

# **THE SOUND OF INDO-EUROPEAN 2**

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## Luvo-Lycian Dorsal Stops Revisited

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### 1. Introduction

There is a broad consensus that at some prehistoric stage the Indo-European stop system had only a two-way phonological contrast of labialized velars (traditionally ‘labiovelars’) and non-labialized velars: thus schematically /K<sup>w</sup>/ versus /K/. The latter had two conditioned allophones, palato-velars or front velars (traditionally ‘palatals’) in fronting environments and non-front velars (traditionally ‘velars’) elsewhere: [K<sup>j</sup>] and [K]. Formulations of just what constituted a ‘fronting environment’ can differ markedly (one may compare among many Meillet 1934: 94 and Lipp 2009: 1.7&53). Nevertheless, the highly skewed—that is, non-random and largely complementary—distribution of traditional ‘palatals’ and ‘velars’ strongly supports this fundamental premise.

The major point of dispute for more than a century has been whether or not a partial loss of conditioning environment, analogy, and other factors led to a so-called phonemic split in PIE (that prehistoric stage that we reach by direct comparative reconstruction). The result would have been a three-way contrast /K<sup>j</sup>/, /K/ and /K<sup>w</sup>/, albeit very likely in a limited number of examples and with much of the previous complementary distribution preserved, as is typical for such splits. I contend that the answer to this question is yes, regardless of the facts of Luvo-Lycian (likewise Kümmel 2007: 312).

The typological objection of Sihler (1995: 152-3) and Lipp (2009: 1.31<sup>65</sup>) that the presupposed backing of palatal stops to velars in the ‘centum’ languages is unattested is a straw man. There is *no* compelling evidence that the PIE stops conventionally labeled ‘palatals’ were true palatal stops (IPA [c] and [j]). Evidence from all attested languages is fully compatible with front velars.<sup>1</sup> There is in any case no necessity to assume that the *phonological* merger of /K<sup>j</sup>/ and /K/ in the centum languages even took place by phonetic backing of front velars. Since the place of articulation of /K/ in the older centum languages is indeterminate, we may rather assume the more likely generalization of [K<sup>j</sup>] in fronting environments (along with other factors leading to an allophonic distribution).

No explanation is offered by Sihler, Lipp or others for the contrasting data cited in the appendix below. Constructs such as \**kreuh*<sub>2</sub>- beside \**kruh*<sub>2</sub>- for ‘gore, bloody flesh’ (with a supposed front allophone before \**r* + front vowel) or \**kew-on*- ‘dog’ (with wholly unattested root full grade!) as a variant of the root generally cited as \*(s)*keuh*<sub>1</sub>- ‘perceive, notice’ (Lipp 2009: 1.55&79) are plausible enough, but they are totally unsupported for Proto-Indo-European as reached by direct comparative reconstruction. They are rather the result of internal reconstruction based on PIE and thus by definition represent pre-PIE.<sup>2</sup>

1 Compare Kümmel 2007: 318. I also regard as fully viable his alternative solution (2007: 318-27) of an original contrast of velar, uvular, and labialized velar stops.

2 Sihler (1995: 154) dismisses such evidence as ‘an artifact of the method’. This is methodologically unacceptable: by definition all of PIE is an artifact of the comparative method. One may always legitimately argue that the method has been incorrectly applied in a

## 2. Luvo-Lycian Evidence I

The question at hand is thus not whether PIE had a three-way phonemic contrast in its dorsal stops, but whether Luvian and Lycian truly offer further support for that contrast. In Melchert 1987 I claimed that Luvian reflexes of voiceless dorsal stops show a triple contrast before front vowels. Morpurgo Davies and Hawkins 1988 independently reached the same conclusion (as noted in the epilogue to my article, Warren Cowgill had already made this analysis many years before, on the basis of far less evidence). The issue was left open as to whether this contrast was unconditioned or reflected a conditioned palatalization of  $*k$  but not  $*k$ . However, in Melchert 1989: 23-31 (see especially page 30), I argued for an unconditioned three-way contrast based on further putative evidence from Lycian. This analysis had the important implication that Anatolian had merged neither the PIE 'labiovelars' and 'velars' nor the 'velars' and 'palatals'. It was thus neither 'centum' nor 'satem', but was, as often, more archaic. This formulation has met wide acceptance (e.g. Fortson 2004: 168, Kloekhorst 2008: 17-18), but occasional rejection (Sihler 1995: 154, Woodhouse 1998, Lipp 2009: 1.275-302).

The crucial Lycian evidence I cited then for  $*k > ts$  before  $*o$  (i.e., in a non-fronting environment) has not withstood scrutiny. Contra Melchert 1989: 29-30 the suffixes Lycian  $-(i)s-$  and Luvian  $-(i)zza-$  are not cognate, reflecting  $*-i(s)ko-$ . Lycian  $-(i)s-$  forms abstracts and names for topographic features: e.g., *wazzis-* 'ship' (an office) or *Tr̄m̄mis-* 'Lycia' (with Borchhardt-Eichner 1997-99: 82-3).<sup>3</sup> The true equation is Luvian  $-zza-$  = Lycian  $-za-$  <  $*-tyeh_2$ ; e.g., CLuvian *wašhazza-* 'sanctified, holy' = Lycian *wasaza-* (kind of priest), HLuvian *ku-ma-za-* = Lycian *kumaza-* 'priest', as seen by Hajnal (2003: 193). The HLuvian ethnic adjectives seen in /Karkamisa/itsa-/ 'of Carchemish' and /nimu:witsa-/ 'child' (i.e.  $*-o$  of /nimu:wi-/ un-manhood') likewise show the same PIE suffix  $*-tyo-$  seen in Lycian *Pttaraze/i-* 'of Patara' and *neleze/i-* 'of the agora' (for the Lycian suffix see Gusmani 1961 and Hajnal 1995: 82 with n. 96). With removal of the supposed Lycian evidence showing  $*k > ts$  before back vowel, my claim of an unconditioned three-way contrast in Luvo-Lycian reflexes of voiceless dorsal stops cannot be upheld. The purported *unconditioned* palatalized treatment of voiceless  $*k$  had always been suspect, due to the appearance of voiced  $*g(h)-$  as Luvo-Lycian  $k-$  before back vowels (see below), as per the apposite remarks of Woodhouse (1998: 40) and Lipp (2009: 1.297).

