the subject which has been taken further by A. Bernabé (1977 b).

In this latter article, as in many former ones, there is abundant documentation on  $\theta$  degree  $\check{u}$  (or  $\check{i}$ , in other roots) in languages which, like Greek tend to generalize  $\check{a}$ . See for example Gr. *glyphō*/*glaphyrós*, *kýlix*/*kálix*, *sárx*/*sýrx*, *rádsu*/*rádamnos*, *skirtáō*/*skairō*, etc. At other times it is comparison that attributes an  $u$  or  $i$  to the  $\theta$  degree of a resonant: cf. e.g. Gr. *ónyma*/Lat. *nōmen*, Gr. *blýdsō*/Goth. *quellan*. I do not believe it is necessary to exemplify the vacillations as to the place of vocalization ( $\check{a}r/r\check{a}$ , etc.); as far as double vocalization is concerned, this is well known in the type  $RH > \check{a}r\check{a}$ , etc. (cf. also Adrados 1973: 207 ff.).

3.4.6.2. It is clear that each language tends to generalize one timbre and that, in the case of the laryngeals, the vocalization  $\check{u}$  or  $\check{i}$  was backed by full degrees with  $u$  ( $\check{u}$ ) or  $i$  ( $\check{i}$ ): verbs in *-neu-*/*-nu-*; types OInd. *snauti*/*snutá*, Gr. *chēwō*/*chytós*, etc. But in principle it is the same process by which the development of a supporting vowel led to a vocalization conditioned, as far as its timbre was concerned, by the phonemes in contact, later tending to become fixed with respect to timbre and placing. It is the same case as that of vocalization after a labiovelar: a type  $k^{\#}C$  may give, when it vocalizes

(for the appendix is frequently lost and this gives *kC*), *kūt* (cf. Gr. *gynā*, Lat. *ut*), but may also give *ā* (cf. Boeotian *banā*).

3.4.6.4. That there were at the same time vocalizations  $C^oHC > CāC$ ,  $CH^{uo}C > CūC$ , and  $C^oH^{uo}C > Cauc$  (and parallel results with  $H^i$ ) is normal in Indoeuropean, the vocalizations of which fluctuated on account of syllabization and of the phonetic influence of the phonemes in contact. It is not an irregularity, strictly speaking, if one does not classify as irregular all that occurs in the vocalization of the resonants, labiovelars, etc. When  $H^{uo} > ū$  (guaranteed by *šeḫur* and other Hittite forms) prevailed, the timbre of  $H^u$  was followed (as in  $*g^{uo}nā$ , Gr. *gynā*, in  $*n^o gh^u$ , Gr. *nuch-*, etc.) I repeat: the vacillation  $ā/ū$  ( $ā/ī$ ) tended to be reduced by means of analogical processes: the tendency, except for OInd. *i* (in which *i* was generalized) was to generalize *ā* with the exception of those forms which were supported by vocalic degrees with *i*, *u*. But there are left to us enough discordant elements of the type of  $ā/āu/eu/ā$ , or that of  $ā/ū$  ( $ī$ ) to demonstrate which is the older and which the more modern treatment. On the other hand, not only the appendix of the laryngeal influenced the timbre. Against a Gr. form *dolichós* from  $*dolH^i$ - (see below), there is *dalugaeš* in Hittite: without a doubt it is the *gh* that has imposed the timbre.

See below 4.3.2. on *ī*, *ū* in Ø degree.

3.4.7.1. So much for the Ø degrees. The full degrees of the *āu* type are easily explained. If they lengthen the preceding vowel, this is because the laryngeal formed the syllable with it; if they take *u*, on the other hand, this is because it formed part of the following syllable to which it gave a centre on vocalizing. That is to say that there was gemination; *nāus* for example, comes from  $*neH-H^{uo}s$ . These geminations were frequent in Hittite, as we have seen, but no rule can be given for the use of the simple or geminated consonant (not only *b*) They are also known in the whole of Indoeuropean.

3.4.7.2. Therefore, vacillations (both in the same language and more frequently, shared by several languages, each of which generalizes one result) of the  $ā/āu$  type before a consonant and the  $eu/āu$  one before a vowel, with a greater number of the former forms (*ā*, *eu*), are not strictly speaking an irregularity. They represent two different syllabizations, one of which is joined to the gemination of the laryngeal, which in turn implies a vocalization before a consonant. The analogy has influenced the imposition of

one solution or the other, also in relation to what occurs in the  $\emptyset$  degrees, but not always successfully. Moreover, the problem cannot be reduced, as is most frequently the case, to a few root-words in which forms of the *diē-/diēu-/diēu*, *g<sup>h</sup>ō-/g<sup>h</sup>ōu-/g<sup>h</sup>ou-* type alternate, forms whose alternance cannot be reduced to phonetic conditionings of the traditional type. Identical alternances are widespread in all manner of roots and suffixes (Greek nouns in *-ē-/ēu-*, Hittite ones in *-ai-/a-*, the Latin type *amāui/amāsti* and their parallels in other languages). The documentation on this matter is overwhelming, see below.

3.4.7.3. This latter is clearly backed by the Hittite data. Before a consonant in this language we have doublets such as *paḥš-/paḥhišša-*, forms such as *paḥhur*, *laḥhu-*; before a vowel we likewise find *laḥhu-*, *naḥhu-*, etc. It is clear that in *paḥš-* the appendix has been lost before the \*s and that the subsequent evolution will be \**pā-*, whilst there is gemination and double vocalization at other times. It is quite possible that, at times, in Hittite itself the first *ḥ* may fall and that the preceding vowel may be lengthened: I have given this interpretation in Adrados 1973: 140 (*na-a-ḥu-un* as against *na-aḥ-ḥu-un*).

One should mention on the other hand that the treatments which are normally prevocalic of the type *ei-*, *ou-*, etc., are also sometimes found before a consonant: the types of Greek *épleusa* (together with *éplōsa*) alongside *plēwō*, Lat. *nūtrio* (from *neut-*) alongside O.Ind. *snāti*, etc. It is sometimes easy to resort to an analogical explanation, at others not so easy. But it is easy to think that vocalization before a consonant does not necessarily require gemination: *eH<sup>uo</sup>-C* easily gives *eu-C*. One need do no more than bear in mind doublets in Hittite of the *laḥu-/laḥhu-* type. I repeat that these diphthongs, which alternate with other long ones, with a simple long vowel and with *a*, are etymologically different to those which come from *ei*, *ou*, etc., which do not alternate with *a* or long vowels (except in *Dehnstufe*).

3.4.7.4. I would recall even further strictly phonetic treatments of the laryngeals with appendix which give the result *u*, *i*:

a) *R* (representing a resonant) *-H<sup>u</sup>-V > RāuV*. This is a treatment of the double  $\emptyset$  degree of the roots with resonant and laryngeal: the prevocalic treatment *RāuV* corresponds to the normal preconsonantic treatment *RāC*. (In OInd. *ūrv*, Lith. *uŗv*, *iŗv*, O.Slav. *ŭrv*, etc.) Cf. Lat. *gnāuus*, *flāuus* from *genH<sup>u</sup>*, *bhelH<sup>u</sup>* in the  $\emptyset/\emptyset$  degree,

Lat. *prāuus*/\**prōuus* together with OInd. *pūrva-*, OSlav. *prǫvǔ* from *perH<sub>3</sub><sup>u</sup>*, Lith. *šiŗvas* from *kerH<sub>3</sub><sup>u</sup>*, etc. There are parallels with *H<sup>i</sup>*.

b) *C-H<sup>u</sup>-V* > *CūV/CauV* and *C-H<sup>i</sup>V* > *CīV/CaiV*. The possibility of a syllabation with development of *o* > *ā* is clear. Cf. Lat. *tenuis* and Gr. *tanawós* from *tenH<sub>1</sub><sup>u</sup>*, Lat. *ceruus* and Gr. *kerawós* from *kerH<sub>3</sub><sup>u</sup>*, Lat. *coruus*/OInd. *kāraua-* from *kerH<sub>3</sub><sup>u</sup>*. Similarly there is Gr. *bállō* from *g<sup>u</sup>elH<sub>1</sub><sup>i</sup>*, OInd. *mányate* < *menH<sub>1</sub><sup>i</sup>* and also *-ai* solutions. Cf. Adrados 1973: 289 ff., 295 ff.

Really, the most serious problem of the theory lies in the occasional appearance before a vowel of forms with no trace of the laryngeal appendices, as likewise in initial position. Thus in roots such as *genH<sub>1</sub><sup>u</sup>* which give at the same time forms such as Lat. *ingenuus*, *genui* and others such as *genus* and their equivalents in other languages. In Hittite one may see very clearly, although without any perceivable rules, the alternance of prevocalic forms *-h-* (*-hh-*) and *-hu-* (*-hhu-*): cf. *lahha-* and Gr. *lawós*, Hitt. *pahhueni*, etc. This is a difficult problem which I cannot solve here. Together with cases in which the root is possibly found in its form without laryngeal lengthening (*gen*, not *genH<sub>1</sub><sup>u</sup>*), there is certainly analogical pressure which favours the loss of the *u*, pressure which is almost invariably exerted in Hittite, except in forms supported by an analogy in the opposite sense (that of *pahhueni* over *pahhur*, for example). In certain cases I believe that the loss of the appendices was regular before etymological *i* and *u*. In any case this is a minor irregularity which may doubtless be explained on the strength of diverse secondary levellings.

3.4.7.5. Strictly speaking, there is not then any shocking irregularity in these solutions or in other minority ones, which I shall not discuss here in order to be brief, and which are likewise explained fundamentally by displacement of syllabic boundary. However, this is what has basically been argued against the theory by some critics such as Cardona (1963), Ruijgh (1968, cf. supra 3.1.), Zgusta (1965, a paper which is otherwise balanced and valuable), Michelini (1974 bis, with explanations which split roots and admit a "heterogeneous" *u* after *dō*, *snā*, etc. etc.).

