

Dentals, Rhotacism and Verbal Endings in the Luwian Languages

1. Some areas of Anatolian philology are notoriously controversial and confused. Accentuation and vocalic quantity are standard examples; they are not obviously marked in writing and the standard text books ignore them. Yet some scholars operate with sound laws defined in terms of accent and quantity¹). The rules are stated, though not in full, but little evidence is given in their support. Until recently most linguists have avoided committing themselves to a specific view. With G. R. Hart's article about plene-writing in Hittite²) we have at last some firm evidence for Hittite accent and the proof that Old Hittite preserves traces of the original accent distribution, but the bulk of the work still remains to be done.

Outside Hittite our ignorance of the basic phonological facts is immense. For Hittite, for instance, there is some agreement about the so-called Sturtevant's Law: between vowels an original voiceless stop is written double, while an original voiced stop is written single. Thus inherited **t* is written -*tt*- (-*dd*-), but inherited **d* is written -*t*- (-*d*-). Does this apply to Luwian? The script is the same and some scholars answer positively; others point out that there is no evidence. Sometimes we have the impression that the tedious work of fact-collecting has not been done.

In this paper I shall deal with some phonological facts, starting from the data and ignoring any earlier proposal. I am not concerned with Hittite, which I shall hardly mention, but with the other branch of Anatolian, i.e. with the three Luwian languages:³) Cuneiform Luwian, written in the cuneiform syllabary and attested in

¹) The names which come to mind are those of H. Eichner, N. Oettinger and F. Starke, though of course there are earlier attempts (Pedersen, Rosenkranz, and especially Čop). For the references and earlier literature see Eichner, *MSS* 31 (1973), 53-107; id., in M. Mayrhofer, M. Peters, O. Pfeiffer eds., *Lautgeschichte und Etymologie*, Wiesbaden 1980, 120-65; N. Oettinger, *Die Stammbildung des hethitischen Verbums*, Nürnberg 1979, passim; id., *KZ* 92 (1978), 74-92.

²) *BSOAS* 43 (1980), 1-17.

³) I have deliberately ignored Palaic and Lydian though their evidence may well be relevant to my problem.

the second part of second millennium B.C.; Hieroglyphic Luwian, written in a special script based on syllabic signs and logograms and best attested in texts of the tenth-eighth centuries B.C., and Lycian, written in an alphabet borrowed from Greek; the bulk of the texts belongs to the fifth and fourth centuries B.C. The questions I shall ask will be initially phonological, but will lead me to consider some morphological problems. Throughout my concern will be with dental stops and with what happened to them.

2. Writing a consonant single or double may be due to passing fancy of the scribe, but writing *r* instead of *t* is a somewhat more definite step to take even for a carefree stonecutter. I start with an odd phenomenon, the so-called rhotacism of Hier. Luwian. In some texts of the first millennium we find words written with the *ra/ri* and *ru* signs instead of the expected *ta*, *ti*, *tu* signs. The texts in question are inconsistent in their spelling; KARATEPE has both *á[-mi]-ia-ti* and *á-mi-ia+ra/i* for the ablative of *amis* 'my'⁴). We could attribute to the *r*-signs a double value (e.g. *ra* and *ta*)⁵), but there are difficulties. The alternation does not occur in word initial position and does not occur in forms where we have reasons to think that the consonant immediately precedes or follows another consonant. If so, the different spellings seem to point to phonetic change rather than to mere graphic alternation; hence Meriggi's name 'rhotacism' for the phenomenon and his suggestion that in Hier. Luwian dentals can change into *r*⁶).

A closer look at the data establishes that not all texts have instances of rhotacism and that no text with rhotacism is consistent in its spelling: the same form can be spelled with *t* or with *r*. This

⁴) The values adopted for the Hier. Luwian signs are those proposed in J. D. Hawkins, A. Morpurgo Davies, G. Neumann, *Nachr. Ak. Wiss. Göttingen*, Phil.-hist. Kl., 1973, nr. 6, 143-98; the transliteration follows the tables first published by Hawkins in *An. St.* 25 (1975), 119-56. Once again I must express my gratitude to J. D. Hawkins, who made available to me his collations of Hier. Luwian texts, read a draft of this paper and suggested a number of improvements.

⁵) E. Laroche, *Les hiéroglyphes hittites*, Paris 1960, 205 attributes to his sign no. 383 (the 'thorn') both the values *ra/ri* and *ta/ti* but also states that 'le rhotacisme n'est pas une hypothèse, mais une certitude confirmée par l'échange des signes pour *tu* and *ru* dans quelques mots.'

⁶) See Meriggi, *Athenaeum* 29 (1951), 34ff.; *Manuale di eteo geroglifico*, I, 20ff.; *Schizzo grammaticale dell'anatolico*, Memorie Acc. Lincei, Serie VIII, Vol. XXIV, fasc. 3 (1980), 261. For the earlier bibliography see Laroche, *op. cit.* (note 5).

speaks either for a change in progress or for an alternation between a conservative and an innovating spelling. In either case the change needs a better definition in geographical, chronological, phonological and morphological terms.

It is not possible to make a clear geographic distinction between the texts with rhotacism and those without; rhotacism is found e.g. in Karaburna and Bohea, in the NW part of the Hier. Luwian area, and in Carchemish in the Eastern part. We have few texts and even fewer can be dated with certainty: the geographic distinction we are looking for may have never existed or may have existed, though we may not be able to recognize it. Chronologically the problems are similar. There is no clear evidence for rhotacism in the second Millennium;⁷⁾ in the first Millennium there are few documents which both come from the same area and may be dated. At Carchemish it looks as if the early texts had no instance of rhotacism⁸⁾, while

⁷⁾ Some examples of rhotacism have been quoted for the early (Empire) texts too. In the later texts we find a conjunction REL-*ti* and a conjunction REL+*ra/i*, which could be the rhotacized form of REL-*ti*. REL+*ra/i* occurs also in EMIRGAZI (Hawkins, *An. St.* 25 (1975), 129f.; E. Masson, *Kadmos* 19 (1980), 121f.) and in KARAHÖYÜK (Hawkins, *ibid.*, 131; E. Masson, *Florilegium Anatolicum*, Mélanges Laroche, Paris 1979, 233), i.e. in early texts. At YAZILIKAYA E. Masson (*Le panthéon de Yazılıkaya*, Paris 1981, 21, no. 31) reads one of the divine names as ^dNu-pa+*ta/i*-kà/gà, where +*ta/i* is her transliteration for our +*ra/i*. Of these examples the latter cannot be used to prove the existence of rhotacism in the Empire period since the reading is not generally agreed (see H. Güterbock, *Les hiéroglyphes de Yazılıkaya*, Paris 1982, 34). REL+*ra/i* also occurs in later inscriptions which show no trace of rhotacism; it is possible that it must be separated etymologically from REL-*ti* and treated as a formation with an inherited -*r*- (cf. Lat. *cur*, Got. *haer*, etc.). The suggestion is supported to a certain extent by the existence of *ku-wa-(a-)ri* in Cun. Luwian, though the value of the form is unclear, and to a greater extent by the presence of a form *tere* in Lycian (cf. Laroche, *BSL* 62 (1967), 58), which is semantically (though not formally) parallel to Hittite *kuwatta kuwatta*. There is no evidence for rhotacism in either Lycian or Cun. Luwian and these words argue for an -*r*-extension of the relative pronoun.

⁸⁾ Apparent exceptions: REL+*ra/i* and CRUS+*RA/I* which appear in some of Katuwas' texts. For REL+*ra/i* see note 7 above; CRUS+*RA/I* is best taken as a fully logographic sign: the second sign cannot be taken as a personal ending (= *ti* or *-ta*) because a) CRUS+*RA/I* stands for a third person plural in CARCHEMISH A 11a, 2, where we do not expect a rhotacized -*nta*; b) the verb CRUS+*RA/I-nu-* is also attested (ALEPPO 2). Conceivably this could be a reduplicated causative of a *ta-* root, but is best taken as the causative of the root indicated by the logogram CRUS+*RA/I*. Finally in CARCHEMISH A 14a, 4 a mutilated sentence ends with *za-za+ra/*

the later texts (dating from the eighth century) do. Elsewhere too rhotacism seems to occur in the later texts only, with the possible exception of the Maraş inscriptions, where rhotacized forms may belong to ninth century documents. The evidence may not be conclusive. Linguistically we can be more explicit; rhotacism seems to have occurred only in intervocalic position⁹). Does it follow that all intervocalic dentals could rhotacize? Given the inconsistency of our spelling an answer is not easy: the presence of *r* instead of *t* proves something, but its absence proves nothing. Yet some forms, such as the ablative ending *-ati* > *-ari*, are rhotacized very frequently, while others, such as the enclitic particle *-ta* (Hittite *kan*), occur frequently but seem to be never rhotacized. Some further conditioning may exist, but is difficult to define.

A priori we could assume that any dental which becomes *r* must have been voiced from the start or have gone through a voiced stage. Yet the shift from dental to *r* is not very frequent. A remote parallel is the change from retroflex *d* or *dd* to *r* in some Indian languages (Hindi, Marathi, Gujarati, Nepali, etc.)¹⁰). In the Mediterranean area the Umbrian intervocalic *d* is replaced by a sound written *rs* in the Latin alphabet. In Latin itself we have some late instances of *d* > *r* (*peres* for *pedes*) and classical examples of dissimilation such as *meridies* < **medidies*¹¹). There are no obvious parallels in the ancient Near East except for a striking one, that of Pamphylian. In this Greek dialect, attested some three or four centuries after the Hier. Luwian texts, intervocalic *d* becomes *r*, a change not found in any other Greek dialect¹²). Hier. Luwian and Pamphylian are

i-ta+ra/i; if this is a verb, the odds are that it is a plural; could it be a middle with etymological *-r-*? The context does not help. However, if these forms are explained away, rhotacism seems to start with the inscriptions attributed to Yariris, i.e. with the early eighth century.

