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PIE velars in Livuan

1. Introduction

The velar consonants of Livuan have been the subject of considerable discussion. Debate has centered on two points: (1) alleged 'stem' treatment of PIE velar stops in Livuan (and Luvian) by which these appear as sibilants *s, *s or *h; (2) apparent weakening of *k to *h (or *b) in both Cuneiform and Hieroglyphic Livuan.

1.1 'Satem' in Anatolian

The history of the debate over 'satem' elements in Indo-European languages of Anatolia is conveniently summarized by Gusmani, FrPhylg. 2 (1969) 281ff. An early suggestion by Meriggi, FizHit 2 (1936) 257ff., that Luvian was a satem language met with indifference or rejection. Examples such as Lyc. eshe 'horse', eshe 'hundred' and cyjwe have to this day either been rejected, taken as borrowings, or explained by a conditioned sound change: see e.g. Pedersen, LH (1945) 50f., Neumann, Hf-Khr (1969) 368, and in detail Kronasser, AOr (1957) 513ff.

The question was renewed with the suggestion of Gelb, Hit 3 (1942) 199ff., that the HLVG sign 448 should be read *w with a palatal sibilant. This sign appears in HLVG. atawa- 'horse', *tansu- 'dog' and *atav 'horn', patently derived from *tvaw-, *tvawom- and *tvmo-

* Abbreviations of Hittitological works are those of the Chicago Hittite Dictionary, edd. Harry G. Gasterbuck and Harry A. Hoffnau, The Oriental Institute of the University of Chicago, 1980. 1 A transcrip of Hittarian signs according to the revised system of Hawkins, Moospengo-Davens, and Neumann, Hittite Hieroglyphic and Livuan: New Evidence for the Connection (= NARA 1971 No.6), Koln, 1974. See also the summary by Hawkins, AsSt 25 (1975) 15ff., and further addenda, AsSt 31 (1981) 168. I am indebted to Jeffrey Wells and Pedestor Ano Moospengo-Davens for many helpful references and suggestions.

tite expression kaltu piran akk. 'die of hunger' in Mādi. Vs 11. Obvi-
osely, this etymology based on a single occurrence is far from cert-
tic.19

The examples cited thus far seem to suggest an in-conditioned loss of voiced velars in Luvian, but Hitt. akawumi (dat.-loc. sg.) 'in or of the country' contradicts this. Hence Oettinger's limitation of velar loss to initial and intervocalic position (assuming takami is /dagmi/ < "dag-em") is even with this restriction, however, there remain prob-
lems, despite the assertion of Oettinger, MSY 34, 106, that there are no
counterexamples. CLuv. kamarti- 'defecate' (~ Hitt. kam(m)ar-ti-
'iden') has been persuasively derived from PIE *ghedh- (cf. Toch. B ken-
mer 'excrement' for the first part of the suffix); see Tischler, HEG 474, for
references. Perhaps the preservation of k- may be attributed to the 'affectionate' value of the word, but at least superficially kamarti- <
*ghedh is a counterexample to loss of initial voiced velars.

CLuv. bustrari- 'borstallat' beside Hitt. bus- 'wall' also makes prob-
lematic the popular derivation of the latter from *ghewm 'pour.' (see
Tischler, HEG 677). Hitt. hakwil- 'atrocity, abomination' has been
derived from *hawg:m:w: or *hawg:y. (HEG 302). If CLuv. hakwilati-
'is genuine Luvian, the preservation of -g- here contrasts with loss in parri-
< *ghukk(i)- cited above.11

Some of these problematic cases may involve false ety-
omologies; others could be due in principle to borrowing from Hittite, although
there is no independent evidence to support this. My purpose here is mer-
ely to emphasize that the conditioning for velar loss in Luvian is not yet
entirely clear, and one could entertain formulations other than
Oettinger's given above.12 One important fact does seem assured: all

19 If 'Kūtizī. 'hunger' (see from the same root as Hitt. kăti- 'be empty.'-aident, then deriv-
ation from a *g- 'to be exhausted,' exhausted (Str. 494, Lik. 8, etc.) is possible, giving
us another example of loss of voiced velar *k-. On the problem of this etymology and
alternatives see Tischler, HEG 3365.

11 Oettinger, MSY 34, 106, n. S, considers the possibility that *g- was lost after a ton-
ant consonant (to permit parri- < *ghukk(i)- as above). However, if one assumes a
zero grade of the root and preservation of syllable *k- into Proto-Luvian (by no means
impossible), then one may retain his original formulation.

12 Although it does not violate Oettinger's rule, it is worth pointing out for the sake of
completeness that the word preserved in CLuv. papparum/i- (clenched, related to Hitt.
parka- 'clenched,' which has been derived since Starcky, CG 122 from *khipp(i)- etc.

13 In this general instability of voiceless velars in Indo-European languages, one
could suppose that loss of the velar element in *g*y(k)- (unconditioned, while
other voiced velars are lost only under certain conditions. Note that in CLuv. -um/i

14 voiceless velars in Luvian

2. PIE Voiceless Velars in Luvian

In contrast with the loss of voiced velar stops, PIE *k* and *g* are
regularly preserved in Luvian.
The intersegmental relationship between the prothoracic and mesothoracic segments is illustrated by the pelvic girdle and coxa.