3.4.8.1. It is quite possible that the origin of these criticisms lies in expository defects in Adrados 1961, which insisted on the non-validity of the neogrammatical principle of the phonetic law. This has been understood as a denial of the regularity existing in phonetic evolution: and it is not this at all. There is regularity in the



principles which bring it about, but in the details there are often conflictive points which are later solved by means of levellings that were not always absolutely completed. This is a more realistic conception of phonetic evolution, which on the other hand is becoming increasingly widespread, and which I have done no more than to apply to Indoeuropean: see details of the argument in Adrados 1963 (b), 1964, and 1967. To prefer to cling to certain out-of-date dogmas rather than to study the facts directly and, in the light of these latter, to modify one's method to the right extent, is to cut off the path of scientific progress. Yet however, this is done only too often. I shall merely quote Ruijgh's words in the above-mentioned publication, to the effect that, when difficulties arise "il vaut formuler le problème que poser des hypothèses contraires aux principes de la loi phonétique" and F. Villar's comment (1970).

3.4.8.2. There is nothing suggested by my laryngeal theory which is opposed to those principles of phonetic evolution known today, with its regular conditionings, its internal tensions, its secondary quests for a new regularity; if there is any opposition, this is to a conception of the phonetic "law" which is today always rejected in theory but is still applied in practice. What are impossible to explain by traditional means (loss of the *-u* or *-i* in certain contexts), are appositions of the *ā-* */āu/ eu-* type: the proof lies in the new attempts of which I speak below, but which I do not believe have led to acceptable results. It is also wrong to explain as phonetic a minimum of examples on the strength of  $H_3^{\#}$  and  $H_1^i$  and the great majority of them as analogical (Martinet and Diver's theory). Either one thing or the other: either one admits three laryngeals with each of the two appendices or one discards the appendices. And then we should be left at square one. This is really what has happened with the practical negligence (explicit rather than critical) into which all theories on the laryngeals with appendix have lapsed.

3.4.8.3. One should not forget, however, that another of the obstacles to be encountered is due to Martinet's original theory and the phonological basis given to it. For this linguist, the supposed *ō/āu* opposition would be based on the notion that it is precisely the laryngeal  $H_3$  which makes one expect a rounding of the lips, a rounding which in a tautosyllabic pronunciation of vowel and consonant tinges the former to *ō*, and in heterosyllabic position



produces *u*. For Martinet (1962: 36) the reconstruction of the laryngeals  $H_1^u$ ,  $H_2^u$  and  $H_3^u$  "témoigne d'un certain manque d'intérêt pour les conditions phonologiques de la reconstruction". U. Schmoll (1963) and R. Schmitt-Brandt (1967: 41) express themselves in similar terms and think that the appendix *u* is incompatible with the timbres *e* and *a*.

To my mind, these declarations in turn bear witness to a certain lack of interest in the data: there are hundreds, even thousands of cases of alternances  $\bar{a}/\bar{a}u$ ,  $\bar{e}/\bar{e}u$ ,  $\bar{o}/\bar{o}u$  and others mentioned, whereas cases of  $\bar{o}/\bar{a}u$  are very few indeed and exclusively Latin, depending on a Latin evolution. By no means whatsoever may it be arbitrarily denied that a laryngeal with any timbre could take the appendix in question or the  $\bar{i}$ . This is an aprioristic statement, contrary to the data and with no sound argument in its favour.

#### IV. ALTERNATIVE RECENT ATTEMPTS TO SOLVE THE PHONETIC PROBLEMS UPON WHICH THE THEORY OF THE LARYNGEALS WITH APPENDIX IS BASED

4.1. The basis of the theory of the laryngeals with appendix is, as is obvious, the existence of alternances of the  $\bar{a}/\bar{a}u/eu$  type in the full degree and  $\bar{a}/\bar{u}/au$  in the  $\bar{o}$  degree within the same root or suffix; and of course of other parallel ones with other timbres which sometimes give  $\bar{i}$  (*i*) results. There are irrefutable facts, which it has been impossible to explain by traditional phonetic laws of the type "*\bar{a}u* before a consonant gives  $\bar{a}$ ": there are too many examples against this, too many parallel data (*eu*,  $\bar{a}/\bar{u}$ , etc.) which are left unexplained. Nevertheless, for reasons which in fact depend on the idea that the solutions suggested for the evolution of the laryngeals with appendix seriously transgress the principle of the "phonetic law", the explanation of this problem as I have just summarized it has not received much acclaim. As I have said, I believe this is an error, but this is how it is. Now, under these circumstances it is logical that alternative attempts should have been made to explain the matter in hand. I shall now refer to these: partly on the strength of an important paper by A. Bernabé which deals precisely with this question (Bernabé 1976 and 1977).

4.2. It is clear that there are only two ways out of it: one is to suggest that *u* (*y*) and  $\bar{i}$  ( $\bar{i}$ ) are lengthenings which are either

arbitrarily added or not or else are dropped under certain circumstances for phonetic and analogical reasons; and the other is to suggest that they are part of the root and to also give a few reasons for their occasional loss. These are what I shall term Theory I and Theory II.

In order to avoid confusion, I would like to point out that when I refer herebelow to the theory that *u* and *i* are lengthenings arbitrarily added or not, that is to say, Theory I, I do not wish to deny by my criticism that in a very old phase of Indoeuropean, even *H* was a lengthening added to certain roots, with which *u* and *i* in the ultimate analysis derive from lengthenings. But these are two different approaches. For the Indoeuropean available to us, *H* is already part of the root and functions systematically as such in certain roots. It is quite a different matter to propose that in a later phase *u* and *i* were either added or not to certain roots sporadically and arbitrarily. I refer to this when I speak of "lengthenings" below.

4.3.1. Theory I is nothing new: it is the renovation of the old ideas on lengthenings *u* (*u*) and *i* (*i*). I should like to refer successively to the proposals of Schmitt-Brandt (1967), Lindeman (1968 and 1969), Schindler (1973), Georgiev (1973) and Michelini (1974).

4.3.2. It is impossible to give a detailed criticism of Schmitt-Brandt's book here, backed as it is by ideas related to the resonants which I do not share; cf. certain remarks in J. Gil (1970: 97 ff.) and A. Bernabé (1976: 174 ff.). As regards the subject which most directly interests me here, for Schmitt-Brandt, *i* (*i*), *u* (*u*) are not based on the laryngeals. The older elements are always *i*, *u* which are either part of the root or a 'lengthening' added arbitrarily to such and such a root, sometimes to roots with a laryngeal. Within this scheme, the long diphthongs of the *ōu* type are explained by a *u* (or *i*) lengthening and a lengthened degree (*Dehnstufe*); the alternating forms of the *ō* type are explained either by lack of an *i* or *u* lengthening, or by their loss before a resonant or *-s*.

These attempts, which crop up periodically (cf. W. S. Allen 1976), to underestimate the long diphthongs by considering them to be recent are really due to the belief, as they cannot be phonetically interpreted, that they disrupt the regularity of Indoeuropean morphology. I believe there is no other argument in their favour.

For it has rightly been pointed out that the lengthened degree is a rare and recent phenomenon in Indoeuropean and is of morphological origin. Both before a consonant and before a vowel, *ōu*, *ēi*, etc. appear in places in which Indoeuropean morphology demands the full degree: in the root of nouns and thematic presents, in N.-Acc.-Voc. of the sing. and Nom.-Voc. plural of diverse athematic nouns with sigmatic nominatives, etc., etc. I have given examples above and hundreds more may be found in my previous publications. The long vowel in these cases is of phonetic and not morphological origin. It therefore implies a laryngeal.

Of course, if one accepts this, it might invariably be thought that *u* and *i* are a lengthening, here preserved, in other instances dropped. But the supposed phonetic law by which *-i* and *-u* are dropped before a resonant or *-s* has been put forward too often, always to be finally rejected for its inadequacies and contradictions. Doublets of the type of Gr. *hierēs* (Arc.) /*hiereús*, *nān*/*nāwa*, are infinite as are the violations of the rule of the type of Hitt. *-aiš*/-*an*, OInd. *dyāus*/*dyām*. On the other hand, it does not seem suitable to resort in cases like these (and in others such as Lat. *amāui*/*amāsti*) to arbitrary lengthenings. Where this may be done is in the case of the roots: OInd. *dirghá-* would have *-H*, Gr. *dolichós* *-i*, Hitt. *dalugaeš* *-u*; there would be a practically generalized *\*laH-u*, *\*poH* and *\*poH-i* 'to drink' would alternate, etc., etc. The same roots are split and numerous data are left unexplained such as for example, the  $\emptyset$  degree with *ū* (*ĩ*) alternating with *ā*.

I do not wish to infer with this that Schmitt-Brandt's book does not contain stimulating ideas. In particular, his acceptance that  $u < u^o$  and  $\tilde{u} < ^o u$  (and likewise in the case of *i*, *ĩ*) is close to my own ideas which start from  $H^*$  ( $H^i$ ): with a supporting vowel (or *schwa secundum*, as one prefers) after the laryngeal when it produces the short vowel and with double vocalizations and compensatory lengthening when it produces the long one. In both cases the freedom of the vocalization is explained on the basis of diverse alternating syllabic boundaries.

4.3.3. I believe that one should not have returned to explanations which had really been refuted long ago. It is more or less the same in Lindeman's case (1968). For example, according to him, the duality between forms with *dhē* and with *dhei* would be explained as coming from a root *\*dhei* which would sometimes be lengthened with *-eH<sub>1</sub>*; the form *\*dhieH<sub>1</sub>* would be reduced to *\*deH<sub>1</sub>* before

suffixes with *-i*, and would have spread later. Similarly, *\*peH<sub>3</sub>* would come from *\*pei-H<sub>3</sub>*. However, to obtain so many long vowel forms from dissimilations against which there are many examples (cf. Bernabé 1976: 143) is a highly unconvincing solution; the *ōu* and other forms are left unexplained.

For the rest, this proposal seems to have been abandoned by its author, who in 1979 deduces Hitt. *šai/šiyanzi* from *sa<sub>1</sub>-ye/o/sa<sub>1</sub>yo-*: that is, he postulates the group *H-i* doubtless thinking that forms such as Lat. *sēmen* come from the root not lengthened with *-i*. With this, one returns to the old theory.

4.3.4. Georgiev's position (1973) is somewhat different. This linguist deals with root-words with a long diphthong, identifying their *-u* (he does not deal with those with *-i*) with a suffix *-ū* which denotes the agent (cf. OInd *bhikṣū-*, etc.). The first thing one should state is that his basis is too narrow: these root-words cannot be separated from those with *-i* neither can either of these types be separated from nominal and verbal forms with similar phonetic treatments and which, on the other hand, demonstrate that *-u* originally had no meaning in itself and is not a suffix of the agent.