⁹) I know of two problematic forms in this respect: one is *za-za+ra/i-ta+ra/i* discussed above (note 8), but the context is too broken to give much guidance. The other is ARHA *ha-ta+ra/i* of KARABURUN 1 where the context requires a third person plural. If the reading is correct I have no explanation—but the evidence is too slight to induce us to give up the general rule. Even Hieroglyphic Luwian scribes make mistakes.

¹⁰) J. Bloch, *Indo-Arian from Vedas to Modern Times*, Paris 1965, 61.

¹¹) Leumann-Hoffmann, *Lat. Gr.*, I², 155. For other parallels in Germanic, Romance, and Iranian see J. Friedrich, *Arch. Or.* 21 (1953), 135–7 (I owe this reference to G. Neumann).

¹²) Cf. C. Brixhe, *Le dialecte grec de Pamphylie*, Paris 1976, 83ff., with the earlier bibliography. The evidence is very limited but there does not seem

not directly related, and we know almost nothing about the pre-Greek population of Pamphylia; however, an Anatolian substratum in Pamphylia is guaranteed by some features of the onomastics and it seems difficult not to connect the Pamphylian sound change with the earlier rhotacism of Hier. Luwian. If so, both on general grounds and on the strength of this parallel, we may assume that Hier. Luwian had a shift from a voiced dental to *r*. Yet we cannot distinguish between two possibilities: *either* all intervocalic dentals were voiced and became *r*, *or* only those intervocalic dentals which were voiced (etymologically or because of a secondary shift) became *r*. We should not forget that for Hier. Luwian we have no direct evidence for a contrast between voiced and voiceless stops.

We may now look at the nature and etymology of the rhotacized forms. We know that Proto-Anatolian inherited a contrast between voiced and voiceless stops (I leave aside the question of the voiced aspirates). Do the rhotacized dentals fit into any etymological pattern?

The forms which undergo rhotacism are:

1. The ablative endings in *-ati* or *-Ca-ri+i/-Ca+ra/i*¹³).
2. The third person singular verbal endings: present *-ti* or *-ri+i/-ra/i*; preterite *-ta* or *-ra/i*; imperative *-tu* or *-ru*¹⁴).
3. Some enclitic particles: reflexive and pronominal *-ti* or *-ri+i/-ra/i*; pronominal *-tu* or *-ru* 'ei', *-ata* or *-a+ra/i* 'it, them'¹⁵).

to be any example of preserved intervocalic *-d-*, except after morphemic juncture and in forms influenced by the *koine*.

¹³) In the rhotacizing texts the rhotacized ablatives are so frequent that it is not worthwhile to give a list. To give some idea of the proportion of the phenomenon—in KARATEPE the Hu version has 8 examples of rhotacized ablatives vs. 14 examples of non-rhotacized ablatives; in what is preserved of the Ho version the proportion is 8 (rhotacized) to 3 (non-rhotacized). In the whole corpus I have counted almost 60 examples of *-ri+i* or *-ra/i* ablatives.

¹⁴) Examples of these forms are not as frequent as those of the ablatives since in our texts the majority of verbal forms is plural; I have counted less than 20 examples of third person singular with rhotacism. There is one example of third pers. sing. imperative in *-ru*, ('PES₂.PES') *tara/i-pi-ru-u-* in KAYSERİ 5. In the present the *-ri+i* forms prevail, though there seem to be a few examples of rhotacized present endings written *+ra/i*.

¹⁵) A full list would take too much space and in a number of texts it is not easy to distinguish the sequences in which *-Ca+ra/i* stands for *-ata* from those where it stands for *-Ca-ti*. I give here a non-controversial example of rhotacized forms for each of the particles mentioned in the text: for *-ara* = *-ata* cf. KARATEPE Ho 114 *á-mu-pa-wa/i-ma-ara/i*, a particle chain formed

4. Some lexical items. Of these, two words are etymologically clear: (EDERE) *á-ru-na* 'to eat' < **ed*-¹⁶); (PES) *pa+ra/i-ri+i*, (PES) *pa+ra/i-za* 'feet' < **pe/od*-¹⁷). A third word is the word for 'sun' attested in compounds and derivatives both as *-ti-wa/i-ta-* and as *-ti-wa/i+ra/i-*. The root is certainly **diw-* but there need not be agreement about the suffix. However, it is worth while to consider the name of the founder of Karatepe, Azatiwatas, which is sometimes written *Azatiwaras*. The Phoenician spelling 'ZTWD' has a *-d-* where the Hier. Luwian forms have either a *-t-* or an *-r-*.

The name confirms our view that the immediate antecedent of an *r* due to rhotacism was a voiced dental; the other two words point to an etymological *d*. However, the verbal endings *-ri* and *-ru* (3rd sing. ind. and imp. present) certainly derive from **-ti* and **-tu* respectively; presumably the past ending *-ta/-ra* also had an original **t* (see below). Should we then assume that both **t* and **d* could be rhotacized intervocalically? ¹⁸) The only objection one could raise is that some words are always written with *t* even though they are relatively frequent and occur in texts which have numerous instances of rhotacism (e.g. REX-*ti-sa*, *-ta*). Yet *argumenta ex silentio* are notoriously unreliable. The problem remains unsolved and we shall not receive much help from forms whose origin is disputed such as the ablative ending *-ati/ari* or the enclitic particles quoted above.

The solution, if solution there is, may come from the other languages of the same linguistic group and I now turn to Cun. Luwian.

3. In Cuneiform Luwian the spelling of stops tends to be relatively consistent: *a-pa-* 'that' is always spelled with one *-p-*; *a-ap-pa* 'back' is always spelled with two *p*. Since Luwian uses the same script as Hittite, the presumption is that Sturtevant's law ought to operate here too and we expect double stops for original voiceless stops, and single stops for original voiced stops. Some data fit:

of *amu* 'I', *pa*, *wa*, *mu* or *mi* and *ara* (Hu *ibid.*: *á-mu-pa-wá/i-ma-ta*); *-ri+i = -ti* occurs e.g. in ASSUR d 1 *sa-pi-su+ra/i-ha-wa/i-ri+i* 'health to theo'; *-ru = -tu* is found e.g. in BULGARMADEN 5 *wa/i-ru-ta* before the particle *-ta* (Hittite *-kan*).

¹⁶) ÇİFTLİK 6; a new Kululu text to be published by Professor M. Kalaş has a form *á+ra/i-tu* 'let them eat' in a sentence closely parallel to SULTAN-HAN Base B *á-ta-ha-si-zi-pa-wa/i-na* DEUS-*ni-i-zi* ARHA *á-tà-tu-u* 'let the A. gods eat him'.

¹⁷) ASSUR f 4, SULTANHAN 3.

¹⁸) Another instance of an etymological *-t-* which is rhotacized is probably ('PANIS') *ma-li-ri+i-mi-sá* of MARAŞ 1, lion, 3, if this participle is connected with the root of the word for 'honey' and is related to Gr. μέλι, μέλιτος, Goth. *miliþ*, etc. (see below note 26).

a-du-na 'to eat' < **ed-*, *pa-a-ta-an-za* 'to the feet' < **pe/od-*; *ti-i-ta-ni* 'to the breast' < **dhēi-(?)*. Others do not: *ma-al-li-(i)-ta-a-ti* 'with honey' has one single *t*, though we may expect *-tt-* from original **t* (Gr. *μέλιτ-*, Goth. *miliþ*) (the same problem arises in Hittite). More important is that the spelling of some morphs is inconsistent: the verbal endings for the third sing. present, past, and imperative appear as either *-tti* or *-ti*, *-ddu* or *-du*, *-tta* (*-dda*) or *-ta* (*-da*). On the other hand the ablative ending *-ati* always has a single *t*, i.e. is consistent in its spelling¹⁹).

Thus Cun. Luwian creates two related but distinct problems: 1. Is the contrast between the spellings with a single stop and those with a double stop consistent and significant? 2. Can this spelling contrast be interpreted according to Sturtevant's law? The answer to 1. would be positive if we had no alternation in the verbal endings. The answer to 2. would also be positive if we could explain away a few words like *ma-al-li-(i)-ta-ti* and if we had no endings with a single *-t-* (*-d*).

Too much depends on the endings and we need to look at them more closely. It is striking that the spellings with *-t-* (*-d-*) or *-tt-* (*-dd*) are consistent for each verb: *(a-)(a-)an-ni-(i)-ti* is written with all possible vocalic combinations, but always has a single *t*; *pi-(i)ia-at-ta* always has a double *t*. Moreover for each verb the presence of a *-ti* spelling in the present calls for a *-ta* (*-da*) spelling in the past and a *-du* spelling in the imperative. Similarly a *-tti* spelling in the present calls for *-tta* (*-dda*) and *-ddu*. There are no serious exceptions²⁰). Hence *a-ú-i-ti* 'comes', past *a-ú-i-ta*, imperative *a-ú-i-du*, but *a-ri-it-ti*, *(a-)a-ri-it-ta*, *a-ri-ia-ad-du*.

¹⁹) I base my statements on an analysis of all texts collected in Otten, *Luwische Texte in Umschrift*, Berlin 1953 and in Laroche, *Dictionnaire de la langue louvite*, Paris 1959; I have also indexed the Luwian texts published in *KBo* IX and *KBo* XII (see Laroche, *CTH*, 135ff.). It is normally assumed that intervocalically at least the *t*-signs (*ta*, *ti*, *tu*) and the *d*-signs (*da*, *di*, *du*) are interchangeable. Notice, however, that in the Luwian texts the *du* sign is normally used for the imperative, while the third persons sing. present and past and the ablative are normally written with *-ti* and *-ta* signs. The use of *da* in the third sing. past is very rare. I do not think that we can draw any phonetic conclusion from this observation and in what follows I shall often refer to *-t-* and *-tt-* spellings, subsuming under *-t-* the *-d-* spellings and under *-tt-* the *-dd-* spellings.