## 3. Luvo-Lycian Evidence II (voiceless stops)

We must reexamine all available evidence anew. Data for the voiceless stops is summarized in Table 1:<sup>4</sup>

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given case (and that the results are thus false), but one cannot accept other results of the comparative method on a large scale, as Sihler does, and airily dismiss those results that do not happen to conform to one's preconceptions of how some part of the grammar should look. The data in the appendix is based on quite indisputable etymologies.

3 Lycian  $-(i)s-$  in my view continues  $*-sh_2o-$  (cf. Luvo-Hittite  $-(a)šha-$  in *tariyašha-* 'exertion, exhaustion', *huliyāšha-* 'marshland', etc.), but this is an entirely separate issue. The key point is that it does *not* match Luvian  $-(i)zza-$ , as I had mistakenly claimed.

4 Examples listed above the solid horizontal line in each column I regard as indisputable etymologies, while those below it are merely probable or possible.

Table 1: Summary of Evidence for the Voiceless Series (C=CLuvian; H=HLuvan)

*k̥	*k	*k <sup>w</sup>
ziyari 'lies' (C) ~ Lyc. <i>sijēni</i> < *k̥éyo-	kišā(i)- (C) 'to comb' < *k̥ēs- ~ OCS <i>česati</i> etc.	kui- 'who' (C) ~ Lyc. <i>ti</i> < *k <sup>w</sup> i-
zār-(za)/zart- 'heart' (C/H) < *k̥ēr/*k̥gd- <i>kṛnōti</i>	karš- (C) 'to cut' < *k(e)rs- ~ Toch <i>kāršt-/kāršt-</i>	kuar-/kur- 'to cut' (C) < *k <sup>w</sup> (e)r- ~ Skt.
-za- (iter.) (C/H) ~ Lyc. -s- < *-s̥ke/o-	Lyc. <i>tukedre/i</i> 'statue' < *twek- ~ Skt. <i>tvác-</i> 'skin'	
za/i- 'this' (C/H) < *k̥o/i- ~ Lith. <i>šis</i> etc.	<i>kup(iya)</i> - 'to plot' (C) < *kup- ~ Skt. <i>kūpyati</i> 'desires'	
Lyc. <i>ti-se</i> 'some-/anyone' < *k̥e ~ Hitt. - <i>kka</i> in <i>kuēlka</i> etc.	Lyc. <i>xupa-</i> 'grave-house' < virtual * <i>kupeh₂-</i> ~ Gmc. * <i>xufa-</i> 'house; hill' (Schaffner 2001: 143)	
azu(wa)- 'horse' (H) ~ Lyc. <i>esbe-</i> < *ékwō-	HLuv. <i>kat-</i> 'fight' in <i>katunas</i> (Morpurgo Davies 1986: 132-3) ~ Hitt. <i>kattu-</i> 'weapon, talon' (thus contra Puhvel 1997: 138) ~ OIr. <i>cath</i> 'fight', Gmc. * <i>hapu-</i> , OCS <i>kotora</i> 'fight', Germ. <i>Hader</i> < *kat-	
zuwan(i)- 'dog' (H) < *kwon-		
zurnid- 'horn' (H) < *k̥ng-id- ~ Hitt. <i>karkid-ant-</i> & Skt. <i>śr̥ṅga-</i> (Starke 1990: 406-7; Puhvel 1997: 89)		
wazi- 'request' (H) < *wek̥-ye/o <sup>5</sup>		
<hr/>		
zarwaniya- 'of horn' (C) < *k̥erw+		
zalma- 'shield, protection' < *k̥elmn-o- (Melchert 1988: 241-3; but cf. Lipp 2009: 1.275 <sup>33</sup> for an alternative Hurrian interpretation)		
zalla- 'trot' (C), /zallal-/ 'vehicle' (H) < *(s)k̥el- ~ Lith. <i>šúolis</i> 'jump' (Rieken 1997)		
/ziramma/i-/ 'fertile' (H) < *k̥erh <sub>1</sub> o- ~ Lat. <i>prō-cērus</i> (Rieken 2003: 45-50)		
versus		
<i>kattawatnalli-</i> 'spiteful' (C) & Hitt.		

5 The stem also appears syncopated in the personal name element *-uzzi-* = IR, but contra Zehnder (2010: 102) the HLuv. noun *waza-* 'request' is not a cognate of Skt. *vása-* < \*wóko-, but a new creation among the productive deverbative action nouns in \*-o-.