On the basis of the *-u* suffix or lengthening, Georgiev postulates forms such as Nom. sing. *\*d̥eH-u-s*, Gen. sing. *\*d̥iH-ōu-s*, Nom. pl. *\*d̥eH-eu-es*, Acc. pl. *\*d̥iH-un*, etc., all of these being forms in which the intervocalic *H* was dropped. From this would come a contraction *\*d̥iēues* (cf. OInd. *dyāvas*, *gāvas*, *nāvas*) in the Nom. pl. (morphologically not very clear), which, together with the Gen. sing. (cf. Ved. *dyos* which does not really represent *\*d̥iōus*) would by analogy create lengthened forms of the type of Acc. sing. OInd. *dyām*, Lat. *d̥iēm* etc. There would be no phonetic loss of *-u*, but an analogical extension of a long vowel.

I believe the basis of this theory to be extremely weak and that it also leaves the greater part of the material unexplained. Schindler is really right when (1973) he points out that in this theory the *H* is quite superfluous. He prefers a phonetic explanation: *\*d̥iēum* > *\*d̥iēm* > *\*d̥iēm*. But we are faced with the same problem as always: this is a phonetic law against which there are all manner of data, thus the infinite number of forms with a long vowel in different circumstances, the *-ōu* forms, etc., etc.

4.3.5. In brief, all these theories are infinitely less economical, less regular and affect a smaller number of cases than the phonetic theory which operates with laryngeals with appendices. They bring



in unnecessary hypotheses, split up forms of the same root as if they were different roots and resort to highly implausible and isolated phonetic and analogical processes. The same may be said for the resurrection (once more) by Michelini (1974) of the theory of the lengthenings in its purest state, that is, without considering "phonetic losses". It is not true that the long vowel roots which alternate with *-u* forms are few; it is unacceptable to break the links between so many forms with and without *-u* (OInd. *drāti/drāvati*, Gr. *dsōnnymi/dsygón*, etc.). One cannot speak of morphology in relation to a *-u* or an *-i* which appear in roots with no special meaning whatsoever and which are morphologized only secondarily with quite different meanings.

4.4.1. The foregoing does not mean any more than that the theory of *-u* or *-i* lengthenings and that of its phonetic or analogical loss upon occasion, is still as unfeasible as ever. Perhaps the soundest proof of this is that a new theory has been put forward, Schmalstieg's (1973), which disregards these lengthenings and gives a purely phonetic solution to the facts studied here. It is not a laryngealistic explanation and I believe it is less economical and leaves more lacunae than that of the laryngeals with appendix: cf. A. Bernabé's criticism (1976), the arguments of which I still believe to be valid despite Schmalstieg's rejoinder (1978). But the essential point is this: Schmalstieg perceived the inadequacies of the theories based on lengthenings and noted that the alternance of long vowels with forms with either a diphthong or with *i*, *u* is the consequence of an old group of vowel plus an element *X*. This element *X* which is to my mind a laryngeal, is an *i* or a *u* for Schmalstieg. This theory differs radically to those of the group I termed Theory I: it is a Theory II, parallel to that of the laryngeals with appendix. It substitutes this latter and at the same time, all the ensemble of laryngeal theory.

4.4.2.1. Schmalstieg's theory is a coherent explanation of forms which are traditionally explained by means of two series of elements (laryngeals and lengthenings *u*, *i*) and which I on the other hand, explain by one sole series (laryngeals with appendix). The question, therefore, is to see whether my explanation is more economical or not. First of all, however, I shall set out the points in common, which are of great importance.

To a great extent, Schmalstieg strictly coincides with my own views, simply substituting  $H^*$  and  $H^i$  by *u* and *i* and attributing



the same phonetic results to them. Thus, when he suggests, for example, that

$$ou-C > \bar{o}C \quad \text{and} \quad ou-V > ouV$$

he is practically repeating my proposal:

$$oH^u-C > \bar{o}C \quad \text{and} \quad o-H^uV > ouV$$

The same goes for the case of the other old diphthongs, although, as *u*, *i* lack the timbres peculiar to the laryngeals, Schmalstieg's monophthongizations (*oi* >  $\bar{e}$ , *eu* >  $\bar{u}$ , *ei* >  $\bar{i}$ , *ai* >  $\bar{a}$ , *au* >  $\bar{o}$ ) can only scantily explain the true alternances which are found (of the types  $\bar{a}/ei$ , *oi*, etc.).

Like myself, Schmalstieg explains the OInd.  $\bar{i}$  in the Ø degree as a generalization of the solution  $\bar{i}$  which is also given, together with  $\bar{a}$ , in other languages.

4.4.2.2. It thus occurs that an enormous amount of the material on roots and morphemes which I handle in my previous books on the subject (Adrados 1961 and 1963, above all), is also used by Schmalstieg in a way which is strictly parallel to my own, except that, I repeat, he starts from *u*, *i* and not from  $H^u$ ,  $H^i$ . I refer, in the vocabulary, to doublets such as Gr. *gélōs/gélvs*, Indoeuropean in general *dō-/dou-/du-* 'to give', and in morphology to oppositions such as *-nā-/nī-* in the Indian verb, *i/ē* in Baltic, Greek verbs, etc., *-ā/-y* and *-ā/-ay* in Old Indian and Avestic nouns, *-aiš* in Hittite (*zaḫḫaiš*, etc.) and *-ēs* in Latin (*dīēs*, etc.). My material is far more abundant and includes the study of the morphologizations; but there is in fact a step forward in the same direction and from similar points of view.

4.4.2.3. I should also like to mention Schmalstieg's theory that in an inflexion such as that of  $*reH_1^i$ - 'thing' (for him  $*rei$ -), the explanation of the variants of the type of OInd. Nom. sing. *rayīs/* instr. *rāyā* is on the basis of  $*roy-i-s/*roy-y-ē$ , that is, on the acceptance of a simple / geminate opposition, in this case with distribution of *y-y* between two syllables and with loss of the *y* of the former thus lengthening the preceding vowel. This is exactly my own explanation (with  $H_1^i$ ). The important thing is that gemination is now acknowledged as likewise spontaneous syllabic displacement; I recall that Mayrhofer already admitted this second point on the basis of  $H_1^i$ , cf. above 2.5.; cf. even earlier Szemerényi (1956: 173).

4.4.3.1. I believe that these are the most valuable results of Schmalstieg's theory. If this was all, one might perhaps value his theory and mine equally. But I believe that mine has the advantage in that it explains in a phonetically impeccable way marginal results presenting difficulties that Schmalstieg's theory is incapable of solving. I once more refer to A. Bernabé's criticism (1976). I shall give here the most essential points in a way that is coherent with the former explanation:

Schmalstieg is incapable of explaining:

- a) — The alternance in the full degree, of the regular results ( $\delta \dots$ ) with forms of the  $\delta u$  type, whether before a consonant or before a vowel.
- b) — The alternance, also in the full degree, of the regular results with those of the preconsonantic  $ei$  type ( $\bar{a}-C/ei-C$ , etc.).
- c) — The alternance of all these full degrees with  $\tilde{a} < \beta$  degrees (for all cases) and  $au/ai$  (according to the roots and forms).
- d) — Despite all, he still works with  $-u$  and  $-i$  "lengthenings" with no very clear explanation.
- e) — He is left without an instrument to explain results of the laryngeals which do not depend on the appendices: above all, the aspirations and development of initial protheses and the aspiration of voiceless occlusives (see Villar 1971).

I believe that Schmalstieg's rejoinder to Bernabé (1978) leaves all these problems practically intact. Disregarding the last of them, which is sufficiently clear and needs no comment, I shall now discuss the others.

4.4.3.2. a) — The results of the  $\delta u$  type, which alternate in the full degree with  $\delta C$  and  $euV$  ( $ouV$  by apophony), are explained by Schmalstieg as contaminations of the "phonetic" results. This is an extremely narrow basis and an unfounded hypothesis. There is no real basis to the notion that in an alternating ending of the type of Ved.  $-\bar{a}/-\bar{a}u$  one should start at  $-\delta C/euV$  and then, in the second case, go on to  $-\delta u > \bar{a}u$ . To think that an OInd.  $snāuti$  is a contamination of  $snāti$  and  $snavati$  and likewise in all cases, is to unnecessarily complicate matters by inventing non-existing forms. And what should one say of so many forms in which there is opposition of  $\bar{e}/\bar{e}u$ ,  $\bar{a}/\bar{a}u$ ,  $\delta/\delta u$ , etc. (OInd.  $jajñāu/jajñātha$ , Lat.  $amās/amāui$ ,  $sēmen/sēui$ , etc., etc.)? The starting-point of the whole theory lies in oppositions of this type and yet they are not explained in Schmalstieg's: neither are the forms themselves explained nor their

effect on the timbre of the vowel, for the contractions of diphthongs suggested by this author give other results.

The explanation is so weak that Schmalstieg, in his rejoinder to Bernabé, complements it with the influence of the *Dehnstufe*. But vast series of old data with highly irregular distribution cannot be explained by means of short regular series of recent data.

4.4.3.3. b) — The preconsonantic results of the *ei* type are explained as belonging to "recent" results as against the old monophthong ones. There is no proof of this recent nature. If there are analogies, it is often impossible to find their starting-point. Neither is the other alternative solution acceptable (Schmalstieg 1978: 139), that of the loss of short vowels in imprecise circumstances (*ejeC < eiC*). On the other hand, there are series *ei/oi/i* and *eu/ou/u* which are obviously old ones (of the type of *\*leik\**, *\*trei*) and which lack parallel forms with a long vowel: a different phonetic reconstruction is needed, based on *u*, *i* (and not on *H<sup>u</sup>*, *H<sub>i</sub>* as in the other case). There is no trace whatsoever of *lēk\**, *trē-*, for example. This is a serious blow against Schmalstieg's theory. For old diphthongs have not been monophthongized. Then, when there are alternances of the type of *ē/ei*, *ō/ou*, etc., before a consonant in the same root, this is not a question of chronology. I have given my explanation: these are results from two different syllabizations, one of which is accompanied by vocalization. That *ei* is more recent than *ē* is yet to be proved; my explanation, however, employs a phenomenon of general phonetics.