²⁰) The corpus is large enough for this statement to be significant. Possible deviations are the following: *KUB XXXV 43 II 14* and *15* has the spellings *sa-ha-ni-eš-ša-ta* and *i-ip-pa-tar-re-eš-ša-ta*, while the duplicate *KUB XXXV 45 II 21-2* has *sa-ah-ha-ni-is-sa-at-ta* and *ip-pa-tar-ri-ša-at-ta*; the

This brings a different slant to the problem; instead of total inconsistency there is a form of consistency, but it is a form of consistency which is not immediately explainable. We still cannot answer the questions asked above, though there is now a strong case for keeping apart the *-t-* (*-d-*) and *-tt-* (*-dd-*) spellings and arguing that they correspond to different phonetic realities. It follows that whoever wants to accept Sturtevant's law for Luwian must first explain the *-t-* endings.

4. In Lycian the problems are different; we have an alphabet which distinguishes at least *p*, *b*; *t*, *d* and *k*, *χ*, *g*. I am concerned now with the dentals only. The presumption is that *t* (from Greek τ) indicates a voiceless dental and *d* (from Greek δ) a voiced dental. Yet the two letters have a curious distribution. Initially *t* is very frequent while *d* is practically non-existent; *tt* is rare, *dd* very rare. Internally after a nasal or a nasalized vowel only *t* occurs; after a consonant, when stops are always written double, *tt* is very frequent, *dd* very rare. A real contrast between *t* and *d* occurs only internally before a consonant and between vowels. On the whole borrowings from Greek show *t* for Greek τ and *d* for Greek δ, but initial Greek *d* is rendered with *ñt* and internal *d* after nasal is rendered with *t*. I do not want to discuss the exact pronunciation of the dentals but it is at least conceivable that intervocalic *d* indicates a fricative²¹).

When a *t/d* contrast is possible, i.e. in the positions indicated, spelling consistency is absolute except for one category, that of the verbal endings. For the third person sing. pres. we find both *-ti* and *-di*; for the past both *-te* and *-de*, and each verb is consistent in its endings. So far the position is similar to that of Cun. Luwian but a further complication arises: some *-di* verbs also appear to have *-ti* endings. Thus we have *adi* 'makes' and *aiti*, past *ade* and *aite*; *kumezidi* 'sacrifices' and *kumezeiti*; *tlidi* and *tleiti*; *tubidi* 'hits' and

odds are that in a *-sa-* verb the *-tt-* spelling of the ending is the correct one (see below para. 10). A problem to be considered is also that of the verb *pa-ši-ha-a-ti* contrasted with *pa-ši-ha-it-ta* though the first form is a gloss; a further complication is the 1st person sing. *pa-a-ši-ha-ah-ha*. For Starke, KZ 94 (1980), 85 note 36 the spellings indicate contrast in vocalic length; I prefer to suspend judgement (see below note 37). Finally we need not worry about the contrast between e.g. *la-la-ad-du* and *la-la-i-du* since the two imperatives may belong to different verbs; the first is built on the root *la-* 'to take' (with reduplication); the second on the stem *lali-/lalai-* 'to speak' (Oettinger, *Stammbildung*, 381, 564).

²¹ For some of the basic data and references see Carruba, *Annali Scuola Normale di Pisa*, viii (1978), 849ff.

tubeiti; *tadi* 'puts', past *tade* and imperative *tatu*; *χttadi* (*χttade*) and *χttaiti*. Yet, the awkwardness can be removed, if we look at the context in which the *-t-* forms occur; in all instances we must be dealing with plurals, for which we expect *-ñti*, *-ñte* endings. The imp. *tatu* is a mistake for the expected *tātu* (plural)²²; the other *-ti*, *-te* endings all occur after *-i-*; we ought to have **-ĩ-* but such a sign does not exist in the alphabet. In other words our endings derive from **-ainti*, **-ainte* which yield *-a/eiti*, *-a/eite*, the expected forms²³).

Is there any evidence for the origin of Lycian *t* and *d*? The lexicon is limited, but what we have does not contradict the view that inherited *t* is continued by *t*, and *d* by *d* whenever this is possible: cf. *kbatra* 'daughter', Gr. *θυγάτηρ*²⁴; *tideimi* (passim) 'son' < **dhēi-*; *pededi* (TL 44a.35) 'feet' < **pe/od-*. Yet, while the *-ti*, *-te* endings

²² *tatu* of TL 118, 2 is matched by *tātu* in identical or similar phrases (TL 75, 80, 88, 91, 93 etc.); in all instances we need an impersonal construction: 'let them (not) put . . .'. A similar problem occurs with *tete* of TL 38, 7, matched by *tātē* in an identical phrase (TL 39, 7); here *e* may be a mistake for *ā* (we expect *tāte* < **tanta*), but we should not forget Heubeck's demonstration (KZ 95 (1981), 158ff.) that *pibiti* and *pibijeti* are third persons singular and plural respectively; *pibijeti* presupposes an earlier **pibijanti* and if so we have again *-anti* > *-eti*. The general lesson to learn is that for graphic or phonetic reasons the stonecutters are not altogether consistent in indicating the nasalization of the plural endings.

²³ That *-iti* and *-ite* forms are plural is not part of the received doctrine. Yet a collection of the data makes it clear that they occur in connection with either a plural or a collective subject; the point need not be elaborated because it has been convincingly demonstrated by A. Heubeck, KZ 95 (1981), 158ff. in an article which will have to be the starting point for any future discussion. In Heubeck's list of verbs three forms may cause difficulties; *hhati* of Tril. 40-1 vs. *hadi* passim; *ppuweti* (Tril. 23, TL 83) vs. *pudē* (TL 87), *puñtē* (TL 114), and *χbati* (TL 106, 2) vs. *χbade* (TL 44c.63; Lycian B 55, 4), *χbaitē* (Tril. 14). None of these need to be too disturbing; *hhati* occurs in a very obscure sentence and the context does not exclude a plural without nasalization mark (see above note 22); if it is related to *hadi* (which is far from certain) the initial *hh* (which is unique) could point to a reduplicated form with different accentual, quantitative and morphological characteristics from the simplex (for initial CC < CVC see *ttaraha* < **tatarasa* in Tril. 14). Similar considerations apply to *ppuweti*; Heubeck has stressed the difficulties we have in understanding the syntax of the sentence where it occurs: it could be a plural used impersonally, but failing that, a reduplicated present contrasted with *pudē* is again possible. As for *χbati* vs. *χbade* the problem is that we do not understand the verb in any of the contexts where it occurs; do we deal with one or with two verbs? Altogether it seems that the clear evidence points to absolute consistence in the quality of the sing. endings and that the exceptions mentioned above may be only apparent.

²⁴ Laroche, BSL 62 (1967), 48.

confirm this rule, the *-di*, *-de* endings contradict it. The parallelism with Cun. Luwian becomes closer.

5. I can summarize this first part. In Cun. Luwian there is a contrast between *-t-* and *-tt-* in intervocalic position; there is also some evidence for a **-t-* origin of *-tt-* and a **-d-* origin of *-t-* but there are exceptions. Most important, in the third person singular present, past and imperative, where we expect *-tt-*, we find both *-t-* and *-tt-*. However, each verb is consistent in the form of its endings; there are *-t-* verbs and *-tt-* verbs. In Lycian the position is similar; spellings with *-t-* and *-d-* between vowels are consistent and there is a bare minimum of evidence which favours the derivation of *-t-* from **-t-* and that of *-d-* from **-d-*. Yet the verbal endings oscillate between *-ti* and *-di*, *-te* and *-de*. As in Cun. Luwian each verb is consistent in the spelling of its endings: there are *-t-* verbs and *-d-* verbs.

Hier. Luwian makes no graphic distinction between dentals, but we observe that some intervocalic dentals rhotacize, i.e. alternate with *r*. In two instances for which we have a clear etymology the *t/r* alternation points to an original **-d-*, but the rule is contradicted by the verbal endings of the third person sing. present, past and imperative. Some of these rhotacize, though we want to derive them from forms with inherited **-t-*.

6. This behaviour of the verbal endings in three closely related languages calls for further enquiry. Yet, before we embark on it we must try to establish a set of graphic/phonetic equivalences among the three Luwian languages. I tabulate below the necessary correspondences; for Hier. Luwian I have quoted the rhotacized forms first, followed by the non-rhotacized equivalents in square brackets²⁵).

Cun. Luwian	Hier. Luwian ²⁶)	Lycian
<i>a-du-na</i> 'to eat'	(EDERE) <i>á-ru-na</i> , <i>à-ra/i-tu</i> [<i>á-tà-tu-u</i>]	
<i>hi-ru-ú-ta-ti</i> 'oath', abl.	(*476. 311) <i>hi-ru-à-ra/i-ti-i</i>	
<i>ma-al-li-(i)-ta-ti</i> 'honey', abl.	('PANIS') <i>ma-li-ri-i-mi-sá</i> 'honeyed, sweet'	
<i>ma-al-li-ti-in-zi</i> (adj.)		

²⁵) The references for the Cun. Luwian words are easily traceable in La-roche, *DLL*; for Lycian see the indexes of Kalinka, *Tituli Lyciae*, vol. 1 (1901) and G. Neumann, *Neufunde lykischer Inschriften seit 1901*, Wien 1979. The references for the Hier. Luwian forms are given in the notes which follow.