*kadduwā(i)*- 'become aggrieved'  
 (Puhvel loc. cit.), + HLuv. *kata*- 'enmity'  
 in *ka-ti-i* CRUS (L. Younger, pers. comm.  
 vs. Morpurgo Davies 1986: 132-3)  
 ~ Grk. *kótos* 'spite, anger', Skt. *śātru*- 'enemy'  
 < \**kot*-. Separate from *kattu*- 'fight' contra  
 Morpurgo Davies (1986: 144), Melchert (1987: 189-90),  
 Puhvel (1997: 140), Woudhuizen (2010: 44)<sup>6</sup>

*Runtiya*- < *K(u)runtiya*- < \**kru-nt*- 'horned'  
 (Watkins 1999: 15-18, Woudhuizen 2010: 44)<sup>7</sup>

*kumma*- 'sacralized' (C/H) ~ Lyc. \**kuma*-  
 < \**kunmo*- < \**k̄w̄n̄-mo*- ~ Av. *sp̄anta*- 'holy'  
 (Schindler apud Watkins 1987: 401)<sup>8</sup>

?(477\*)*ku-tu-pi-li*- (H) 'fire offering'      ?*kerut(i)*- 'Stag-god' < \**k̄oru*+  
 < \**ku*- (Woudhuizen 2010: 44)      (thus revising Carruba 1978: 171-2<sup>28</sup> et al.)<sup>9</sup>

[Less likely but possible: *kattu*- 'talon' < \**kat*- based on Skt. *śātaya*- 'cut; cut down' (Jamison 1983: 90) (cf. Germ. *Schlacht* for sense 'fight').]

There are three critical points to be drawn from the preceding data. First, all instances of \**k̄* ([k<sup>h</sup>]) > *ts* are either in exclusively fronting environments or in paradigms with fronting environments. Second, the number of examples cited for \**k̄* > *ts* is immaterial; the crucial example is that of *kišā(i)*- 'to comb' that shows \**k̄* > *k* in an exclusively fronting environment (more on this word below). Third, a dispassionate review of all the relevant evidence includes some very credible examples of Luvo-Lycian *k* < \**k̄* in non-fronting environments.

Current available evidence therefore points to a *conditioned* palatalization of \**k̄* before front vowel (\**i*, \**e*, and \**ē*), yod, and \**w* (not *u!*). For \**w* as a fronting environment note the

- 6 While one often fights one's enemies, enmity or hatred is a mental state of existence, while fighting is a concrete action, and the two cannot simply be conflated, as I and many others have tried to do in this case.
- 7 I am much indebted to Heiner Eichner for calling my attention also to the name of Kubaba's consort in Carchemish, namely Karhuha, whose name is written in KARKAMIŠ A11+12, §18 as (DEUS)CERVUS2+*ra/i-hu-ha-ya* and who surely also represents some form of a stag-god (see Hawkins 2000: 106-107). The initial /k-/ would point to a preform \**k̄orh<sub>2</sub>u*-.
- 8 As Lipp (2009: 1.293) correctly points out, my assumption of 'Gutturalwechsel' (Melchert 1994: 252) was egregiously ad hoc.
- 9 The interpretation by Carruba and others of *keruti* as a sacrificial animal is contradicted by the word order of the clause, which hardly allows *keruti* to be the direct object. I also am unaware of any evidence for the use of cervids as sacrificial animals in IE-speaking Anatolia. My own attempt to take it as a personal name (2004a: 97) was an act of desperation also effectively refuted by the context. The position of *keruti* in its clause (following *ql=ebi*, that is, *ql(a)=ebi* 'this here precinct') suggests rather that it names a recipient of the sacrifice. Given the prominence of the more common name for the Stag-god in western Anatolia (reflexes of /*Runtiya*-/), such a recipient does not seem to me impossible. My hesitation rests mainly on the less than clear morphology. In view of the tendency of *h* to be lost in Luvian in a sequence \**Rh<sub>2</sub>w*- (Melchert 1994: 258), it is not impossible that Lycian *keru*- reflects a virtual \**k̄orh<sub>2</sub>wV*-, i.e. that its base contained a laryngeal like that of Karhuha (see note 6).

virtual complete absence of PIE sequences in  $*Kw$  (versus the well attested  $*\tilde{K}w$ ) and the strong tendency of labiovelars to be palatalized (Hock 2009). HLuv. *zurnid-* ‘horn’ <  $*k_{\tilde{r}}ng-id-$  suggests that also  $*k_{\tilde{r}}R-$  >  $*k_{\tilde{r}}jəR-$  > *zVR-* (see below on *zanta* ‘down’ <  $*k_{\tilde{r}}m/yt-$ ).

Several points call for further comment. The existence of the stem *kišš-* ‘to comb’ in Hittite (P3Sg *kišzi*) suggests that Anatolian inherited a root present  $*kés-ti$ , whose weak stem  $*ks-(é)nti$  might in principle have provided a non-fronting environment for Luvian *kišā(i)-*. However, whereas Hittite trivially leveled the strong stem,<sup>10</sup> one cannot possibly derive the Luvian verb in *-ā(i)-* starting from the root present. Prehistoric  $*kés-/ks-$  could have led only to a Luvian  $*kas+$ , leaving the *i*-vocalism of *kišā(i)-* wholly unexplained. One can derive the latter with Čop (1970: 93) and Melchert (1994: 152) from a virtual  $*kēséh_2-ye/o-$  with lengthened grade like Latin *cēlāre*, and this is supported by CLuvian *ilhā(i)-* ‘to wash’, whose first vowel can only reflect a long  $*ē$ . Less likely but not to be entirely excluded is  $*kes-éh_2-ye/o-$  with a short root vowel (if Luvian really does share with Hittite the change of pretonic short  $*e$  to *i*, for which see Melchert 1994: 240, with due caution). In either case, the Luvian verb requires a preform with fixed mid-front vowel, and the non-affrication of the initial  $*k$  retains its force.