4.4.3.4. c) — The *ø* degree *ǣ* gives Schmalstieg great trouble. He has to resort to devices like splitting OInd. *pīlǣ* and Gr. *patēr* (based on a precedent of Barrow's). Should we split in two any root which takes either *ǣ* or *ū* (*ī*) in the *ø* degree? The matter is even more serious if one does not accept the laryngeals but merely a *ə* responsible for the *ø* degree. A root of the *Cə* type requires the forms *Ceə*, *Coə*, in its full degrees: yet we are told that the long vowels always come from diphthongs with *-u* or *-i*. Left without laryngeals, Schmalstieg is deprived of a valuable instrument in reconstruction (remember what I said on item d). On the other hand, the *ø* degrees *au*, *ai* are not even mentioned. This is another point which has been left unexplained.

4.4.3.5. d) — Schmalstieg 1978: 107 rightly points to the deictic *-i*, *-u* of certain verbal endings. But to identify them with supposed lengthenings of roots such as *bhe*, seems erroneous: we once more come

back to the famous lengthenings, in fact it appears that Schmalstieg suggests that any *-u* or *-i* in these diphthongs is a lengthening. I have already criticized the semantic problems and those of another type (e. g. the real deictic *-i* and *-u*'s do not come in series with a long vowel such as those studied here) of lengthening. I would add here that the peculiar contractions suggested explain, for example, *bhe-u* > *bhū* as a full degree, when it is really a Ø degree, and leave the real full forms unexplained. After rightly transferring the debate on the whole complex of these data to the field of phonetics, Schmalstieg once more turns back to the supposed lengthenings.

4.4.4. Thus, in fact, I believe that Schmalstieg's work is a confirmation of the needs to which the theory of the laryngeals with appendix responds. It is a good parallel and a reassertion of many of their solutions. But it is a far less economical theory and one far more open to criticism in the name of regularity in phonetic evolution.

#### V. NEW DATA OF USE TO THE THEORY OF THE LARYNGEALS WITH APPENDIX

5.1. Thus, for the past few years, the need has been felt to explain in a new way the data on which the theory of the laryngeals with appendix is based. This is proof that previous explanations were unsatisfactory. But these new theories do not satisfy either, continually being renewed and for the most left to one side without even criticism or commentary. Nevertheless, their very existence is important for the reasons stated above. Moreover, here and there they contribute highly interesting points as, for example, that in relation to syllabic boundaries and vocalizations; the relationship between long vowels and forms with *u*, *i*, which scholars are now trying to establish by phonetic means along new principles, etc.

Meanwhile, new data have come to light which I believe can be interpreted from the point of view of the laryngeals with appendix: sometimes their discoverers point this out, sometimes they do not. They are support for this theory, and I shall offer a short review of them.

I shall disregard the strict and detailed application of the laryngeals with appendix to the problem of Indoeuropean morphology in works of the Spanish school later than the phonetic study by



Adrados 1956, 1961, 1973: I mean Adrados (1963, 2nd. edit. 1974, 1975), González Fernández (1974, with a personal variation, see above), Villar (1974) and Bernabé (1976, 1977) above all. I shall refer only to other publications.

5.2.1. It is curious that there should be increasing emphasis on phonetic results which I attribute to the laryngeals of the  $H^i$  type rather than on those derived from the  $H^u$  type. With explicit reference to said laryngeals, one should quote L. G. Heller's article (1966, [1973]) in which he attributes the origin of reduplications with  $i$  to same: that is, to give two examples, Gr. *kíchlā* would come from  $*ghH^i-ghH^i-l-eH_2$  (I would rather suggest  $*ghH^i-ghl-eH_2^i$ ), Gr. *bibádsō* would come from  $*g^uH^i-g^uH^im-$  (I would simply suggest  $*g^uH^ig-^uH_2^i$ , cf. the full degree *ébā*).

The article has certain obscure points, for it speaks simply of a palatal laryngeal, although the truth is that it gives examples with the three timbres. On the other hand, it gives examples of roots in which there is really a laryngeal  $H^u$  ( $*dheH^u$ ,  $*deH_3^u$  in Gr. *títhēmi*, *didōmi*, etc.) I do not really believe that reduplication with  $i$  automatically means the presence in the root of a laryngeal  $H^i$  but it is plausible that this should be the starting-point, later analogically extended to other roots. Cf. e. g. Hitt. *išhai-/išhiia-*, Luw. *hishiia-* 'to tie' from a root  $*seH^i$ .

5.2.3. At the beginning of this article I referred to Georgiev's (1974) and Watkins' (1975) contributions on the Luwian abstracts in *-ahi* and *-ahit*, closely related to the nouns in *-ā/-ǎ* (first declension) and the neuter plural also in *-ā/-ǎ*, originally the same formation. In this passage I referred only to the fact that the presence of the laryngeal in these formations is now directly witnessed whilst its presence had so far been merely deduced by comparison and internal reconstruction. But at this point, the reader will clearly see that this is precisely a laryngeal  $H_2^i$ , the same that I postulated years ago (Adrados 1961: 268 ff., cf. also Villar 1974: 146 ff., Adrados 1975: 372 ff., 436 ff.).

The same authors mention forms with *-i* in several languages which the Spanish school has long interpreted as coming from a palatal laryngeal. Georgiev quotes OInd. *sénāya*, *sénāyai*, *séne* from *senā*; Gr. *gýnai*, OSlav. *zenojq*, etc.: there is an infinite number of other examples. Of course both Georgiev and Watkins postulate  $H-i$ , but we already know the difficulties of proposals such as these. One should rather think that Palaic solutions such as those we have

seen (in neuter plurals and in verbs) *-a-*, *-aa-*, *-aga-*, bear witness to not only a laryngeal which is being lost, but also to a laryngeal which during a first phase had lost its appendix.

On the other hand, the fact that Luwian *-aḫi* corresponds to Hittite *-(a)ai* is once more witness to the tendency of the laryngeal to be lost in this language. Moreover, one should add the pure stems in *-aḫi* of Lycian, used mainly as Dat. sing. and corresponding to Hittite *-ai*; cf. my paper "Further Considerations on the Phonetics and Morphologizations of  $H^i$  and  $H^u$ " (forthcoming).

On the other hand, if the laryngeals were being lost in Hittite and if there are alternances  $h(\bar{h})/\emptyset$ , there is nothing strange in that there should be alternances of the  $hi/i$  and  $hu/u$  type: examples were really found long ago (cf. Adrados 1973: 393 ff.). But now Watkins' above-mentioned article offers others: he finds data which make him postulate the loss of an  $H$  before *-i* in the verbs in *-aizzi/-aiti*. If one explains that he postulates *-H-i-* where I postulate simply  $H^i$  one may observe in fact that we are working along the same lines. So far nobody had suggested the existence of a laryngeal in this inflexion.

5.2.4. Alternances of long vowel/*i(u)* are not lacking in Hittite, many had been collected in previous papers; they were for example, the basis of Risch's theory and I had added numerous data; they are also to be found in Villar (1974) in his study of nominal inflection. There are now new data in J. J. Weitenberg's article (1979) on the Hittite stems with a diphthong. By using material from old Hittite, he demonstrates the inextricable mixture of forms in *-a* and *-ai*. There is *-aš* and *-aiš* in Nom. sing., *-an* and *-ain* (*-aen*) in Acc. sing.: *-an* is considered to be the older form, whilst the use of *-ain* increased with time and is analogical to the Nominative. Weitenberg rightly points out the analogy of Lat. *diēm*, OInd. *dyām*. One should note that in the Nom. Indoeuropean presents both a long vowel and a long diphthong (Lat. *diēs*, OInd. *dyaus*). That is, the peculiarities mentioned are almost always connected with root-words, they have far wider extension and are of Indoeuropean origin. As is well known, the Gen. sing. of this declension is in *-iiaš*, obviously from *\*-H<sup>i</sup>-os*.

5.2.5. One could bring forward much more material, but I shall leave the Anatolian languages and search outside them. I should like to refer to an article by C. Sandoz (1974). I had suggested that originally the verbs in *-neu/-nu-* represented an excision of the

phonetic results from  $*-neH-/*nH-$ , which also gives verbs in  $-nā-/-nā-$  (in OInd.  $-nī-$ ). But I believed that this  $H$  was not always  $H_2^u$  although it was the model of the second type, and I gave material in favour of old nasal verbs with  $H_1$  and  $H_3$ , both with labial and palatal laryngeal. Traces of this are to be found (Adrados 1974: 690 ff.) in the  $-nī-$  of OInd. (a generalization from  $H^i$ ), in verbs in  $-nai$  in Germanic and Baltic, in  $-ni$  together with  $-nā$  in Hittite, in thematizations such as Gr. *iaīnō*, OInd. *iṣanyati*, Toch.  $-ññ-$ ,  $-ñ-$  <  $*-nH^i$ , etc. Similarly, in C. Sandoz's above-mentioned paper, the existence of Indoeuropean verbs in  $*-neimi$  is put forward as parallel to those in  $-neumi$ , on the strength of comparisons such as OInd. *ubhnāti* with Gr. *hyphainō*: the type would have passed into the normal one in  $-nāmi$  by the confusion in OInd. of the result of  $i$  and  $a$ . Really, one should postulate that  $*-neH^u$  and  $*-neH^i$  converged in  $-nā$ , hence the origin of successive reorganizations.

5.2.6. An article by A. Maniet (1969) examines a morphological contrast, that of Gr. *philéo/ephilēsa* which I had explained with the aid of  $H^i$ : it was observed that the regular solutions of  $-H^i$  are  $eiV/\bar{e}C$ . Maniet's solution cannot be the same for he works with  $-e-i-/-e-H-$ . It is, I repeat, simpler to postulate  $-H^i$ .

5.2.7. It is not a definite conclusion, but is worth noting that in Messapian the first declension presents datives of the sing. both in  $*-ai$  (*theotia* <  $*teutā$ ) and in  $-ahi$  (*etθetahi*, perhaps 'mother'), cf. O. Haas 1962: 187 ff. As we interpret these datives as pure stems in  $*-eH_2^i$ , it may easily be thought that in forms of the second type the  $-hi$  is a trace of the palatal laryngeal. It is quite true that  $-hi$  is generalized as a form of the dative where a laryngeal is not expected. But it is no less true that there are traces of  $h$  as coming from a laryngeal: for example, corresponding to Gr. *grāus* (with  $H^u$ ) there is *grahis*, Gen. sing. *graheos/graveos* (Haas, l. c.: 196).