²⁶) Hier. Luwian references for the forms quoted below: *á-ru-na* ÇİFTLİK 6; *à-ra/i-tu* KULULU (see note 16); *hi-ru-à-ra/i-ti-t* ASSUR f 1 (Hawkins,

Cun. Luwian	Hier. Luwian	Lycian
<i>pa-a-ta-an-za</i> 'feet' dat. pl.	('PES') <i>pa+ra/i-za</i> dat. pl. ('PES') <i>pa+ra/i-ri+i</i> abl. [<i>pa-ti-i</i> , <i>pa-ta-za</i> , <i>pa-ta-ti</i>]	<i>pededi</i> abl.
<i>ta(-a)-ti(-i)-iš</i> 'father' <i>ta-a-ti-na</i> , <i>da-a-ti-i</i> , acc., dat.	<i>tá-à+ra/i-za</i> dat. pl. [<i>tá-ti-i-sa</i> , <i>tá-ti-na</i> , <i>tá-ti-zi</i> , <i>tá-ti-na</i>]	<i>tedi</i> (<i>ddedi</i> ?)
<i>ti-ta(-im)-me-iš</i> 'nourrisson'		<i>tideimi</i> 'son'
<i>ti-wa-ta</i> 'sun' in com- pounds <i>ti-wa-da-ni-it-ti</i> , 3rd sing. etc.	<i>-ti-wa/i+ra/i-</i> in compounds [<i>-ti-wa/i-ta-</i>] Phoen. -TWD	
Abl. ending <i>-a(-a)-ti</i>	<i>-a/i+ra/i</i> , <i>-a/i-ri+i</i> ²⁷) [<i>-a/i-ti</i>]	<i>-adi/-edi</i>
Enclitic particles:		
<i>-du</i> 'to him/her/it'	<i>-ru</i> [<i>-tu</i>]	
<i>-ata</i> 'it, them'	<i>-a+ra/i</i> [<i>-a-ta</i>]	<i>-(e)de</i>
<i>-ti</i> reflexive particle	<i>-ra/i</i> , <i>-ri+i</i> [<i>-ti</i>]	<i>ti!! -di?</i> ²⁸)

KZ 94 (1980), 118); *ma-li-ri+i-mi-sá* MARAŞ 1 (Lion), 3 (Laroche, *HH*, p. 95; Hawkins, *An. St.* 30 (1980), 142); *pa+ra/i-za* SULTANHAN, 3; *pa+ra/i-ri+i* ASSUR f 4 (Hawkins, KZ 94 (1980), 110); *tá-à+ra/i-za* CEKKE B 5 (linked with INFANS(-)*ni-wa/i-za-ha* 'to the fathers and to the children'). The form *tiwara-* occurs in the name *Azatiwat/ra-* twice in KARATEPE Hu (115, 143) and once in KARATEPE Ho, 326; in the name *Sarwa-tiwara-* twice in SULTANHAN (11, 14); in the name *Halpatiwara-* once in CEKKE B 9 (HALPA-*pa-SOL-wa/i+ra/i-sá(-ha)*, etc. The same stem presumably occurs in the adjective/participle (DEUS) *SOL-wa/i-tà-mi-sa* 'illuminé, ensoleillé', which appears in the rhotacized form in CARCHEMISH A 18h, 1; HİSARCIK 2, 1 etc., and is used as a personal name in CEKKE B 7.

²⁷) For the Hier. Luwian ablative ending and enclitic particles see above notes 13 and 15.

²⁸) Lycian has two *ti* particles; one is the relative *ti* < **kwi-*, and the other the reflexive *ti* which corresponds to Cun. Luw. *ti*, Hittite *za*; we are concerned with the latter. In Lycian the reflexive *ti* is always enclitic and in the vast majority of the cases occurs after the particle *me*; in its turn this is nasalized (*mē*) in almost half of its occurrences. Twice or perhaps three times (*TL* 4; 35; 44b, 33) we find a *di* form after the particle *se/si* but the identification of *di* and *ti* is not absolutely certain; cf. Carruba, *Satzeinleitende Partikeln*, Rome 1969, 29 and for some hypotheses, Bryce, *An. St.* 26 (1976), 176 note 7. If *di* and *ti* are the same particle the regularity of the *ti* spelling could be due to the frequency with which *ti* occurs after *mē* or to some other conditioning. If we start from inherited **ti* (> Hitt. *-z(a)*), *di* will be due a *t > d* change in a particular sandhi position (see below) and the Cun. and

The list establishes a correspondence Cun. Luw. *-t-*, Hier. Luw. *-r-* [*-t-*], Lycian *-d-*. The one exception, Lycian *ti*, belongs to an enclitic particle and can probably be explained away. We also expect a correspondence Cun. Luwian *-tt-*, Hier. Luwian *-t-*, Lycian *-t-* but the evidence is limited, mainly because we cannot make use of the Hier. Luwian forms with *-i-* since the spelling is so conservative and inconsistent. Whatever we have agrees with our expectations; the main point is that there is no example of Cun. Luwian *-tt-* which corresponds to Hier. Luwian *-r-* or Lycian *-d-*.

Cun. Luwian	Hier. Luwian	Lycian
<i>hantawatti-</i> 'leader' ²⁹)	REX- <i>ti-sa</i>	<i>χñtawati</i>
Enclitic <i>-tta</i> (Hitt. <i>-kan</i>)	<i>-ta</i>	<i>-te</i> , <i>-de</i> ? ³⁰)
<i>-att-</i> abstract suffix	<i>-a-ta-</i>	<i>-at-</i>
(e.g. <i>šar-la-at-ta-</i>)	(e.g. <i>sa₅+ra/i-la-ta-</i>)	(e.g. <i>pijatu</i> , acc.)

It is now clear that for the intervocalic dentals we can establish two sets of correspondences:

1. Cun. Luw. *-tt-*, Hier. Luw. *-t-*, Lyc. *-t-*
2. Cun. Luw. *-t-*, Hier. Luw. *-t-* or *-r-*, Lyc. *-d-*.

Thus in this position each language shows a contrast between two dental types (or their descendants). The exact nature of the contrast remains obscure: we can think of an opposition between voiceless and voiced, fortis and lenis, stop and fricative consonants. There is no reason to assume that the contrast was phonetically the same in the three languages and the odds are that it was not.

7. I can now return to the verbal endings. It emerges that, when the evidence is available, the Luwian verbs with *-t-* endings have cognates with *-r-* [*-t-*] endings in Hier. Luwian and with *-d-* endings

Hier. Luwian forms will reflect the same change; if we start from inherited **di*, then Lycian *ti* may be explained as suggested above, but we also need to argue that Hittite *-z(a)* can derive from **di* (see note 36).

²⁹) The reading is vouched for by Starke, *KZ* 94 (1980), 77, note 15, who attributes it to a thirteenth century text. Laroche, *DLL*, s.v. registers only forms with a single *-t-*. For the comparison with the Hieroglyphic and Lycian forms cf. Laroche, *Fouilles de Xanthos* VI, Paris 1979, 105; Starke, loc. cit., prefers a different interpretation for REX-*ti-sa*.

³⁰) For the identification of the particle see Laroche *RHA* 168 (1961), 30ff.; cf. also Carruba, *Satzeinleitende Partikeln*, 28ff. who discusses the possible evidence for a *de* alternant of *te*. If both *de* and *te* exist the position of the particle is entirely similar to that of reflexive *ti* discussed in note 28.

in Lycian. Here too the evidence is limited but entirely consistent. In my table the relevant forms from the same or a closely related verbal stem are listed in round brackets; for Hier. Luwian I have listed in square brackets the parallel verbal forms with non-rhotacized dental endings.

Cun. Luwian	Hier. Luwian ³¹⁾	Lycian
? <i>a-ti</i> 'makes'		<i>adi/edi</i>
<i>a-ta/a-da/a-a-ta</i>	<i>á-à+ra/i</i>	<i>ade/ade</i>
? <i>a-a-du</i>	[<i>á-ia-ti-i,</i>	(<i>agā, aiti,</i>
(<i>a-ha, a-a-ia-ši,</i>	<i>á-tà-'</i>]	<i>aite)</i>
<i>a-ia-ta, a-i-ia-an-da)</i>		
<i>a-ú-i-ti</i> 'comes'	'PES'- <i>wa/i+ra/i</i> pres.?	
<i>a-ú-i-ta</i>	'PES'- <i>wa/i+ra/i</i> past	
<i>a-ú-i-du</i>	[<i>PES-wa/i-ti, á-wa/i-ta</i> etc.]	
(<i>a-ú-i-mi, a-ú-i-ši,</i>		
<i>a-ú-i-ha)</i>		
<i>i-ti</i> 'goes'	('PES' ₂) <i>i+ra/i</i> pres.	
? <i>i-i-ta</i>	[('PES' ₂) <i>i+ra/i</i> past	
<i>i-du</i>	[('PES' ₂) <i>i-tà, i-tu</i>]	
(<i>i-ia-an-du)</i>	(<i>i-wa/i, (PES'₂)i-u-na)</i>	
<i>ma-na-a-ti</i> 'sees' ³²⁾	LITUUS- <i>na-ri+i(-')</i>	
<i>ma-na-a-ta</i>	[LITUUS- <i>na-ti-i,</i>	
<i>ma-na-a-du</i>	LITUUS- <i>na-tà</i>]	
(<i>ma-na-a-ha)</i>	(LITUUS- <i>na-ha)</i>	
<i>tar-pi-i-ta</i> 'trampled?'	('PES' ₂) <i>tara/i-pi+ra/i</i> pres.	
(<i>tar-pi-ha)</i>	('PES' ₂ .PES') <i>tara/i-pi-ru-u-</i>	
	imp.	
	[<i>tara/i-pa-à-ti, tara/i-pa-ta₅,</i>	
	<i>tara/i-pi-tu-u)</i>	

³¹⁾ Hier. Luwian references: *á-à+ra/i* MARAŞ 2, 2 (Hawkins, in B. Alster ed., *Death in Mesopotamia*, XXVI R.A.I., 1980, 217f.; Meriggi-Poetto, *Orientalia* 49 (1980) 258); 'PES'-*wa/i+ra/i* SULTANHAN, 4, 8 (present?); PORSUK, 4; ÇALAPVERDİ 1, 3 (past) (cf. Hawkins, *RHA* 29 (1971) 113ff.); *i+ra/i* CEKKE, 10 (present?), TOPADA, 3 (twice, past? cf. Hawkins, *An. St.* 25 (1975), 128); LITUUS-*na-ri+i(-')* ASSUR f, 3; g, '4' (Hawkins, *Kadmos* 19 (1980), 123ff.); *tara/i-pi+ra/i* TUNP 1, 4; *tara/i-pi-ru-u-* KAYSERİ, 5; *tu-pi-ri+i* SULTANHAN, base K (the sentence is very fragmentary but can be restored on the model of KAYSERİ, 3).