Contra Lipp (2009: 1.273-5, 278 with note 36, 298) the reading *zú* for hieroglyphic sign 448 is assured. Despite the protestations of Hawkins (2000: 36) et al., the alleged ‘interlocking’ evidence for a value *sù* does not exist. The fact that sign 108 (CORNU), the drawing of a horn, has a phonetic value *sú* proves absolutely nothing, since as Hawkins himself concedes, we find in KARATEPE the word ‘CORNU+RA/I’ *su-ra/i-* meaning ‘plenty, abundance’ (where the use of ‘horn’ as the determinative reflects the notion of a cornucopia). It is quite clear that the value *sú* for sign 108 is acrophonic to this word, which is based on the verbal root *su-* ‘fill’ and has nothing to do with the word for ‘horn’. If on the other hand the word for ‘horn’ truly began with */su-/*, it is completely inexplicable why it was not spelled with the transparent 108 sign for ‘horn’, but rather with the opaque 448: (‘CORNU’) *zú+ra/i-ni*. Further confirmation for the value *zú* is furnished by *zú+ra/i-wa-ni*-(URBS) ‘of Tyre’ (i.e. *Šūr*) (thus Lipiński 2004: 115 and Yakubovich 2010: 66-7<sup>58</sup>), with a predictable rendering of Semitic emphatic *š* as an affricate *ts* (see the references given by Lipp 2009: 1.310).

The three HLuvian words for ‘horse’, ‘dog’, and ‘horn’ thus cannot be loanwords from Indic via Hurrian, since they show an affricate */ts/*, not a sibilant */s/*. The morphological match of HLuvian */zurnid-/* and Hitt. *karkid-* in *karkidant-* ‘horned’ also precludes borrowing. While the suffix *-id-* is very productive in Luvian, including in loanwords, it is decidedly not so in Hittite, and the word equation can only reflect a common preform  $*k_{\tilde{r}}ng-id-$ , where a further suffix has been added to the base seen in Sanskrit *śṛṅga-* (see for this analysis of the Hittite already Puhvel 1997: 89). Hittite, which retained the stop in what was now a sequence  $*karngi-$ , deleted the nasal. Loss of the stop in Luvian (see below) allowed the nasal to remain. As discomfiting as it may be, sporadic *uR* <  $*R$  beside *aR* in Anatolian is a fact (see Melchert 1994: 260), comparable to the situation for *uR* and *iR* in Baltic as described by Lipp (2009: 1.24-7).<sup>11</sup>

10 Since the Hittite verb is attested all of twice, only in New Hittite manuscripts, its *i*-vocalism before an *s* may easily be secondary and requires no special explanation (contra Kloekhorst 2008: 482). On the effective merger of */i/* and */e/* before */ss/* in NH verbs see already Melchert 1984: 147-9.

11 Obviously, however, my consistent citing there of the root of *gurta-* as beginning with a front

New evidence presented by Kloekhorst (2008: 34-50) for *u* spelling /o/ in Hittite versus *ú* for /u/ offers welcome support for my rather tentative claim (Melchert 1994: 125) that the immediate result of \**R* in Hittite was \**oR*: note *an-tu-u-ri-ya-* ‘interior’ /ando:riya-/ < \**andwóriya-* < \**en-dhwí-*. If the same was true for Luvian, then the prehistoric result \**oR* would have normally lowered to merge with /a/, but in some words rose instead to merge with /u/. That Luvian did share the same development is suggested by *kumma-* ‘sacralized’. Rather than assume an unmotivated resyllabification as given in Table 1 above (\**k̄w̄n-mo-* > \**kunmo-*), we should suppose rather a sequence \**k̄w̄n-mo-* > \**k̄wonmo-* > \**k̄onmo-* (with dissimilatory loss of the \**w* before \**o*) and read the word as /kommo-/. Lack of any ‘plene spellings’ in CLuvian precludes proof of this analysis, but other use of *u* and *ú* in CLuvian confirms that Kloekhorst’s basic generalization holds also for it. That is, we must assume that Luvian also had both phonemic /u/ and /o/.

The need to assume that syllabic sonorants acted as a fronting environment in a language where the anaptyctic vowel appears as either /a/ or /u/ is decidedly unwanted. However, we may be dealing with the kind of reciprocal effects seen in Greek κύκλα ‘set of wheels, chariot’ < \**k̄<sup>v</sup>k̄<sup>v</sup>léh<sub>2</sub>*, where the labiovelars rounded the anaptyctic vowel, which in turn caused delabialization of the preceding stop (see Eichner 1985: 139). Likewise, we are allowed to suppose that the front velar stop led to a palatal onset of the anaptyctic vowel, which then caused the palatalization (affrication) of the front velar, after which it was absorbed in the affricate, leaving only the non-front nuclear vowel: \**k̄<sup>j</sup>r̄ng-id-* > \**k̄<sup>j</sup>o<sup>r̄</sup>ng-id-* > \**tsj<sup>o</sup>r̄ng-id-* > \**tsorng-id-* > *zurnid-* (again really /tsornid-/).