5.2.8. However, perhaps the most interesting contribution during these years is that of K. Strunk, who in two articles (1969, 1970) suggested the existence of  $\beta/\beta$  degrees in disyllabic roots which in Greek give  $oRi$  ( $R$  symbolizing any resonant): *pólis*, *dolichós*, *amboliERGós*. At other times, another short vowel would appear in the second syllable: *korésai*, *tomóntes*, etc.; before a vowel the laryngeal of the second syllable would be lost, with which he explains, for example, *polýs*.

All this theory is based in the first place on the acknowledgement of the vocalism  $o$  in the vocalization of the resonants: a fact which

it would be a good thing to start accepting, for formerly it was restricted to a dialect such as Aeolic. See bibliography below on these vocalizations.

I believe that morphology (the case of the thematic aorist) and comparison (cf. Gr. *dolichós*, OInd. *dīrghás*) speak for this theory: in the case of Strunk's first examples I had postulated a F/θ degree. But this is not what interests us most here but the appearance of the *i* in the second syllable. It is true that Strunk does not know how to explain it very clearly; he speaks of a "combinatory variant". The fact is that he recognizes the *i* in a θ degree as against full degrees with a long vowel: that is, the *i* vocalization is acknowledged as coming from a laryngeal. This is the laryngeal  $H^i$  and I have given extremely abundant examples of this phenomenon (in Adrados 1961): I give examples not only in Greek, but in Indo-European in general; not only for  $i < H^i$ , but also for  $-u < -H^u$ .

To be precise, I have interpreted *polýs* as from  $*polH_1^u-$ , which together with forms with a long vowel such as OInd. *áprāt* has others with *u* as Lat. *plēui*, OInd. *paprāu*, Gr. *plēwon*, *ploutos*, etc. This means that the  $-ū$  of the  $-ū$  stems is of laryngeal origin; if this has not yet been acknowledged, then the laryngeal origin of the  $-i$  of the *pólis* type has been, as I had proposed; this is based on alternances of the *pólēi* type with a long vowel. That is, we are on the point of discovering that nominal (and verbal) formants come from radical laryngeals. Specifically the formants  $-i$ ,  $-i$  (not only  $-ē$ ,  $-ā$ , etc.).

5.3.1. There are few data and interpretations which have come to light over the past few years and which contribute to the theory of the laryngeals with labial appendix. This is indirectly related to O. Parlangeli's paper (1972) in which he gives new Messapian material for the perfect in  $-u$ , deriving it from first persons of the sing. of the type of Lith. *sakāu* 'I said', OInd. *dadāu*, Toch. B *takāwa*, according to a doctrine which is for the rest well-known; I have interpreted these forms as coming from the radical  $H^u$  laryngeals. But Parlangeli does not realize that the same formant also has other functions and that that of marking the perfect is a specialization. I would also mention J. Saint-John (1976), who considers that in the Latin perfects in  $-ui$  there is an antihhiatic  $-u-$  (cf. supra 3.3.3. on this theory). There is at least a step forward in that he attributes phonetic and not morphological origin to this form.

5.3.2. Although limited, T. González Rolán's contribution (1972)



is of interest within the laryngealistic theory. He explains the Latin perfects *fixi*, *uixi*, *struxi*, *fluxi*, corresponding to the presents *fiuo*, *uiuo*, *struo*, *fluo*, as coming from  $*-H^s$ -s, according to a treatment which has been put forward (cf. data in Adrados 1973: 90, the origin is in Martinet 1953). This same laryngeal is the origin of the  $-u$  of the present. The reciprocal confirmation of the origin of the  $-u$  and the  $x$  is worth noting. More data on the  $-k$  of the perfect, within the same line of thought, is to be found in O. Parlangeli's above-mentioned article (1972).

## VI. INDOEUROPEAN MORPHOLOGY, THE TOUCHSTONE FOR THE THEORY OF THE LARYNGEALS WITH APPENDIX

6.1. In criticisms of the theory of the laryngeals with appendix, some of which I have mentioned above, one notices a lack of attention (which would be essential) to the repercussion of this theory in the interpretation of Indoeuropean morphological evolution. I believe it is precisely the fecund nature of the theory in reconstructing the creative process of Indoeuropean morphology which most speaks in its favour.

This is really the second strong argument to be put forward in favour of the laryngeals with appendix. The first is that they phonetically explain a series of morphological elements with  $i$  ( $i$ ),  $u$  ( $u$ ) which it was impossible to interpret as old lengthenings and morphemes; moreover, it explains them phonetically in a plausible way, that is, without arbitrariness and at the same time realistically. The second argument, closely related to the first, is that it is thus possible to see how elements which were originally radical take on grammatical meanings in a second phase depending on the oppositions into which they are integrated, and hence are widespread as suffixes or endings.

6.2.1. In fact we are dealing with something as simple as the following. Several present stems with  $-u$  ( $u$ ) and numerous others with  $-i$  ( $i$ ) exist in verbs of different languages. In many cases, these are certainly suffixes which spread when added to roots or stems without a laryngeal; they are often diffusions and specializations of a recent date. But there exist a certain number of verbs in which the  $-u$  ( $-u$ ) presents all the characteristics of being a perfectly phonetic development of a root which we know from independent data to have had  $-H^s$ ; similarly,  $-i$  ( $i$ ) is found in roots with  $-H^i$ .

Let it be well understood that we are not going into whether at the remotest date the element  $H^u$  or  $H^i$  was a lengthening, or whether before there existed a root  $*g^ueiH_1^i$ - ('to throw', whence Gr.  $*ballō > ballō$ ) there was  $*g^uei$ - or not; if before  $*g^ueiH_3^u$ - (whence Lat. *uiuo*) 'to live' existed, there was  $*g^uei$ - or not. The important thing is that, from a very remote date onwards, these roots appear with the laryngeal in all manner of nominal and verbal forms, and that it was an element with no semantic or morphological value.

6.2.2. Therefore, it is quite normal to attribute a radical origin to the  $-u$  ( $-u$ ) and the  $-i$  ( $-i$ ), particularly an origin in roots such as those mentioned. This is confirmed by the fact that in principle the  $-u$  ( $-u$ ) and  $-i$  ( $-i$ ) of these verbs carries no special meaning, and that they also appear in nominal forms and in the verb outside the present tense.

To be precise, roots in  $-H^u$  present a  $-u$  or  $-u$  in forms of the aorist and perfect of several languages: sometimes in all persons and at others in only some of them. These are forms such as the perfects of OInd. *jajñau/jajñātha* (from  $*genH_1^u$ - 'to be born'), Lat. *plēui*, Lith. *pyliau* (3rd. sing. *pylia*) from  $*pleH_1^u$ - 'to fill', Lat. *dāui*, Lith. *daviau* from  $*deH_3^u$ - 'to give', and many other forms of these languages, of Tocharian, of Messapian, of Greek itself (I believe that the suffix  $-uot$  of the perfect sprang from roots with  $-H^u$ : *beblēwōs*, *tethnāwōs*). More seldom we find an  $-i$  ( $-i$ ) outside the present tense which comes from roots with the laryngeal  $-H^i$ .

6.2.3. Either within or outside the present tense, certain stems which end in the above-mentioned resonants might sometimes have been specialized from a remote date onwards to mark aspects, voices, *Aktionsarten*, etc. But the fundamental point is the specialization which makes them indicate (sometimes together with other elements) whether the stem is a present, an aorist or a perfect: at times and secondarily, the person.

It is easily seen that when a normal phonetic treatment reduces the  $-u$  ( $-u$ ) or the  $-i$  ( $-i$ ) to one sole stem, then it is automatically converted into a characteristic of this stem in virtue of the opposition thus established. For example, the  $u$  ( $-u$ ) is phonetic in Gr. *plēwō/éplōsa*, in Lith. *dúomi/daviau*, in Lat. *uiuo/ulxi*, *plēs/plēui*, etc.; so in certain cases it automatically became a present tense marker, in others a marker of other tenses than the present (aorist or perfect originally). Furthermore, in an archaic Latin inflexion *amāui/amāsti* the different phonetic treatments ( $\bar{a}uV/\bar{a}C$ ) serve

to differentiate persons, and the same occurs in Toch. B. *kālpāwa*/*kālpāsta*); in the Lithuanian preterite a final fluctuation *\*-ēu*/*\*-ē*, *\*-āu*/*\*-ā*, which is of phonetic origin (solution before a vowel and a consonant respectively at the beginning of the following word) and which in OInd. tends to become free, is used on the other hand to oppose 1st. sing. (*-iaû* < *\*-ēu*, *-aû* < *\*-āu*) and 3rd. sing. (*-é* < *\*-ēu* -o < *\*-ōu*).

The same occurs with *-i* (*-î*). The most frequent case is that in which the present has *-i* or *-î*, either thematic or semithematic, against which there is an old aorist with *-ē* or *-ā*. There is, then, a trace of an alternance *\*-H<sup>i</sup>*/*\*-eH<sup>i</sup>*: cf. Gr. *chairō*/*echārēn*, OSlav. *minjō*/*mīnĕxŭ*, etc., but there is also, for example, *-āiV/āC*, that is, two phonetic variants of the full degree: Gr. *\*timajō* > *timáo* (alongside Aeol. *tīmāmi*, cf. Hitt. *ḫatrami*, *newahmi*)/*etīmāsa*, Lith. *dovenóju*/*dovenóti*, etc.

6.2.4. In fact, *-u*, *-i* and their variants, and likewise *-ā*, *-ē*, are found in the different wrongly called tense stems (and also in the models), sometimes also indicating diverse specializations (stative value, aspect in Slavonic, etc.). Their appearance in principle is phonetically conditioned: only by means of opposition within a morphological series of a language or group of languages, are the *-u*, *-i*, *-ē*, *-ā*'s specialized and morphologized. But the origin is precisely wherever there is no trace of grammatical meaning: in roots with a laryngeal. It should be noted that what we postulate for *-u*, *-i* should likewise be postulated for *-ē*, *-ā* (both for the present and for the aorist; for the indicative and for the subjunctive): the acceptance of the laryngeals with appendix does no more than carry further a theory which is in any case essential once the laryngeals are acknowledged. When they are not acknowledged, the problem of the specialization of the other lengthenings, the *-s-* for example, is exactly the same in actual fact. See below.