³²⁾ For the forms of this verb in Cun. Luwian see Starke, *Kadmos* 19 (1980), 142ff.

Cun. Luwian	Hier. Luwian	Lycian
<i>tu-ú-pi-ti</i> 'beats, hits'	<i>tu-pi-ri+i</i> [<i>tu-pi-ti</i>] (<i>tu-pi-wa/i</i>)	<i>tubidi</i> (pl. <i>tubeiti</i>)

We can now compare the *-tti*, *-tta*, *-ttu* endings of Cun. Luwian with the equivalent endings of Lycian. We expect—and we find—Lycian *-ti*, *-te*; we also expect the Hier. Luwian equivalents not to show rhotacism, and this is indeed the case, but I should again emphasize that, given the nature of the spelling, the value of the nonrhotacized forms is not very great.

Cun. Luwian	Hier. Luwian ³³	Lycian
<i>hu-u-i-ia-ad-da</i> 'ran'	(REL.REL- <i>ta</i>) ³⁴	<i>χuwati</i> 'follows'
<i>pa-ap-ra-ad-du?</i>		? <i>pabrati</i>
<i>pí(-i)-ia-at-ta</i> 'gave'	<i>pi-ia-ta</i>	<i>pijetī</i>
<i>píd-du</i>	<i>pi-ia-tú</i>	<i>pijetē</i> (<i>píjaχā</i> , <i>píjetē</i> , red. <i>pibiti</i> , pl. <i>pibijeti</i>)
<i>du-ú-wa-at-ta</i> 'put'	<i>tu-wa/i-ta</i> / <i>tu-ta</i>	<i>tuwete/tuwetē</i>
(<i>du-ú-wa-an-da</i> , <i>du-ú-wa-an-du</i>)	(<i>tu-wa/i-ha</i> , pl. <i>tu-wa/i-tu</i> , PONERE- <i>wa/i-ti</i>)	<i>tuweti</i> (pl. <i>tuwēti</i> , <i>tuwetu</i> (sic))
<i>ú-pa-at-ta</i> 'bring'?? (cf. <i>u-up-pa-ad-du??</i>) <i>up-pa-an-ta?</i>)	(MANUS) <i>u-pa-ta</i> (<i>u-pa-ha</i>)	<i>ubete</i>

The correspondences I have just listed cannot be due to chance. The Luwian languages obviously have two categories of verbs; in the endings of the third persons sing. present, past, imperative the first category has a consonant which intervocalically is written *-t-* (Cun. Luwian), *-t-/r-* (Hier. Luwian), *-d-* (Lycian); the second cate-

³³) Hier. Luwian references: *pi-ia-ta* e.g. in SULTANHAN 3, BULGAR-MADEN 2; *pi-ia-tu(-u)* is likely to be a plural in most of its occurrences (e.g. KARATEPE 283, 297; ÇİFTLİK 7), but *pi-ia-tú* in CARCHEMISH A 13d, 7 is probably singular; the inscription (from the reign of Katuwas) has no clear examples of rhotacism. *tu-wa/i-ta* occurs e.g. in SULTANHAN 3; *tu-ta* e.g. in ERKİLET 2, 1; *u-pa-ta* occurs in CARCHEMISH a 2, 3, but this too is a Katuwas inscription with no clear example of rhotacism.

³⁴) This is probably a reduplicated form (attested in CARCHEMISH A 6, 4), while the Cun. Luwian form is not reduplicated. That the Lycian verb belongs here is not certain because of a number of phonological problems.

gory has *-tt-* (Cun. Luwian), *-t-* (Hier. Luwian), *-t-* (Lycian). The correspondences are as follows:

	Cun. Luwian		Hier. Luwian		Lycian	
3. sg. pres.	I. <i>-ti</i>	II. <i>-tti</i>	I. <i>-ti/-ri</i>	II. <i>-ti</i>	I. <i>-di</i>	II. <i>-ti</i>
3. sg. pret.	<i>-ta</i>	<i>-tta</i>	<i>-ta/-ra</i>	<i>-ta</i>	<i>-de</i>	<i>-te</i>
3. sg. imp.	<i>-tu</i>	<i>-ttu</i>	<i>-tu/-ru</i>	<i>-tu</i>		

8. In our analysis of the individual languages and scripts we found a minimum of evidence for the suggestion that intervocalically Cun. Luwian *-t-*, Hier. Luw. *-t/-r-*, Lycian *-d-* all derive from an original **d*. Yet for the third person singular of the present and imperative we reconstruct **-ti* and **-tu*. The origin of *-ta/tta* etc. is disputed, but from the data listed earlier it emerges that whatever origin we attribute to the dentals of the third pers. sing. present and imperative we ought also to attribute to the dental of *-ta/tta*, i.e. either this is analogical on the other forms or has the same phonetic origins.

If the original endings were **-ti* and **-tu* it seems reasonable to assume that at some stage the inherited intervocalic **t* acquired two allophones, one of which eventually merged with **d*. The alternative hypothesis, according to which **t* and **d* merged and the merger was followed by a split in the new phoneme, creates more problems than it solves. We could only argue for it if we found an inherited **d* continued by Cun. Luw. *-tt-*, Hier. Luw. *-t-* and Lycian *-t-*, but we do not³⁵). On the other hand our hypothesis calls for a definition of the environment in which the split occurred; in its turn this draws our attention to the limits of our evidence and leads us into some difficult speculation. Before starting on it, let us consider some corollaries to our conclusions. First, if the split happened in Common Luwian, this language must have inherited from the parent language a contrast between voiceless and voiced dentals. It is possible of course that the split occurred in Common Anatolian, and if so my account will have to be modified, but the evidence I have collected bears only on Common Luwian. Secondly, if in Common Luwian (or in Common Anatolian) *t > d* in certain environments, it follows that Common Luwian *d* does not necessarily point to *d* in the parent language. The point, often made, according

³⁵) I said earlier that it is impossible to make any firm statement about the phonetic qualities of the sound involved: from now on I shall regularly speak of *t* and *d* and ignore the phonetic problem.

to which the ablative ending Cun. Luwian *-ati*, Hier. Luwian *-ati* or *-ari*, Lyc. *-adi* or *-edi* derived from Common Luwian **-adi* and consequently cannot go back to PIE (or PIH) **-e/oti*, is acceptable only if we first state the conditions under which **t > *d* in Common Luwian (or Common Anatolian) and show that these do not apply to the ablative ending³⁶). Thirdly, any explanation of the split will have to be based on Common Luwian forms. In other words, we must dismiss as too weak any hypothesis which e.g. accounts for the distribution of the *-ti* and *-di* endings in Lycian, but cannot explain the distribution of the equivalent endings in the other Luwian languages.

9. From now on we move on uncharted territory. Any attempt to establish the environment in which **t > d* in Common Luwian must look first for such features as the number of syllables in the word, the quality of the preceding and following vowels, the quantity of the vowels, the position of the accent, etc. The first two features are not helpful: in Cun. Luwian contrast *piyatta* and *aiata*, *anniti* and *aritti* where different endings appear in verbal forms which have the same number of syllables. Also in Cun. Luwian (and in the other languages) both *-tti* and *-ti* occur after *-i-* and after *-a-*. Accent and vocalic quantity are obvious candidates for inquiry, but we move in darkness: how do we distinguish a long vowel from a short vowel, an accented syllable from an unaccented one?³⁷)

For Lycian Carruba (see note 21) has argued that *t > d* immediately after an accented syllable. He points to the relatively large number of short verbal forms with *-d-* endings, which he contrasts with the frequent long forms with *-t-* endings: *adi*, *tadi*, *tade*, *tlidi*, *ɣltadi* etc. vs. *s̄mmati*, *tuweti*, *pr̄nawute* etc. The assumption is that the accent is on the stem and not on the ending. Yet, we also have

³⁶) For an original voiced dental in the ablative cf. e.g. Laroche, *BSL* 55 (1960), 170, and more recently Starke, *ZA* 70 (1980), 157; *Festschrift Neumann*, Innsbruck 1982, 415ff.; for Cun. Luw. *-ati*, Hitt. *-az* from **-o-ti* cf. Neu, in Neu and Meid ed., *Hethitisch und Indogermanisch*, Innsbruck 1979, 186, with the earlier literature. If, as is likely, Hitt. *-az* and *-ati* have the same origin, one of the questions is whether in internal or final position *-di-* may yield *-zi-* in Hittite (see Starke, loc. cit.).