The recent demonstration by Goedegebuure (2010) that CLuvian *zant/da* means ‘down’ and equates to Hittite *katta* likewise requires that a syllabic sonorant act as a fronting environment. Her analysis rests on comparisons such as CLuvian *zanta...kišamman āšdu* with Hittite *katta kišān ēšdu* ‘let it be combed down’ and likewise *zanda dūpaimmi-* with *katta GUL-ant-* ‘struck down, afflicted’. She cites further the functional equivalence of CLuvian \**zantalununa* with Hittite *tepnumanzi* ‘belittle’, persuasively interpreting the Luvian as ‘erniedrigen, humiliate’ < \**zantala/i-* \*‘low’ (cf. *šarla/i-* ‘high’ and *šarlā(i)-* ‘exalt’). As she correctly argues, there is no connection with Hittite *katta(n)*, *katti* in the meaning ‘with, beside’ (cognate with Latin *cum* ‘with’, OCS *kŭ* ‘to’ etc.), so the only sure cognate is Greek κατά/κάτω. This permits us likewise to start from front velar \**k̄<sup>j</sup>̄n/ntV* and assume a development parallel to that sketched for ‘horn’ above: \**k̄<sup>j</sup>̄n/ntV* > \**k̄<sup>j</sup>̄<sub>o</sub>m/ntV* > \**tsj<sup>o</sup>m/ntV* > \**tsontV* > *zanta*.<sup>12</sup> This ‘reciprocal effect’ scenario is manifestly hypothetical, and I do not insist upon it in the form presented. I offer it only to show that such behavior of syllabic sonorants following a sound that was itself already a front velar is by no means preposterous.

Palatalization of \**k̄* before short \**ē* is undeniable. The attempt by Lipp (2009: 1.284-5) to eliminate short \**ē* conditioning is impossible: there simply is no conditioned change of posttonic \**-es* > Luvian *-is*, as he proposes. CLuvian *ta-piš-ša* ‘sky, heaven’ is to be read as *ta-paš<sub>x</sub>-ša*, as shown by *tap-pa-aš-ša* (for *paš<sub>x</sub>* see Neu-Rüster 1989: 216 w/refs.). There is thus no way to derive iter. *-za-* from a non-existent preform \**-ški(C)*. Lycian *tise* ‘someone,

velar \**ḡ(h)-* was wholly erroneous.

12 Lipp (2009: 1.53) assumes that a syllabic nasal served as a fronting environment in pre-PIE, in order to account for \**dek̄n(i)* ‘ten’ with consistent front velar, but does not explain how it might have done so.

anyone' < \*k<sup>v</sup>is-*ke* also directly contradicts any alleged rule of posttonic \**ě* > *i*. We thus confront either a contrast of *kišā(i)*- < \**kesāye/o-* versus *-za-* < \**-s<sup>h</sup>ke-* with short \**ě* or of *kišā(i)*- < \**kēsāye/o-* versus *zār* < \**kēr* (with vocalism from weak stem for \**zīr*) with long \**ē*. Luvian and Lycian must therefore have inherited a three-way contrast of \*/k<sup>l</sup>/, \*/k/ and \*/k<sup>v</sup>/, with conditioned palatalization of only \*/k<sup>l</sup>/, but not \*/k/, in fronting environments.

#### 4. Luvo-Lycian Evidence III (voiced stops)

The picture for voiced dorsal stops (which include PIE voiced aspirated dorsal stops) is unfortunately much less clear, for two reasons. One is simply the lack of more than a handful of compelling etymologies for the velar set. Those available do not cover enough different environments to determine with confidence the conditioning for various reflexes. The second problem is that there is clear evidence for widespread medial loss of voiced stops (see Kimball 1994 and Melchert 2004b). This means that, for example, in /*zurnid-* 'horn' < \**k<sup>h</sup>rng-id-* (NB with velar \**g*) it is impossible to determine whether the loss is due to a general loss of medial prevocalic \**g(h)* or results from palatalization to yod before \**i* and then absorption of the glide (as certainly is the case in /*imra/i-* 'open country' < \**ghemro-* cognate with Hittite *gimra-*).

The evidence that we have available appears in Table 2.

Table 2: Summary of Evidence for the Voiced Series (compare in general Kimball 1994)