From the foregoing one may draw the conclusion that, as they derive originally from the root, *-u* and *-i* may appear in several stems of same whenever the phonetics require this: the morphology then distinguished the stems with the aid of other devices (vocalic alternances, etc.). Cf. e. g. OSlav. pres. *moljō* /pret. *moli*. But most often it happens that, once a suffix is created with a given grammatical meaning, it spreads only with this and tends to be differentiated. Although there is no lack of interferences between the suffixes with *-i* and *-u*, enlargements with *-ē*, *-ā*, etc.

6.2.5. It is also logical that even where the *-H* is not etymological but has been transferred as a morphological characteristic, the phonetic results should be the same. For example, an inflexion such as Greek: *philēō/ephilēsa* is only explained by means of an element  $*-eH^iV > -eiV/*-ēH^iC > -ēC$ : yet however these are denominatives and there is no original *-H<sup>i</sup>*. It is doubtless analogical to other denominatives of the type examined above: *-āiV/-āC* (its oldest model derived from root-words of the type of Gr. *mnāomai* from  $*g^hneH_2^i-o-$  is specifically radical and thematic). In it the laryngeal is original, see above 5.2.3. on traces of same in Hittite and OInd. In a similar way, Latin preterites such as *amāui/amāsti* or Tocharian ones such as *kālpāwa/kālpāsta* present normal phonetics although here it is not a case, strictly speaking, of roots. Evidently formants with  $*-eH^u$ ,  $*-eH^i$ , etc., appeared in an older phase; they are often used in stems opposed to others without a laryngeal (or with a laryngeal which was lost without leaving traces), of the type of Gr. *leipō/ellipēn*, Lat. *lego/legē-bam*, Goth. *haba/habai-da*, etc.

6.2.6. I am not going to describe the details, which include many irregularities (slidings and secondary specializations, contaminations, etc.): I have already given full descriptions in my former publications (above all Adrados 1961, 2nd edit. 1973; 1963, 2nd edit. 1974; 1975). It is a question above all of demonstrating that the morphological theory fits perfectly into the phonetic theory of the laryngeals with appendix, and that this so generally neglected fact is the best proof of the validity of the latter.

If it is denied, it is not only that a few isolated facts are left unexplained for which unconvincing theories are time and again manipulated. Central morphological facts of the verb (and the noun) are left unaccounted for, hundreds, thousands of forms in all the Indoeuropean languages.

6.3.1. Once we have come to this point, it would be a good idea to state that the current trend of research in this field is far better prepared to take in ideas such as these. This is for two reasons: on account of the progressive acceptance of the fact that the same formal elements are grammaticalized or morphologized in different ways for reasons of the system (for integration in different oppositions); and because of the equally progressive acceptance of the fact that polythematic verbal inflexion is secondary in Indoeuropean, which implies the need to study its origin.



Let us examine the first point. In *Indoeuropean Linguistics* the interminable controversy is traditional on whether the *-ē*, the *-ā*, the *-s*, etc., that is, the different characteristics of the verbal stems, are originally of the present or aorist or if their oldest meaning is stative or intransitive or desiderative, etc. In other instances, it was a question of demonstrating that the *-s-* of the aorist was different to that of the subjunctive or the *-e/o* of the indicative was also different to that of the subjunctive, etc., etc. I am not going to go into this controversy now as I believe it is based on false hypotheses: that the polythematic verbal system (and in particular the version peculiar to Greek and Indo-Greek) comes from the oldest type of Indoeuropean; and that within it, each formal characteristic had one function and each function one sole formal characteristic (1:1 ratio). I have fully criticized this in a former paper (Adrados 1971), among several others.

Precisely the fact that it is impossible to discover one sole original meaning for the *-u* (*-u*) and *-i* (*-i*) of diverse verbal and nominal formations, often with unmistakable traces of radical origin and secondary specialization, is what has made impossible any explanations of same which would be coherent from both the phonetical and morphological point of view; in fact, this has made it impossible to reconstruct "one" Indoeuropean *-u* or *-i* with "one" grammatical meaning. However, there is a change of opinion which differs from the older current of ideas and accepts the presence in the Indoeuropean verb (to keep for the moment to this latter) of the same morphological elements with several functions. There is also a tendency to apply structural criteria in order to explain the origin of the diverse grammaticalizations by means of oppositions.

6.3.2. See, for example, in F. Bader (1974: 15), the simple admission that various lengthenings *-t*, *-s*, *-u*, *-k*, etc., may, independently of their origin, be added to the same or different roots to mark tenses and persons, likewise different according to the oppositions in which they are included. Opinions such as these are becoming increasingly general. For example, W. Meid (1979: 170) uses this criterion quite normally to explain the creation of the Indoeuropean opposition of present/aorist on the basis of an *-s-* which was previously indifferent to it. N. Berg's (1977) paper in the same sense on the origin of the Greek past-perfect is also a remarkable contribution.

More or less explicitly, structuralist positions of this type are spreading. Without going into the theoretical details, I should like to refer here to papers of mine which support this theory (above all Adrados 1963: 55 ff., 1965, 1968, 1971).

I would point out that the theories developed by Kuryłowicz, above all from 1964: 9 ff. onwards, and followed also by Watkins, have certain points common with mine when they explain certain semantic developments by means of oppositions. But Kuryłowicz is more concerned with explaining the birth of derived meanings with later formal specialization and does not go into the fundamental question of explaining the grammaticalization, within the new systems of oppositions created, of older formal elements which had nothing to do with the new meaning (cf. Adrados 1971).

6.3.3. It is above all important, as I said above, that the thesis is today becoming more widely acknowledged which has been the substance of several works of mine since 1962 and which postulates that the verbal system of Anatolian represents a more archaic phase of Indoeuropean than that other which is at the root of the other Indoeuropean languages. To be precise, Indoeuropean only secondarily created a verbal system which opposed several stems for each verb: present, aorist and perfect (later dialectally, the future, also); indicative, subjunctive and optative (the imperative, as is known, is archaic and of the same stem as the indicative). This is today the position of authors such as Kerns-Schwarz (1972), W. Meid (1975, 1979), W. P. Lehmann (1974), W. Cowgill (1975, 1979), O. Carruba (1976), E. Neu (1976), W. R. Schmalstieg (1977), B. Rosenkranz (1979).

It, therefore, turns out that we are now faced with a problem of enormous dimensions, which did not arise for the traditional school of thought which postulated that the polythematic verbal model of Greek and Indo-Iranian was that peculiar to the oldest type of Indoeuropean. We are now faced with a series of stems which were only secondarily opposed to each other and which possessed a large series of formal markers. Furthermore, we know that these formal markers were neither of the present nor the aorist nor the subjunctive, etc., precisely because they existed at an earlier date to the creation of these categories, of which Anatolian bears witness.

6.3.4. Therefore, we must explain how and why an *-s-* became a characteristic of the aorist or the subjunctive or, also, within the present, of the desiderative. It is no good saying that *-s-* was

originally of the preterite or that there were two *-s*'s, a preterite one and a subjunctive one, etc. An alternance *Root/Root-s* was used in several ways to create oppositions: the *-s* was opposed to *Ø* or to other suffixes or to the *-s* itself with lengthenings or special vocalic degrees of the root. This is the path followed approximately by the above-mentioned authors: for details of my own position see Adrados (forthcoming article in *Indogermanische Forschungen*.)

That is to say, the problem of the *-u* and the *-i* is not an isolated one for apart from the *-s* there are several lengthenings with the same problem and there are also, as I have said above, *-ē* and *-ā*. Radical elements, maybe of various ages, diverse lengthenings, have been grammaticalized to express the new oppositions. Moreover, as *-u*, *-i* are variants of *-ā*, *-ē* which are independently inexplicable, the whole of the laryngeal theory is that which supports the evolution of Indoeuropean morphology; and this latter, in turn, supports the laryngeal theory.

6.3.5. It should be noted that we establish two groups among the formal elements which are to be found in the sole stems of Hittite verbs and which were then grammaticalized in later polythematic inflexion: a) lengthenings strictly speaking, such as *-s-*, *-t-*, *-sk-*, and a few others, added to the root without any meaning of their own originally; b) the laryngeals *-H<sup>u</sup>* and *-H<sup>i</sup>* with their diverse timbres and vocalic degrees and their diverse solutions. In the second case, they are radical elements, at least at a certain stage of Indoeuropean: but the morphologization and diffusion of these radical elements (without any meaning of their own, of course) and of the lengthenings, are perfectly comparable. Maybe at an older stage, as we have said, *-H<sup>u</sup>* and *-H<sup>i</sup>* may also have been lengthenings. But as far as we are concerned here, this is indifferent. Here it is a question of finding the means of explaining the creation of the formal markers of the new categories and functions on the strength of lengthenings and laryngeal elements.

6.4.1. Finally, it should be made clear that the evolution of verbal and nominal morphology are parallel, except for the fact that in Anatolian both have reached a comparable degree of development (monothematic inflexion, with certain exceptions of heteroclisis), whilst in later Indoeuropean the nominal inflexion was less developed than the verbal, it did not create polythematic systems except for the oppositions in the adjective of masculine and feminine. Thus, Hittite offers a panorama of nominal inflexion

which is roughly comparable to that of the rest of Indoeuropean, much more so than verbal inflexion.

6.4.2. Now, in nominal inflexion, the laryngeal stems are of great importance and these stems develop forms with *-u* and *-i*, according as to whether they end in the laryngeal *-H<sup>u</sup>* or in *-H<sup>i</sup>*. On account of the processes of morphologization to which we have referred, some forms with *-u* or *-i* were grammaticalized and denoted certain cases; on the other hand, by adding the thematic vowel to these stems, derivatives (nouns or adjectives) in *-uo*, *-io* were deduced which later spread as suffixes. The details may be seen in Villar (1974) and Adrados (1975: 370: ff., 462 ff.) I shall give only a few data which are important to my thesis, after mentioning those given above on stems with a long diphthong, the presence of a laryngeal *H<sup>i</sup>* < *-hi*, *-i* in certain forms of Anatolian and the existence of *-i* stems, the *-i* of which comes from the vocalization of a laryngeal (cf. supra 5.2.8).