³⁷) One should look at scriptio plena in Cun. Luwian to see if it marks accentuation or length or both, but its use is sporadic and sometimes contradictory. I have not been able to identify any significant pattern in its distribution and in what follows I shall not take it into account. It is possible that eventually a clear pattern may emerge, but at the very least this will have to wait for a better chronological definition of the texts.

in Lycian *χbati*, *hbatī*, *latī*, *qatī*, *sttati*, *ttiti* etc. If we look at the Cun. Luwian evidence—as we must—we find *a-ta*, *i-ti* etc., which could fit Carruba's rule, but also *ša-a-at-ta*, *la-at-ta*, *píd-du*, *ta-at-ta*, which do not. If so, and if the accent is not on the ending, which etymologically at least is unlikely, it emerges that both Cun. *-tt-* (Lyc. *-t-*) and Cun. *-t-* (Lycian *-d-*) can occur immediately after the accent.

At this stage all that is left is etymology and we shall use it—in duly cautious manner. In our list of correspondences in the three languages there is one verbal form which is etymologically clear: C. Luw. *i-ti* 'goes', Hier. Luw. *iri*. For the third person sing. present we expect **éti*, which in Common Luwian would presumably become **éti* or **tti*³⁸). In this form **t > d* and we notice that the change happens after accented diphthong or long vowel. If Cun. Luwian *a-ú-i-ti* 'comes' is a compound of *i-ti* (cf. also Hier. Luw. *awiri*), we could say that here too **t > d* in the same conditions, though in this form the accent may be on the first element of the compound. A more doubtful, but still persuasive etymology is that of *ma-na-a-ti* 'sees', Hier. Luw. LITUUS-*na-ri+i*. It can be read *mnáti* and derived from **mneH₂- > mnā-* (Gr. *μνᾶμα*, *μνῆμα*), according to Starke's etymology (op. cit. in note 32)³⁹). The imperative *ma-am-ma-an-na-ad-du*, which is built on the reduplicated stem and presumably had a different type of quantity and accentuation, has a *-tt-* ending; this supports, rather than otherwise, the original suggestion. Yet the other forms with *-t-* instead of the expected *-tt-* cannot be explained in this way; there is no reason, for instance why *mallitati* (see above para. 6) should have a long accented vowel before the dental.

I turn now to another verb, which is attested in Hier. Luwian only, but has a clear etymology. For AEDIFICARE-*ri+i* 'builds' we know the full phonetic reading *tamari* in view of the other attested forms *ta-ma-ha* 'I built', (AEDIFICARE) *ta-ma-ta* 'he built'

³⁸) Qualifications are necessary: a protoform **(H₁)éti* is not in doubt, but (a) we cannot know whether *t > d* before or after the monophthongization of *ei*, (b) we cannot exclude a generalization of the zero grade from the plural to the singular.

³⁹) Starke does not discuss the possibility of a protoform **ménH₂(e)ti* (see below note 40) presumably because he gives weight to the scriptio plena in *ma-na-a-ti* and to the contrast between the simple *-n-* of this form and the *-nn-* of the reduplicated form. Čop, *Linguistica* 4 (1961), 60f. tentatively postulates a shift from a Protoluwian *mánata* to a later *manáta*, but offers no independent evidence in support of this view.

etc.⁴⁰) We recognize the root **demH₁-* attested e.g. in Greek *δέμω*, Myc. future participle *de-me-o-te*. A present from this root must either be an athematic form **démH₁-ti* or a thematic form parallel to the Greek form: **démH₁-e-ti*; a form **dméH₁-ti* is excluded because in Luwian it would presumably yield **dmīti*. Other prototypes are possible but there is no reason to reject those suggested; **démH₁(e)ti* ought to become **dāmati*; the rhotacized ending of Hier. Luwian points to a *t > d* shift between unaccented vowels. The same shift, if correct, can also account for the dental of *mallit-* from **mélitV-* (cf. Gr. μέλι, μέλιτος).

10. So far we have formulated two very tentative rules:

a) $\acute{V}tV > \acute{V}dV$

b) $\acute{V}CVtV > \acute{V}CVdV$

The rules, if valid, apply to Common Luwian or to an even earlier state of the language; we are not in a position to say whether they still operated synchronically in the individual languages. Notice at any rate that for each specific form the possibilities of misinterpretation are great. Cun. *a-ta* may well have had an initial long stressed vowel, but does this mean that the *-ta* (rather than *-tta*) ending is due to rule a)? We know that *a-ta* derived from *a-ia-ta* where in all likelihood the accent was on the first syllable (cf. Oettinger, *Stammbildung* 349); if so, it is rule b), not rule a), which initially accounted for the form of the preterite ending. The same considerations apply to Lycian *adi* (< **ayadi*). In others words the forms of the verb 'to make' are explained diachronically by rule b), but may be explained synchronically by rule a). Is this so for other verbs too? We know far too little about quantity and accentuation in Cun. and Hier. Luwian and in Lycian to provide a sensible reply.

This problem may be ignored for the present purposes but our conclusions about accent and quantity are based on so little evidence that all possible counterchecks are called for. If the rules mentioned above explain the shift of inherited *-t-* to *-d-*, in what circumstances is *-t-* preserved? In the verb a monosyllabic root with a long vowel or diphthong calls for a *-d-* ending: it should follow

⁴⁰) For the verb *tama-* 'built' see Hawkins, *RHA* 29 (1971), 116ff.; for *tamari* A. Morpurgo Davies, *Festschrift O. Szemerényi*, Amsterdam 1979, 590. Oettinger, *Stammbildung* 570, note 20, argues for a form *tamai* in KARA-TEPE but this is not supported by the evidence; see Morpurgo Davies, loc. cit. and Hawkins-Morpurgo Davies, *JRAS* 1975, 128.

that if we have a *-t-* ending added to a monosyllabic root, this must have a short vowel; in other words we expect a short radical in a form like *la-at-ta*. Is there any confirmation?

At this stage we ought to turn to the verbs with *-tti*, *-tta* endings in Luwian or *-ti*, *-te* endings in Lycian to see if we can recognize any pattern. If we take the whole evidence together the first thing we notice is that there is a rather large category of verbs which appear with *-tta* endings in the preterite and *-ttu* endings in the imperative, but, in Cun. Luwian at least, have no *-tti* forms for the present. Combining the Cun. Luwian and Hier. Luwian evidence we recover a number of third persons sing. ending in *-ai*, according to the model of the Hittite *-hi* conjugation. A list follows⁴¹):

Clear examples:

3rd sing. present	past	imperative
Hier. <i>la-i</i> 'takes'	Cun. <i>la-(a-)at-ta</i>	Cun. <i>la-a-ad-du</i>
Cun. <i>la-la-a-i</i> 'takes'	Cun. <i>la-(a-)la-at-ta</i>	Cun. <i>la-a-la-ad-du</i>
Hier. LITUUS.LITUUS- <i>na-i</i> 'sees, looks'		Cun. <i>ma-am-ma-an-na-ad-du</i>
Cun. <i>na-ah-hu-u-wa-i</i>		Cun. <i>na-ah-hu-wa-ia-ad-du</i>
Hier. <i>pi-ia-i</i> 'gives'	Cun. <i>pi-(i-)-ia-at-ta</i>	Cun. <i>pid-du</i>
Hier. <i>tu-wa/i-i</i> 'puts'	Cun. <i>du-ú-wa-at-ta</i>	
Hier. <i>u-pa-i</i> 'brings, offers'	Cun. <i>ú-pa-at-ta</i> Lyc. <i>ubete</i>	

So-called *-sa-* iteratives:

Cun. <i>ar-pa-ša-a-i</i>	Cun. <i>ar-pa-ša-at-ta</i>
Hier. <i>pi-pa-sa-i</i> etc.	Cun. <i>ip-pa-tar-ri-ša-at-ta</i> (cf. note 20)
	Cun. <i>ša-ah-ha-ni-iš-ša-at-ta</i> (cf. note 20)
	Cun. <i>tar-pa-ša-at-ta</i>
	Cun. <i>ua-ar-pa-ša-at-ta</i>

Less certain examples:

Cun. <i>mu-u-wa-i</i>	Lyc. B <i>muwati</i>
Hier. <i>mu-wa/i-i</i>	(1st pers. <i>muwaxa</i>)
Cun. <i>ša-a-i</i>	Cun. <i>ša-a-at-ta</i>
Hier. <i>ta-i</i> or <i>tà-i</i>	Cun. <i>ta-at-ta??</i>
Hier. *261(-) <i>ta-pa-i</i>	Lyc. <i>tebete</i> 'defeated, destroyed'

⁴¹) For the basic data see *Festschrift O. Szemerényi*, 577 ff.

The pattern emerges clearly: 3rd pers. sing. *-ai* in the present, 3rd pers. *-tta* in the preterite⁴²); if there are Lycian cognates these have *-te* in the preterite (*pijete* 'gave', *tuwete* 'put'). Lycian has also replaced the *-ai* presents with *-ti* (not *-di*) forms: Lyc. B *muwati*, *pijeti*; Lyc. A *tuweti*. The only possible exception (Lyc. *tadi* 'puts') is etymologically too uncertain to be taken too seriously.

All verbs with *-ai* in the present have an *-a-* vowel before *-ttu* of the stem and *-ttu* of the imperative; our problem is whether that *-a-* was originally short or long and whether it was accented or not.