* <i>ĝ(h)</i>	* <i>g(h)</i>	* <i>g<sup>w</sup>(h)</i>
/kuttassra/i-/ 'orthostat' (C/H) ~ Lyc. < * <i>ĝh(o)ut-</i> 'wall' < 'pour'	<i>gurta-</i> 'citadel' (C)	<i>wawa/i-</i> 'cow' (H)
<i>katmaršiya-</i> 'defecate' (C) < * <i>ĝhodom(V)r-</i>	< * <i>gh<sup>h</sup>dho-</i> ~ Skt. <i>g<sup>h</sup>ra-</i>	<i>wawa-</i> < * <i>g<sup>w</sup>o/ew-</i>
<i>kallar(a)-</i> 'unfavorable' < * <i>ĝhalH-</i> ~ ON <i>galli</i> 'flaw' OIr. <i>galar</i> 'illness' <i>ēbrius</i> Lith. <i>žalà</i> 'damage, wound'	<i>t(u)watra/i-</i> 'daughter' (H) < * <i>dhugh<sub>2</sub>tr-</i>	<i>wāna-</i> 'woman' (C) < * <i>g<sup>w</sup>ōn-</i>
<i>pa-</i> 'get a share' (H) < * <i>bhag-</i> ~ Skt. <i>bhaj-</i> etc.	<i>u-</i> 'to drink' (C/H) < * <i>eg<sup>w</sup>h-</i> ~ Lat.	
<i>t(i)yamm(i)-</i> 'earth' (C) < * <i>dhĝhēm(i)-</i> (delocative)	<i>zurnid-</i> 'horn' (H) < * <i>k<sup>h</sup>rng-id-</i> ~ Skt. <i>ś<sup>h</sup>ṅga-</i>	<i>dakkuwa/i-</i> 'dark' (C) < * <i>dhéng<sup>w</sup>o-</i> ~ Fris. <i>diunk</i> 'dark' Welsh <i>dew</i> 'fog' <i>qān-</i> 'slay' < * <i>g<sup>w</sup>on-</i>
<i>īššra/i-</i> , / <i>istra/i-</i> 'hand' (C/H) (?) < * <i>ĝ(h)esr-</i>		
/imra/i-/ 'open country' (C/H) < * <i>ghemro-</i> (< 'earth')	<i>nāna/i-</i> 'brother' (C/H) ~ <i>nēne/i-</i> < * <i>néno-</i> ~ Hitt. <i>negna-</i> (?)	* <i>k<sup>w</sup>anza-</i> (REL- <i>za-</i> ) 'incise' (H) < * <i>g<sup>w</sup>h<sup>h</sup>-</i> <i>s(<sup>h</sup>k)e/o-</i>
(PES <sub>2</sub> ) <i>waza-</i> 'drive' (H) < * <i>wēgh-ye/o-</i>	(CORNU) <i>ki-pu-tà/ra</i> 'horn' (?) (H) < * <i>geibh-</i> 'bent, curved' (?)	



*zūwa-* ‘food’ (C)

< \**ḡyóuHo-* ~ OHG *kiuwan* ‘chew’

*parray(a)-* ‘high’ (C)

< \**bherḡhoi-* ~ Arm. *barjr* etc.

*papparkuwa-* ‘purify’ (C)

< \**bḡhḡw-* ~ Av. *brāzaiti* ‘shines’

*/taggam-/* ‘land’ (H)

< \**dhéḡhōm* ~ Hitt. *tēkan* etc. (?)

*ruwan* ‘formerly’ (H) < \**ḡhrēw+*

~ Olce. *grýjandi* ‘dawn’, Lith.

*žerėti* ‘gleam’

Deocclusion of labiovelar \**g<sup>w</sup>* (*h*) > *w* except next to nasal seems assured. The case of Lycian *qān-* is still much debated. However, the recent demonstration by Kloekhorst (2006: 97-101) that the one sure source of Lycian *q* is \**h<sub>2</sub>w* effectively eliminates any comparison with Hittite *ḡanna-* ‘judge’ (thus still Puhvel 1991: 82, with references to predecessors). The occurrences of the Lycian verb in any case demand a sense ‘destroy, kill’. We would expect a singular \**g<sup>w</sup>énti* to lead to \**wēti* with deocclusion, but in the plural \**g<sup>w</sup>nénti* the following *n* could have preserved the stop. What is much harder to account for is the *a*-vocalism. I can only suggest that the immediate result of the third plural \**qnēti* led to a specifically Lycian anaptyxis, hence \**qānēti* (by chance unattested), from which was back-formed a new singular *qāñti*. The number of required unverifiable steps in this derivation leaves the word of uncertain status.

However, if one accepts the plausible though not absolutely compelling etymology of HLuvian (CAPERE+SCALPRUM) REL-*za-* ‘incise’ from an iterative of \**g<sup>w</sup>hen-* ‘strike’, then one must likewise here assume that occlusion of the initial voiced labiovelar was blocked by the following nasal. Carruba (1978: 169<sup>21</sup>) assumes a reading \**kuenza-*, but in an *e*-grade form we would definitely predict deocclusion: compare CLuvian *wi/enal-* ‘stick’ (\*‘striking instrument’) < virtual \**g<sup>w</sup>hēn-*l** (thus with Starke 1990: 313-5). We should rather assume \**k<sup>w</sup>anza-* (thus Hawkins 2000: 70 and passim), based on an iterative with zero grade of the root \**g<sup>w</sup>h<sub>2</sub>s(k)e/o-*. It remains surprising to me that a syllabic nasal would have such a blocking effect on deocclusion.

Examination of Table 2 shows that available assured etymologies permit assumption of a conditioned treatment of just \**ḡ(h)* > [j] > Ø / \_\_ V<sub>front</sub> and \**ḡ(h)* > *ts* / \_\_ \**y*, with preservation initially before back vowels, but a crucial contrasting example to prove that the first two changes did *not* apply also to velars are lacking! Although the determinative obviously is quite suggestive, we cannot be sure that HLuvian (CORNU)*ki-pu-tà/ra-* (/kibud(a)-/ or /kipud(a)-/) refers to the crescent horn of the moon (see Hawkins 2000: 470 on the problem and Puhvel 1997: 188 on the questionable Hittite-context <sup>sl</sup>*kiputi-*). Even if it does, the derivation suggested above from a root meaning ‘bent, curved’ is a mere possibility and is not the sort of etymology on which one bases a sound law.