6.4.3. Pure *-H<sup>u</sup>*, *-H<sup>i</sup>* stems may in principle have the three timbres, although some are more productive than others; they may be in the full degree or in the Ø degree, which often alternate, within the same paradigm, with the consequent morphologizations. When it is a case of Ø degree, *-ā* or *-ī*, *-ǎ* or *-ǔ* may be expected, according to the laryngeal, with secondary levellings by analogy to the full degree: alongside *-ā*, there is *-ǎ* (Gr. *nýmphā/nýmphǎ*, OSlav. *roka/roko*); alongside *-āu* or *-ēu*, there is *-ǔ* (OInd. Nom. *dyaus* /Instr. pl. *dyubhis*, Dat. *karāve*/Gen. *kāros*/Nom. *kārus*); alongside *-ēi* or *-ei*, there is *-ī* (parallel examples in *\*reH<sup>i</sup>*-, cf. supra 5.2.4., in OInd. *agnis*). Of course, one may likewise propose influence in the opposite sense. In any case, it is a phenomenon which is quite comparable to the excision in the verb of *-nā/-nǎ-* stems (except in OInd.) and *-neu/-nu-* stems.

As for the full degree, if one exemplifies with *-eH<sup>u</sup>*, it may in principle give *-ā*, *-āu*, *-eu*; by exemplifying with *-eH<sup>i</sup>*, it may in principle give *-ē*, *-ēi*, *-ei*. The various results and solutions may sometimes give free allomorphs, thus in Hittite *-i* stems which have D. L. *-i*, *-ei*, *-e*; these forms are sometimes distributed among the languages and dialects; we have already spoken of the presence in Greek of *-ē* and *-eu* stems, compare, too, Dor. Acc. sing. *bōn*, other dialects *boun*.

But most often there are distributions which give rise to morphologizations. Thus in oppositions of the types of OInd. Nom. *dyaus*/



Acc. *dyām*; Hitt. Nom. *-aiš*/Acc. *-an* (see 5.2.4.); Nom. *-ā* (Gr. *chōrā*, Lith. *rankà*, OSlav. *rōka*, Goth. *giba*, OInd. *prajā*, etc.)/Dat. *-ai* (Gr. *chōrai*, Lith. *rañkai*, OSlav. *rōke*, Goth. *gibai*, OInd. *prājayai*); Nom. *-u* (OInd. *sunūs*, Goth. *sunus*, OSlav. *synu*)/oblique cases with *-ōu*, *-ou* (Loc. OInd. *sūnanu*, OSlav. *synū*; Dat. OInd. *sūnave*, OSlav. *synovi*), among many other numerous examples.

6.4.4. As I said, not all stems in a laryngeal have the same diffusion. There are a few isolated roots with a long diphthong which we have already mentioned. There is a certain diffusion of  $*-eH_1^i$  stems (in Latin and Baltic above all), of  $*-eH_2^u$  (above all in Greek and also in Iranian).  $*-eH_3^i$  stems (of the type of Gr. *peithō*, OInd. *sākhā*) are relatively rare. The type in *-ā* is extremely frequent (which also gives neuter plurals), so are *-i* and *-u*. The most remarkable points about these types are, from our point of view:

a) — The occasional presence of direct traces of the laryngeal, cf. supra 2. 1.

b) — The radical nature of many stems: that is, as in the verb, the morphological elements *-ā* (*-ā-*), *-i* and *-u* are radical in origin. Thus, for example, in the word for 'woman',  $*g^*neH_2^i$  (Gr. *gynā*, OInd. *gnā*, OSlav. *žena*, with another vocalic degree); 'strength',  $*g^*eiH_2^u$  (Gr. *biā*, OInd. *jyā*), etc. The same occurs in the *-i*, *-u* stems, cf. supra 5.2.8. and examples such as  $*delH_1^i$ -, whence Lith. *dalis*, OInd. *dalis*;  $*genH^u$ - whence Gr. *génys*, OInd. *hanus*;  $*g^*erH_2^u$  whence Gr. *barýs*, OInd. *gurús*; etc. Cf. Adrados 1973: 341 ff.

c) — The inextricable mixture of forms with and without *-u*, with and without *-i*. Thus in the root-words with a long diphthong in the *-ē* and *-ō* stems of several of the above-mentioned languages, in the *-i* ones in Hittite, in the first declension of OInd., in Gr. *gynē*/ *gynaikós* etc. etc. It is impossible to explain this by the mixture of two types of stem, one should rather say that the excision of the *-ā* and *-i* inflexion is secondary.

d) — The possibility of explaining certain endings and certain suffixes as of radical origin. For example, in the *-i* stems a Dat. sing. such as Gr. *pólei*, with parallels in other languages, is simply a pure stem with F/F degree; But from this point on, *-ei* was considered as an ending, whence OInd. *agnaye*, *sūnave*, etc. In the same way, a suffix *-io* is radical in for example, Gr. *gýnaios* from  $*g^*neH_2^i-o-$ ; the same goes for *-uo* (Lat. *ingenuus* and *gnāuus* from  $*genH_1^i$ ). All this has its exact parallel in what happens in the verb.

c) — It is also obvious that the frequently feminine nature of  $*\tilde{a}/\tilde{a}$  ( $*eH_2^i/*-H_2^i$ ) comes from a polarization as against  $-o$  and its use in Nom. Acc. Voc. pl. neuter is equally secondary. There are traces of a lack of generic and numerical meaning.

6.4.5. All this seems to be eloquent proof that we are dealing with stems with a laryngeal, that these laryngeals took palatal or labial appendix and that from forms originally radical which ended up in these laryngeals by means of grammaticalization and secondary diffusion, several devices were created to oppose the cases, as likewise endings and suffixes. To be precise, in the sing., the Nominative, the Dative-Locative (a unique case at the beginning, I believe) and the Vocative, as also in the plural, the Nom. Acc. Voc. of the neuters, are pure stems which were later differentiated by means of these devices. But, thanks to the use of the various pronetic solutions, differences were introduced which helped distinguish the other cases.

6.5. I repeat that in fact morphology is the main touchstone for proving that at an older date all the laryngeals had appendices. Moreover, the laryngeals with appendix are the key to the creation of nominal and verbal inflexion at their different stages. They are at least one of the keys.

Of course, there is still much to be researched on the subject of the evolution of these Indoeuropean phonemes in the different languages. My *Estudios sobre las laringales indoeuropeas* (*Studies on IE Laryngeals*) of 1961 merely contributed a first step forward, really one along the path of research trodden before or simultaneously by several scholars. In the second edition of 1973, certain complements and modifications were added to the theory expounded therein. Others have later been put forward and I should draw the reader's attention now to my article "Further Considerations on the Phonetics and Morphologizations of  $H^i$  and  $H^*$  (forthcoming in *Emerita*), in which I put forward solutions in doubtful cases of supposed phonetic irregularity. For the regular nature of this evolution, and its parallel to that of the resonants, is becoming ever more clearly defined.

FRANCISCO R. ADRADOS  
Duque de Medinaceli, 4  
MADRID — 14  
SPAIN

## REFERENCES

ADRADOS, F. R.

1956 "Quelques traitements phonétiques des laryngales indoeuropéennes", *Hommages à Max Niedermann*, edited by G. Redard (Bruxelles: Société des Etudes Latines), 17—33.

1958 "La vocalización de las sonantes indoeuropeas" [The vocalization of the IE resonants], *Emerita* 26: 249—309.

1959(a) "El desarrollo de las vocales de apoyo interconsonánticas en las lenguas indoeuropeas" [The Development of interconsonantic voyelles d'appui], *Emerita* 27: 155—162.

1959(b) "Sobre la prótesis vocálica en las lenguas indoeuropeas" [On vocalic prothesis in IE languages], *Emerita* 27: 323—348.

1961 *Estudios sobre las laringales indoeuropeas* [Studies on IE laryngeals], (Madrid: C. S. I. C.).

1962 "Gramaticalización y desgramaticalización" [Grammaticalization and disgrammaticalization], *Miscelanea Homenaje a André Martinet III*, editado por Diego Catalán (La Laguna: Universidad), 1—41.

1963(a) *Evolución y estructura del verbo indoeuropeo* [Development and structure of IE verb], 2nd enlarged edition 1974 (Madrid: C. S. I. C.).

1963(b) "Loi phonétique, sonantes et laryngales", *Emerita* 31: 185—211.

1964 "A proposito di laringali" [On Laryngeals], *Archivio Glottologico Italiano* 49: 67—70.

1965 "Historische und strukturelle Methode in der indogermanischen Sprachwissenschaft", *Kratylos* 10: 131—154.

1967 "Loi phonétique, phonologie et sonantes indoeuropéennes", *Lingua* 19: 113—144.

1968 "Die Rekonstruktion des Indogermanischen und die strukturelle Sprachwissenschaft", *IF* 73: 1—47.

1971 "On indoeuropean sigmatic verbal stems", *AL* 2: 95—116.

1973 *Estudios sobre las sonantes y laringales indoeuropeas* [Studies on IE resonants and laryngeals], 2nd edition (Madrid: C. S. I. C.).

1975 *Lingüística indoeuropea* [Indo-European linguistics], (Madrid: Gredos).

ALLEN, W. S.

1976 "Long and short diphthongs: phonological analogies and phonetic anomalies", *Studies in Greek, Italic and Indoeuropean Linguistics*, edited A. Morpurgo and W. Meid (Innsbruck, Beiträge zur Sprachwissenschaft), 9—16.

BEEKES, R. S. P.

1969 *The Development of the Proto-Indo-European Laryngeals in Greek*, (The Hague: Mouton).

BEEG, N.

1977 "Der Ursprung des altgr. aktiven Plusquamperfekt und die Entwicklung der alphathematischen Flexion", *NTS* 31: 205—263.

BERNABÉ, A.

1973 "Geminación de -s- y sonantes en hitita" [Gemination of -s- and resonants in Hittite], *RSEL* 3: 415—456.

1975 "Resultados en Griego de las raíces con dos laringales (tipo HeH-)" [Greek developments of roots with two laryngeals (type HeH)], *RSEL* 5: 345—381.