⁴²) Notice that Hier. Luwian presents an apparent exception to this rule. The verb *i-zi-i-sa-ta-i* 'honours' (CARCHEMISH A 1a, 5; A 1b, 3) also seems to have a form *i-zi-i-sa-ta+ra/i* (CARCHEMISH A 6, 5) which is normally interpreted as 'pleased, honoured', i.e. as a third person sing. preterite. Yet there are reasons for reinterpreting the whole construction. The text reads:

(And with him I made his brothers)

(i) |à-wa/i| REL-*i-zi* |(*314') *ka-tù-na-sa* |i-zi-i-sa-ta+ra/i|

(ii) *wa/i-ma-za* |zi-la| (*314') *ka-tù-ni-zi* | (MANUS) *i-sà-tara/i-i*
(*'PONERE'*) *tù-wa/i-há*

Two parallel phrases (iii and iv) follow where instead of *katunas* and *katuninzi* we have (*382') *tara/i-pu-na-sa* (iii) and (*382') *tara/i-pu-na-zi* (iv) respectively. To translate (i) and (ii):

'(for) them whom the *katunas* pleased,
to them I put *katuna*'s (plur.) in the hand.'

means to ignore the fact that the expected nominative singular corresponding to the plural *katuninzi* ought to be *katunis* and not *katunas*; *katunas* can only be a genitive singular. Since there is no word divider between *i-zi-i-sa-ta+ra/i* and the following particle chain (this is true both of (i)-(ii) and (iii)-(iv)) we can read (i) as:

à-wa/i REL-*i-zi* (*314') *ka-tù-na-sa*

and start (ii) with *i-zi-i-sa-ta+ra/i-wa/i-ma-za*; similarly for (iii) and (iv). The meaning then becomes:

'those who (are) of *katunis*,
to them for honour I put *katuninzi* in the hand.'

(i) is a nominal clause and the construction *qui (est) alicuius* is paralleled e.g. by CARCHEMISH A 1a, 5: à-wa/i REL-*i-sa* OVIS(ANIMAL)-*si* 'who (is) of sheep[, let him offer a sheep to this statue]'; REL-*i-sa-pa-wa/i* (PANIS)*tu+ra/i-pa-si-i* 'but who (is) of bread [, let him bring to it bread and libation]'. In other words, I assume that we have evidence both for a verb *izistai* 'honours' and a noun *izista-* 'honour' (in the abl.); we may compare the noun *wariya-* 'help' of SULTANHAN, 4 and the verb *wariyaya* 'helps' of BOHCA, 3, 4, and perhaps even the noun *pi-ia-za* of KULULU lead fragment 1 and the verb *piyai* 'gives'.

Certainty is not possible, but a case can be made for assuming that the final *-a-* of the stem of *du-ú-wa-at-ta* 'put' (Hier. *tu-wa/i-ta*, Lyc. *tuwete*) was in origin short and accented. If *tuwa-* is related to **dheH₁-*, as seems likely, a plausible explanation of the presence of the *-u-* is that accepted by Oettinger (*Stammbildung* 482) who starts from a 1st person plural pres. **duyéni* (from **dhH₁-yéni*); presumably the next step was the replacement of the expected 3rd pl. **dánti* with *duṽánti* and the new stem was created from there. If so, however, the most likely reading of *du-ú-ua-at-ta* is [*duwáta*]; there is no reason why the accent should be retracted and the *-a-* vowel long.

11. I conclude with an examination of the *-ye/o-* verbs of the *-mi/-wi* conjugation in Luwian. Cun. Luwian has a large number of these formations; presumably there has been a great deal of levelling between *-ye-* and *-yo-* forms and Oettinger (*Stammbildung*, 562) is probably right in assuming that we expect *-yi-* from **-ye-* and *-ya-* from **-yo-*. From our point of view the oddity is that these verbs have both *-tt-* and *-t-* endings, with of course absolute consistency within the paradigm of each verb. I list here the verbs divided into two groups merely according to the endings. The forms in brackets provide information about the rest of the paradigm and the cognate languages; unless it is stated otherwise, the verbs quoted are Cun. Luwian.

A. Verbs with *-ti*, *-ta*, *-du*
endings

(a)-a-an-ni(-i)-ti

(a-ni-e-ia-an-t[i], a-ni-ia)

ha-pi-ti, ha-pí-ta

(ha-pi-ú-i, ha-pa-a-in-du, ha-pa-nu-ša)

ka-lu-ut-ta-ni-ta (ka-lu-ta-an-ni)

kán-ga-ti-ti (ga-an-ga-ta-im-mi-iš)

ku-wa-li-i-ti

la-la-i-du

ša-pi-ia-ti

tar-mi-ta

(tar-ma-in-du, tar-mi-iš-ša-an-du)

tar-pi-i-ta (tar-pí-ha, tar-pa-ša-at-ta,

B. Verbs with *-tti*, *tta*, *-ddu*
endings

a-ri-it-t[i], (a)-a-ri-it-ta,

a-ri-ia-ad-du

((a)-a-ri-in-ta, a-a-ri-ia)

ar-na-mi-it-ti (ar-na-mi-in-ti)

a-ar-ra-ah-ha-ni-it-ti

[a]-da-ri-it-ta

hú-u-i-ia-ad-da (hu-i-nu-wa-ah-ha)

ka-lu-ti-it-ti

kat-mar-ši-it-ti

ku-la-(a)-ni-it-ta (ku-la-ni-wi)

la-wa-ar-ri-it-ta (la-wa-ar-ri-ma)

nu-uh-ha-ri-it-ti

Hier. <i>tara/i-pi+ra/i</i> , <i>tara/i-pi-ru-u-'</i> ,	<i>pa-ar-ri-it-ti</i> (<i>pa-ar-re-en-ti</i>)
<i>tara/i-pi-tu-u</i> , <i>tara/i-pa-à-ti</i> ,	<i>pa-aš-ta-ri-it-t[i</i>
<i>tara/i-pa-ta₅</i>)	(<i>pa-aš-ta-ar-nu-wa-at-ta</i>)
<i>du-ú-pi-ti</i> (<i>du-ú-pa-im-mi-iš</i> ,	
<i>du-pa-a-im-mi-in</i> , <i>du-ú-du-pa</i> ,	<i>ta-ra-a-u-it-ta</i> , <i>da-ra-u-id-du</i>
Hier. <i>tu-pi-ri+i</i> , <i>tu-pi-ti</i> ,	(<i>tar-ra-wa-u-un-ta</i>)
Lyc. <i>tubidi</i> , pl. <i>tubeiti</i>)	
<i>ú-wi-ši-ta</i> (<i>ú-i-ši-ha</i>)	<i>ti-wa-da-ni-it-ti</i> ,
<i>wa-ri-i-ta</i>	<i>ti-wa-ta-ni-ia-at-ta</i>
	(<i>ti-wa-ta-ni-ia-ah-ha</i> ,
	<i>ti-wa-ta-ni-ia-am-ma-ti</i>)
	<i>wa-al-li-it-ta</i> (<i>wa-al-li-in-du</i> ,
	<i>wa-li-ia-am-ma(-ti)</i> , Hier.
	<i>wa/i-li-ia-nú-wa/i-ha</i>)

Both groups include a mixture of categories; *anniti* and *aritti* may be deverbatives, but most of the other forms are likely to be denominatives⁴³). For *aritti* we could think of **ar-yé-ti* with a shift from *-yé-* to *-yi-* (see below) and the preservation of [t] after an accented short vowel. If so, we should postulate for *anniti* a form with the same suffix, but the accent on the root; the type is presumably found in Hittite to judge from the deverbatives with a *-ye/a-* suffix and the *-e-* grade of the root (e.g. *weriia-* 'rufen'), and we may have a clear example of the type in the Luwian list if *wa-ri-i-ta* is an exact match for Hitt. *weriia-* (Oettinger, *Stammbildung* 344 and 539). The alternation of *-t-* and *-tt-* endings in the denominatives is baffling since in most cases we expect *-yé-* verbs. However, some of the verbs which have a *-ti* type ending (A) share a further characteristic. The imperative, when attested, has a third pers. plural in *-Caindu* and not in *-Cindu*; the participle, when known, ends in *-ai(m)mis*. The cognate verbs in other languages also show an alternation between *-i-* and *-ay-*, *-ai-*, *-a-* forms. In contrast with Oettinger's assumption that most of these verbs have *-Cyi-* forms with the generalization of the *-ye-* form of the suffix (> *-yi-*) to the expense of *-yo-* (> *-ya-*), it seems easier to refer to the known distinction between *-Caye/o-* (*-Cayi-/Caya-*) verbs and *-Cye/o-* verbs, and to assume that in origin at least the *-aimmis* participles and the *-aindu*

⁴³) *hu-u-i-ia-ad-da* could be a deverbative and could conceivably belong to the category discussed above which has a *-tta* ending in the preterite and an *-i* ending in the present.

imperatives belong to the first type⁴⁴). If so, the *-ti* endings could be a mark of the original *-Caye/o-* verbs, i.e. we could argue that in the *-Caye/o-* verbs the original *-t-* endings shifted to *-d-* (spelled *-t-* rather than *-tt-*). Why should it be so? The reconstruction which follows is extremely tentative and depends on two assumptions which it shares with Oettinger's *Stammbildung*: first in Luwian the *-ye/o-* verbs tend to generalize the *-ye-* forms of the suffix; secondly, in Luwian *-ye-* > *-yi-*. In the denominatives with *-tt-* endings we expect a third pers. sing. present ending *-Cyéti*, which develops into *-Citi* (spelled *-Ci-it-ti*); the third pers. plural *-Cyénti* will similarly change into *-Cint/di* (spelled *-Ci-in-ti*). For the *-Caye/o-* denominatives there are two possibilities. We may assume that the accent was on the *-a-* so that in the third pers. sing. present we would have *-Cáyeti* > *-Cáyidi* > *-Cídi* (spelled *-Ci-ti*). Before a nasal, especially if tautosyllabic, the *-i-* (< *-ye-*) may have been preserved. The plural we expect is *-Cayenti* which, whatever the position of the accent, would become *-Cainti*; in its turn **-Cainti* may have been analogically (if not phonologically) replaced by *-Cinti*, while the parallel form of third pers. plural imperative preserved the earlier pattern *-Caintu* (presumably from **-Cayentu*)⁴⁵).