At least suggestive is the apparent contrast we find between palatalization of \**k̂* in HLuvian *zurnid-* ‘horn’ < \**k̂ng-id-* and the lack thereof in CLuvian *gurta-* ‘citadel’ < \**ḡrdho-*. I must insist on the latter etymology, against that from \**g<sup>w</sup>r(H)to-* (e.g. Bader 1991:

127, Kimball 1999: 250). The problem is not formal (against Melchert 1994: 260), since the labiovelar could have been unrounded by the round anaptyctic vowel before being deoccluded: \*g<sup>w</sup>r(H)to- > \*g<sup>w</sup>orto- > gurta- (read /gorta-/).<sup>13</sup> The insurmountable obstacle is the semantics: all reflexes of the root \*g<sup>w</sup>erH- in question mean 'mountain' (Sanskrit *giri-*, Avestan *gairi-*, OCS *gora*) or refer to natural phenomena putatively associated with mountains, such as Greek βορέας 'north wind' < 'wind off the mountains'. However, it is clear from the use of CLuvian *gurta-* in the Deeds of Suppiluliuma that the word refers to a man-made fortified enclosure, which is not necessarily on a high place: KBo 5.6 iii 33: *šarāzzi gurti* 'into the upper citadel/walled city'. If *gurta-* meant inherently 'acropolis, high place', it would be pointless to specify it as 'upper', which clearly implies the existence of a similar lower enclosure. The problem for our present inquiry is that the absence of palatalization in *gurta-* < \*gh<sub>r</sub>dho- cannot prove that a sequence of voiced front velar \*g(h) plus syllabic \*r did palatalize. It is only such a direct contrast within the voiced series that would be probative, because even if there was conditioned palatalization of only front velar \*g(h) and not non-front velar \*g(h), we cannot simply assume that the conditioning matched precisely that of the voiceless series (especially in non-obvious environments such as \*R).

As already noted above, the general treatment of medial voiced front velars and non-front velars is obscured by uncertainty about the precise conditions on the deletion or retention of both. Medial loss before vowel seems likely. See Melchert 2004b: 377 for HLuvian *pa-* 'allocate; receive a portion' < \*bhag-V-. In the word for 'daughter' the unsyllabifiable \*dhugh<sub>2</sub>tr- received an anaptyctic vowel colored by the laryngeal, which was then lost regularly before stop. Loss of the prevocalic \*g and then glide insertion led regularly to HLuvian /tuwatra/i-/: \*dhugh<sub>2</sub>tr- > \*dhu.g<sub>a</sub>h<sub>2</sub>tr- > \*du.gah.tr- > \*du.ga.tr- > \*du.a.tr- > du.wa.tr-. Lycian syncope of the first vowel led further to *kbatra-*.<sup>14</sup>

Whether medial \*g(h)/g(h) was lost medially before consonants is far less clear.<sup>15</sup> Čop (1970: 91) reads HLuvian dat.-loc. sg. *ta-ka-mi* 'in the country' as /taggami/, reflecting generalization of the strong stem \*dhéḡōm, with the medial voiced \*g being preserved due to its being geminated by Čop's eponymous law (followed in Melchert 1994: 232). However, *ta-ka-mi* may alternatively be read /tagmi/ (Lipp 2009: 1.297 et al.) and taken as a reflex of \*dheḡhm-(e)i, with preserved voiced stop before nasal. Hittite *negna-* 'brother' is generally equated with Luvian *nāna/i-* and Lycian *nēne/i-* (most recently by Kloekhorst 2008: 601). However, a clear etymology for the word remains to be found, and we cannot at present exclude that the Luvian and Lycian words are mere Lallwörter that resemble the Hittite purely by chance (see Puhvel 2007: 108).<sup>16</sup> I must not fail to mention one last nagging complication. We have seen that \*w acted as a fronting environment and led to affrication of \*k̥ to ts.

13 This remains true whether one derives Hittite *gulšš-* and Luvian *gulz-* 'inscribe' from \*gw<sub>l</sub>s- 'prick' (thus with Puhvel 1997: 244 following Carruba) or from \*kw<sub>l</sub>s- (Oettinger 1979: 204 et al.). As Puhvel rightly insists, that choice must be made on other grounds.

14 Since we cannot know whether the HLuvian stem was /tuwatra/i-/ or /twatra/i-/, \*duatr- may alternatively have led directly to \*dwatr- with disyllabification of the \*u, producing /twatra/i- and *kbatra-* directly.

15 For further consideration of this problem see Ofitsch 1998: 426 with references.

16 Unfortunately, the very attractive etymology of Neumann (1991: 63-4), \*ni-ḡnh<sub>1</sub>-ó- 'inborn', runs afoul of the already OS spelling *ne-eg-na* in KBo 20.31 Ro 6, whose *e*-vocalism cannot be derived from \*ni-. The Luvian and Lycian obviously also exclude \*ni-, if they are in fact cognate!

However, in the verb *papparkuwa-* 'purify', most likely from reduplicated *\*bhṛh<sub>1</sub>ǵw-* to the root *\*bhreh<sub>1</sub>ǵ-* seen in Av. *brāzaiti* 'shines', the *\*ǵ* is preserved as a velar stop. Is this different treatment due to the difference in voicing of the stop, or did the preceding non-syllabic *r* that developed in *\*bhṛh<sub>1</sub>ǵ-* > *\*park-* block the palatalization? Strictly speaking, of course, we do not even control the outcome of *\*ǵ(h)w-* more generally, for lack of evidence.