1976 "A critical review of some interpretations of the IE long diphthongs", *AL* 7: 161—190.

1977(a) "A critical review of some interpretations of the IE long diphthongs (II)", *AL* 8: 142—157.

1977(b) "La vocalización de las sonantes indoeuropeas en griego" [The Vocalization of IE sonants in Greek], *Emerita* 45: 269—298.

CARDONA, G.

1963 "Review of *Estudios sobre las laringales indoeuropeas*", *Language* 31: 91—100.

- CARRUBA, O.  
1976 "Anatolico e Indoeuropeo" [Anatolian and Indoeuropean] *Scritti Bonfante*, edited by G. Devoto and others (Brescia: Paideia), 121—146.
- COWGILL, W.  
1975 "More evidence for Indo-Hittite: the tense/aspect system", *Proceedings of the Eleventh International Congress of Linguists III*, edited by Luigi Heilmann (Bologna: Il Mulino), 557—570.  
1979 "Anatolian *-hi-* conjugation and Indo-European perfect: Instalment II", *Hethitisch und Indogermanisch*, herausgegeben von E. Neu und W. Meid (Innsbruck: Beiträge zur Sprachwissenschaft), 25—39.
- CROSSLAND, R. A.  
1958 "Remarks on the Indo-European laryngeals", *AL* 10: 79—99.
- DIVER, W.  
1959 "Palatal quality and vocalic length in Indoeuropean", *Word* 15: 110—122.
- ERHART, A.  
1970 *Studien zur indoeuropäischen Morphologie* (Brno: University).
- GAMKRELIDZE, V.  
1968 "Hittite and the laryngeal theory", *Pratidānam*, edited by J. C. Heesterman (The Hague: Mouton), 88—97.
- GEORGIEV, V.  
1973 "Die Herkunft der ide. Diphthongstämme und der Eigentümlichkeiten ihrer Kasusformen", *Die Sprache* 19: 140—147.  
1974 "Die luwischen Abstrakta auf *-ahi*, die hethitischen Nomina Actionis auf *-(a)i* und die *-a-* Stämme", *KZ* 88: 117—121.
- GIL, J.  
1970 "La apofonía en indoeuropeo" [Apophony in Indoeuropean] *Estudios Clásicos* 14: 1—111.
- GONZÁLEZ FERNÁNDEZ, J.  
1972 *El perfecto latino en /ui/ (Crítica a Martinet y a Adrados)* [The Latin /ui/ perfect (A rejoinder to Martinet and Adrados)], (Sevilla: Universidad).  
1980 "El carácter temporal de la oposición infectum/perfectum y el testimonio del verbo hettita" [The temporal character of the infectum/perfectum opposition and the testimony of Hitt. verb)], *Emerita* 40: 407—414.
- GONZÁLEZ ROLÁN, T.  
1972 "Nueva interpretación de algunos perfectos latinos" [A new interpretation of some Latin perfects], *Emerita* 40: 407—414.
- GUSMANI, R.  
1979 "Ittito, teoria laringalistica e ricostruzione" [Hittite, laryngeal theory and reconstruction], *Hethitisch und Indogermanisch*, herausgegeben von E. Neu und W. Meid. (Innsbruck: Beiträge zur Sprachwissenschaft), 63—71.
- HAAS, O.  
1962 *Messapische Studien* (Heidelberg: Winter).
- HAMP, E. P.  
1955 "Italic perfect in (X\*) and IE", *Word* 11: 399—403.
- HELLER, L. G.  
1966 [1973] "Indoeuropean *i-* reduplication and root-final *H*", *Word* 22: 303—309.
- KEILER, A. R.  
1970 *A phonological study of the Indoeuropean laryngeals* (The Hague: Mouton).
- KERNS, J. A. and B. SCHWARTZ  
1972 *A Sketch of the Indo-European finite verb* (Leiden: Brill).
- LEHMANN, W. P.  
1974 *Proto-indoeuropean Syntax* (Austin: University of Texas Press)
- LINDEMAN, F. O.  
1968 "Bemerkungen zu den indogermanischen Langdiphthongen", *NTS* 22: 99—114.



- 1970 *Einführung in die Laryngalthorie* (Berlin: de Gruyter)
- 1979 "Remarques sur la flexion des verbes du type *teḫḫi* in hittite", *Hethitisch und Indogermanisch*, herausgegeben von E. Neu und W. Meid (Innsbruck: Beiträge zur Sprachwissenschaft), 153—157.
- LÜHR, R.  
1976 "Germanische Resonantengemination durch Laryngeal", *MSS* 35: 73—92.
- MANIET, A.  
1969 "Le contraste vocalique du type *phileō/ephilēsa*, *timāō/etīmēsa*, *Mel. Fohalle*, edited by Ch. Hyarth (Gembloux: Duculot), 77—82.
- MARTINET, A.  
1953 "Non apophonical o-vocalism in Indoeuropean", *Word* 9: 253—267.
- MAYRHOFER, M.  
1964 "Hethitisch und Indogermanisch. Gedanken zu einem neuen Buche", *Die Sprache* 10: 174—197.
- MICHELINI, G.  
1974(a) "Indoeuropeo e *h* hittito" [Indoeuropean and Hitt. *h*] *SILTA* 3: 445—477.  
1974(b) "Osservazioni su *Estudios sobre las sonantes y laringales indoeuropeas* di F. R. Adrados" [Remarks on *Estudios sobre las sonantes y laringales indoeuropeas*], *SILTA* 3: 503—510.
- NEU, E.  
1976 "Zur Rekonstruktion des indogermanischen Verbalsystems" *Studies in Greek, Italic and Indoeuropean Linguistics*, edited by A. Morpurgo and W. Meid (Innsbruck: Beiträge zur Sprachwissenschaft), 239—254.
- PARLANGELI, O.  
1972 "Isoglossa italice: Perfetti in -K- e in -V-" [Italic isoglosses: -k- and -v- perfects], *Rendiconti Ist. Lombardo* 106: 234—242.
- POLOMÉ, E.  
1965 "The laryngeal Theory so far", *Evidence for Laryngeals* edited by W. Winter (The Hague: Mouton), 2nd ed., 9—78.
- PUHVEL, J.  
1960 *Laryngeals and the indoeuropean verb* (Berkeley: University of California Press).
- RISCH, E.  
1955 "Zu den Hethitischen Verben vom Typus *teḫḫi*", *Corolla Linguistica*, edited by Hans Krahe (Wiesbaden: Harrassowitz), 189—198.
- RIX, H.  
1969 "Anlautender Laryngeal vor Liquida oder Nasalis Sonans im Griechischen", *MSS* 27: 79: 110.
- ROSÉN, H. B.  
1957 "Laryngeal-reflexe und das indogermanische schwache Perfectum", *Lingua* 6: 354—376.
- ROSENKRANZ, B.  
1979 "Archaismen in Hethitischen", *Hethitisch und Indogermanisch*, herausgegeben von E. Neu und W. Meid (Innsbruck: Beiträge zur Sprachwissenschaft), 219—229.
- RUIJGH, C. J.  
1969 "Review of *Evolución y Estructura del Verbo Indoeuropeo*", *Lingua* 19: 405—424.
- SANDOZ, C.  
1974 "Une classe résiduelle du *√*verbe indo-européen", *BSL* 69: 55—61.
- SCHINDLER, J.  
1973 "Bemerkungen zur Herkunft der indogermanischen Diphthongstämme und zu den Eigentümlichkeiten ihrer Kasusformen", *Die Sprache* 19: 148—157.
- SCHMALSTIEG, W. R.  
1956 "The phoneme /v/ in Slavic verbal suffixes", *Word* 12: 255—259.  
1973 "New thoughts on Indo-European phonology", *KZ* 87: 99—157.

- 1977 "Speculations on the Indo-European active and middle voices", *KZ* 90: 23—36.
- 1978 "More on Indo-European monophthongizations: a reply to Dr. Alberto Bernabé Pajares", *AL* 9: 135—162.
- SCHMID, W. P.  
1979 "Das Hethitische in einem neuen Verwandtschaftsmodell", *Hethitisch und Indogermanisch*, herausgegeben von E. Neu und W. Meid, (Innsbruck: Beiträge zur Sprachwissenschaft), 231—235.
- SCHMITT-BRANDT, R.  
1967 *Die Entwicklung des indogermanischen Vokalsystems* (Heidelberg: Julius Groos).
- SCHMOLL, U.  
1963 "Review of *Estudios sobre las larinales indoeuropeas*", *ZRPh* 79: 431.
- STRUNK, K.  
1969 [1970] "Verkannte Spuren eines weiteren Tiefstufentyps im Griechischen", *Glotta* 47: 1—18.  
1970 "Ueber tiefstufige *sej* Wurzeln im Griechischen", *MSS* 28: 100—127.
- SZEMERÉNYI, O.  
1956 "Latin *res* and the Indo-European long diphthong stem nouns", *KZ* 73: 167—202.  
1967 "The new look of Indo-European", *Phonetics* 17: 65—99.  
1978 *Introducción a la Lingüística comparativa* [Spanish translation. Originally published as *Einführung in die vergleichende Sprachwissenschaft* (Wissenschaftliche Buchgesellschaft: Darmstadt)] (Madrid: Gredos).
- VILLAR, F.  
1970 "L'immobilisme et le problème du verbe indo-européen", *Lingua* 28: 188—199.  
1971 "El problema de las sordas aspiradas indoeuropeas" [The problem of IE aspirated unvoiced stops], *RSEL* 1: 129—160.  
1974 *Origen de la flexión nominal indoeuropea* [Origin of IE nominal flexion], (Madrid: C. S. I. C.).
- WATKINS, C.  
1975 "Die Vertretung der Laryngale in gewissen morphologischen Kategorien in den indogermanischen Sprachen Anatoliens", *Flexion und Wortbildung*, edited by H. Rix (Wiesbaden: Reichert), 358—378.
- WEITENBERG, J. J. S.  
1979 "Einige Bemerkungen zu den hethitischen Diphthong-Stämmen", *Hethitisch und Indogermanisch*, hrsg. von E. Neu und W. Meid (Innsbruck, Beiträge zur Sprachwissenschaft), 289—303.
- ZGUSTA, L.  
1965 "Die indogermanischen Laryngale und die Lautgesetze" *ArOr* 33: 639—646.