An alternative possibility is that the *-aye/o-* verbs too had the accent on the thematic vowel. This would make no difference to our reconstruction of the development of the plural forms. In the singular we would expect **-Cayéti* > **-Caíti* (>? **-Cáiti*) > *-Cídi*; after a stressed diphthong (either descending or ascending) *t* > *d*, on the condition of course that this change happened after the shift *-aye-* > *-ayi-* > *-ai-*.

⁴⁴) Oettinger, *Stammbildung* 564 attributes to his *-a(i)i-* class only a few verbs which show an alternation between *-a-* and *-ai-* forms: *i-li-il-ha-a-i-ti*, plur. *e-le-el-ha-an-du*; *la-la-i-du*; *pa-ši-ha-a-ti*; *pa-ši-ha-it-ta*, etc. The other verbs which have *-iti* in the singular ind. and *-aindu* in the imperative plural he attributes to the *-(i)i-* class. I suspect that the few instances of *-aiti* singulars are either archaisms (< **-ayeti* > *-aidi* > *-idi*) or analogical reformations from the plural where *-ai-* was preserved; *e-le-el-ha-an-du* may derive from *-ayandu* < **-ayontu*, where the generalization of *-ye-* had not taken place; *pa-ši-ha-a-ti* may be due to a generalization of *-yo-* (**-ayo-* > **-aya-* > **-aa* > *-ā*) or to remodelling on a supposed plural in *-andi*. None of these explanations is certain or provable, but it seems that these few forms are not consistent enough or numerous enough to define a separate verbal class.

⁴⁵) I do not understand the *-mm-* of the participles. Čop, *IF* 75 (1970), 85ff. has argued that, after short accented *e*, *m* > *mm* in Cun. Luwian, but I doubt that this rule, if valid, applies here; in general I do not understand what determines the presence of *m* or *mm* in the spelling.

I ignore the instances in which *-ya-* (< **-yo-*) was generalized instead of *-ye-* because the data are too limited, but I may point out at this stage that our reconstruction accounts for some at least of the Lycian *-iti*, *ite* plurals. Heubeck (op. cit.) lists sing. *tubidi*, pl. *tubeiti*; sing. *tlidi*, plur. *tleiti*; sing. *komezidi*, plur. *kumezeiti*. Among these forms *tubidi* is an exact match for Cun. Luwian *du-ú-pi-ti*, Hier. Luw. *tupiri*; *komezidi* is clearly a denominative built on *kumaza* 'priest': the *-idi* forms presumably derive from **-ayeti*, the *-eiti* forms from **-ayenti*. The position of forms such as *adi*, *ade* (sing.), *aiti*, *aite* (plur.); *xbade* (sing.), *xbaita* (plur.); *xttadi* (sing.), *xttaiti* (plur.) is similar but not identical. For the verb 'to make' we assume (because of Cun. Luwian) that the proto-forms were all built on an *aya-* stem, where there is no reason to believe that the *-y-* is suffixal. Presumably the development was **áyati* > *ádi*. If in Lycian we find *aite* in correspondence with Cun. Luw. *a-a-ia-an-ta* this may be due to a morphological shift (**-enti* replaces **-onti*, unless vice versa is true, i.e. Cun. Luwian innovated and Lycian did not), or—more probably—to a syncope of unaccented *-a-*: **áyanta* > **áinta* > *aite*. The other verbs which have *-adi* or *-ade* in the singular and *-aiti* or *-aite* in the plural may be *-aye/o-* verbs with generalization of *-o-* > *-a-*. Here too it is possible to think of a syncope which explains the change from **-ayanta* to *-aite*, provided we are ready to assume that the accent was on the first syllable of the suffix⁴⁶).

12. There is no natural end to speculation, but I ought to sum up. I have made a case for a distinction between two dentals in the three Luwian languages and argued that this reflects, a) the inherited distinction between voiceless *t* and voiced *d*, and, b) the result of a split of **t* which partially merged with **d*. In intervocalic position inherited **d* and those allophones of **t* which merged with it are continued by Cun. Luwian *-t-*, Hier. Luwian *-t-* or *-r-*, Lycian *-d-*; inherited **t*, when it did not merge with **d*, is continued by Cun. Luwian *-tt-*, Hier. Luwian *-t-*, Lycian *-t-*. The split of inherited

⁴⁶) The important point is that in Lycian there are a number of verbs which never show *-iti* or *-ite* in the plural; this speaks against the hypothesis that *i* is due to a phonetic development of the nasal (**-anti* > *-aiti*) similar to that attested in Lesbian Greek (**-ontya* > *-oisa*). It is also important to notice that, as J. D. Hawkins points out to me, CARCHEMISH A 1a, 1 has a third person plural preterite SA₄(-)*sa-na-i-ta* from the same verb which has a third singular present SA₄(-)*sa-ni-ti*; the pattern is absolutely parallel to that of the Lycian verbs with sing. *-idi*, plur. *-eiti*.

**t* had the effect that in all the three languages the verbs have a double series of endings for the singular: on the one hand Cun. Luw. *-tti*, Hier. Luw. *-ti*, Lycian *-ti*; on the other hand Cun. Luw. *-ti*, Hier. Luw. *-ti* or *-ri*, Lycian *-di*. Analogical levelling may have occurred but the three languages were conservative enough to preserve a number of endings in the original distribution. These are sufficient to show that the split of **t* and its partial merger with **d* must be Common Luwian (if not earlier).

In trying to account for the split of **t* I tentatively suggested that the conditioning must have had something to do with accent and vocalic quantity, i.e. with two features which may well have been prominent in Common Luwian, but have left little or no mark in the spelling system of the attested languages. The few etymological data we have lead us to some highly speculative conclusions: voiceless **t* was preserved after a short stressed vowel but merged with **d* after a long accented vowel or diphthong and between unaccented vowels. These rules obviously do not exhaust all possibilities but they are all that our limited evidence allows us to set up. A further weakness in our conclusion is that we are not able to state whether the rules applied to Common Luwian only or must also be treated as synchronically valid in Cun. Luwian, Hier. Luwian and Lycian⁴⁷).

What precedes is strictly based on the evidence adduced: no attempt has been made to exploit other data or take into account the conclusions reached by other scholars. Yet at this stage I must stress that some, if not all, of my results are not new. In particular, Eichner, Oettinger, and, to a certain extent, Starke operate on similar or identical rules for the lenition of **t* in Common Anatolian,

⁴⁷) The enclitic particles are important. If we are obliged to assume (note 28) that some languages generalized one sandhi form of a particle and some another (contrast e.g. *di* in Cun. Luw. and Hier. Luw., and *ti* in Lycian) then we must also assume that the rules are no longer synchronically valid, at least as far as the enclitic particles are concerned. Yet our evidence is too limited and etymologically too uncertain to lead to any firm conclusion. Consider for instance the case of Cun. Luw. *-tta*, Hier. Luw. *-ta*, Lyc. *-te* (note 30); there is a very doubtful Lycian form *de*, but except for this we have no evidence for a voiced form of the dental in this particle. Yet, since *-ta* tends to occupy the last position in the particle chains, and these are stressed on the first element, we might expect *-t-* > *-d-* between unaccented vowels in the majority of the occurrences. But we know nothing about the etymology of *-ta*; the consonant could in theory derive from a consonantal cluster and, if so, there is no reason why it should undergo the same changes as an inherited *t*.

though they also make a number of other assumptions about the lengthening and shortening of vowels in accented and unaccented position respectively. They do not present in full the evidence on which they base their conclusion; if this, as I hope, is different from mine, it may well be that our results are mutually supportive.

13. Finally, I cannot abandon the subject without a further, factual, observation. I have pointed out that in Cun. Luwian the verbs consistently use *either* *-tt-* or *-t-* in the endings of the third person sing. present, past and imperative. The same verbs also show another form of consistency. The verbs which have *-tt-* endings have a *-hha* ending for the 1st person sing. past and a *-šši* ending for the second person sing. present; on the other hand the verbs which have *-t-* endings also have *-ha* and *-ši* endings. Though consistent the evidence is limited and may be tabulated here:

1. *-t-* verbs: *a-ha* 'I made', *a-a-ia-ši* vs. *a-ti*, *a-ta*, *a-ia-ta* etc.
a-ú-i-ha 'I came', *a-ú-i-ši* vs. *a-ú-i-ti*, *a-ú-i-ta* etc.
e-el-ha-a-ha 'I washed?' vs. *il-ha-ti*, *e-el-ha-a-du*
ma-na-a-ha 'I saw' vs. *ma-na-a-ti*, *ma-na-a-ta*, *ma-na-a-du*
tar-pi-ha 'I trampled' vs. *tar-pi-i-ta*
ú-i-ši-ha vs. *ú-wi-ši-ta*
2. *-tt-* verbs: *za-ap-pa-aš-ši* vs. *za-ap-pa-at-ta*
a-ra-an-nu-uh-ha vs. *a-ra-nu-wa-at-ta*; all *-nu* verbs have *-tta* endings
 and the other 1st sing. past attested is *hu-i-nu-wa-ah-ha*.

The phenomenon is not limited to Cun. Luwian; the Lycian data are miserable but confirm it:

1. *agā* 'I made' vs. *adi*, *ade* (Cun. Luw. *a-ha*, *a-ti* etc.)
2. *pijaxa* 'I gave' vs. *pijete* (Cun. Luw. *pi-(i-)ia-at-ta*)
prīnawaxā 'I built' vs. *prīnawate*
 Lyc. B *muwayā* vs. *muwati* (Cun. Luw. *mu-u-wa-i*, **muwatta*).

We must conclude that in Cun. Luwian the double writing of *-h-* and *-š-* is as significant as that of the stops⁴⁸).

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⁴⁸) A version of this paper was first read at the First East Coast Conference on Indo-European Studies held at Yale University in June 1982. I am grateful to the participants to that conference for a number of useful points made in the discussion.