## 5. Conclusion

The unconditioned three-way contrast I claimed in 1989 for the voiceless dorsals in Luvian and Lycian is to be rejected. Luvo-Lycian is rather the 'mirror-image' of Albanian: before the merger of the front and non-front velars, the voiceless front velar, but not the non-front velar, underwent conditioned palatalization. A similar conditioned palatalization of just voiced front velars is also possible, but cannot at this point be affirmed. Thus Anatolian is in terms of the traditional classification 'centum': it does show an eventual phonological merger of the front and non-front velars.

## Appendix: Evidence for Three Sets of Dorsals in Contrasting Environments

### Initial before \*r:

- \**kremh*<sub>2</sub>- 'become slack': Skt. *śram*- 'become weary', Grk. *krémamai* 'hang down'
- \**kreuh*<sub>2</sub>- 'bloody flesh, gore': Skt. *kravis*-, Grk. *kréas* 'flesh' etc.
- \**k<sup>w</sup>reih*<sub>2</sub>- 'obtain by exchange, buy': Skt. *krīṅāti*, Grk. *priamai* 'buy' etc.

### Initial before \*l:

- \**klei*- 'lean, recline' (intr.): Skt. *śri*- 'recline', Grk. *klinō* 'lean', etc.
- \**klep*- 'steal': Lat. *clepō*, Grk. *klépō*, TochB *kālypi*- 'steal'

### Final after \*i:

- \**weik*- 'enter': Skt. *viś*- 'enter', Grk. *oikos* 'house', Lat. *uīcus* 'clan' etc.
- \**weik*- 'separate, select': Skt. *vivékti* 'separate', Lat. *uictima* 'victim', Gothic *weihan* 'consecrate'
- \**leik<sup>w</sup>*- 'leave behind': Skt. *riṅāti*, Grk. *leipō*, Lat. *linquō* 'leave behind' etc.
- \**leiġ*- 'bind': Lat. *ligāre*, Alb. *lidhem* 'bind', MLG *līk* 'bond'
- \**weig*- 'give away': Skt. *vij*- 'flee', OE *wīcan* 'yield', TochAB *wik*- 'disappear'
- \**neig<sup>w</sup>*- 'wash': Skt. *nij*- 'wash', Grk. *néiptai* 'is washed' etc.
- \**leiġ<sup>h</sup>*- 'lick': Arm. *lizem*, Grk. *leikhō*, OIr. *ligim* 'lick' etc.
- \**steiġ<sup>h</sup>*- 'stride (upward)': Skt. *stigh*-, Grk. *steikhō* 'advance', Goth. *steigan* 'climb' etc.
- \**(s)neig<sup>wh</sup>*- 'to adhere': Skt. *snīhyati* 'love', Grk. *neiphei*, Lith. *sniēga* 'snows' etc.

### Final after \*r:

- \**derk*- 'look at': Skt. *dṛś*- 'see', Grk. *dérkomai* 'look at' etc.
- \**perk*- 'fill up': Skt. *prk*- 'fill', OIr. *ercaid* 'fills'
- \**terk<sup>w</sup>*- 'turn' (intr.): Hitt. *tarku*- 'dance', Lat. *torqueō* 'turn' (tr.), TochB *tetarku* 'turned'
- \**werg*- 'make': Av. *vərəziieiti* 'does, makes', Grk. *éorge* 'has carried out' etc.
- \**h<sub>2</sub>werg*- 'turn': Skt. *vṛj*- 'turn', Hitt. *hurki*- 'wheel' etc.
- \**terg<sup>w</sup>*- 'threaten': Skt. *tarj*- 'threaten', Grk. *tárbos* 'fright', Lat. *toruus* 'glaring' etc.
- \**b<sup>h</sup>erġ<sup>h</sup>*- 'high': Av. *bərəz*- 'height', Hitt. *parku*- 'high' etc.
- \**b<sup>h</sup>erġ<sup>h</sup>*- 'guard, watch over': Av. *bərəjaiia*- 'honor', Goth. *bairgan* 'preserve' etc.

### Final after \*t:

- \**Hmelk*- 'stroke': Skt. *mṛśāti* 'touches', Lat. *mulceō* 'stroke'
- \**selk*- 'pull, draw': TochB *sālk*-, Grk. *hélkō* 'pull, draw'
- \**h<sub>2</sub>melg*/- 'milk': Grk. *amélgō*, Lith. *mélžu*, OE *melcan* 'milk' etc.
- \**welg*- 'roll': Skt. *vālgati* 'looms up, leaps', OE *wealcan* 'roll, press' etc.

Final after \*n:

\*denk- 'bite': Skt. *da(m)ś-*, Grk. *dáknō* 'bite'

\*kenk- 'hang' (intr.): Skt. *śānk-* 'be in doubt', Hitt. *kank-* 'hang', Lat. *cūnctor* 'hesitate'

\*b<sup>h</sup>eng<sup>h</sup>- 'make firm, massive': Skt. *bahū-* 'thick, many', Av. *bažaiti* 'fixes', Hitt. *panku-* 'all', Grk. *pakhūs* 'thick, massive' etc.

\*g<sup>h</sup>eng<sup>h</sup>- 'walk': Lith. *žengiū*, Goth. *gangan* 'walk' etc.

\*h<sub>1</sub>leng<sup>wh</sup>- 'light, nimble': Skt. *rámhate* 'hurries, runs', Grk. *elaphrós* 'light, quick', OHG *gi-lingan* 'succeed'

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