The prothoracic segment (P) is connected to the mesothoracic segment (M) by a pair of coxae (Co) and a pair of trochanters (Tr). The prothoracic segment is composed of a prothoracic somite (Pr) and a prothoracic segmental plate (PSP). The mesothoracic segment is composed of a mesothoracic somite (Ms) and a mesothoracic segmental plate (MSP).

The coxa of the prothoracic segment attaches to the prothoracic segmental plate (PSP) and is connected to the mesothoracic segment (M) by the coxal articulation (CoA). The trochanter of the prothoracic segment (Tr) attaches to the mesothoracic segmental plate (MSP) and is connected to the femur (Fr) of the mesothoracic segment.

The prothoracic segmental plate (PSP) is connected to the mesothoracic segmental plate (MSP) by a pair of pleural membranes (Pl). The pleural membranes are composed of the pleural cavity (PlC) and the pleural folds (PlF).

The prothoracic segment is connected to the mesothoracic segment by a pair of muscles (Mu) and a pair of nerves (N). The muscles are composed of the prothoracic and mesothoracic muscle groups (MuP and MuM), which are connected by a pair of tendons (Te) and a pair of ligaments (Li).

The nerves are composed of the prothoracic and mesothoracic nerve groups (NnP and NnM), which are connected by a pair of ganglia (Ga). The ganglia are connected to the prothoracic and mesothoracic ganglion (GaP and GaM).

The prothoracic and mesothoracic segments are connected by a pair of aedeagi (A) and a pair of ovipositors (Ov). The aedeagi are located on the prothoracic segment and the ovipositors are located on the mesothoracic segment.

The prothoracic segment is connected to the mesothoracic segment by a pair of hemolymph vessels (Hv) and a pair of hemolymph vessels (HvM). The hemolymph vessels are connected to the heart (Hr) and the prothorax (PrT) and mesothorax (MsT) respectively.
'quarrel' etc.).20 CLav. kup-;'plot reflects either *kub- (Gmc. *kupō-; 'hope') or less likely *kep- (Skt. kṣepati; 'gets angry' etc.): see Tischler, HEG 639 for references. We have also tentatively suggested, JCS 35 (1984) 139 ff., that CLav. kikīmāti-; 'meets plate with iron' and is derived from kikī- 'iron' (perhaps 'the black/grey metal') < *kil- seen in Grk. κέλανος 'black' etc.). We thus find at least three certain and two more possible examples of Luv. k < PIE *k. This includes the case of kīmlīti-; 'comb' before a front vowel.

2.3 PIE *k > Luv. z ([ts])

One may note that there are no examples above of Luv. k < PIE palatal *k. Remarkably, I am not aware that any such etymology has even been proposed, let alone won acceptance. I believe that this absence of Luv. k < PIE *k is not an accident, and is due rather to the fact that the reflex of PIE *k in Luvian is z (phonetically probably [ts]).

This is hardly a new idea. Gunmani, FaPdagaro 2,305, has suggested that Luv. za/-ze/-'this' is derived from *kue/-ke/-, and the thought has undoubtedly occurred to others. Tischler in Das etymologische Wörterbuch (1983) 281 f., has also compared CLav. zar-t-ya- (epithet of rivers) with Hitt. kar-ti-; 'blood'; CLav. zar-pa- (undesirable state) with Hitt. kar-pi-; 'anger'; and Luv. zarru-; 'live' with Hitt. kar-; 'smarts'.

However, the first etymology has remained isolated (recall that for Gunmani and others the regular outcome of *k in Luvian is z or k, as in 11 above). As for the others, the preforms suggested by Tischler all have initial voiced stops, which by 1.2 above we would expect to disappear entirely (or irregularly remain as k).21

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20 For correct derivation from a *keu- see already Cyp. Slash. Arc. 8 (1955) 40. On the semantics see Melchert, AZ 93 (1979) 271. *kub- is the morphology (a-stem) and the semantics argue that the Anatolian forms are related to Celtic-Germanic *ku-/k-'sight, quarrel' etc. not to Grk. κυατος; 'sight, anger', conse Laroche, RIMA 76 (1965) 67. If Skt. kṣepati is related to the family of *kew-, it would merely show another case of 'Catalanvowel'. However, the meaning suggests that kṣep- be put rather with Grk. kikī- from an ablauting root *kōtīt; beside *kaiw(u)- with PIE *a-.

21 Hitt. (a-)ar-ti-; 'blood' continues *gik- with a voiced *g- (cf. Av. zarru- 'ya-etc. and see Tischler, HEG 540). Since Tischler also cannot explain the double -rr- or lack of -ti- in zar-pa-, the entire equation is best abandoned. As for zar-pa-; 'keep', the meaning of the Luvian word is quite uncertain, as is the etymology of Hitt. kar-pa-. The equation remains possible, but it is much too dubious to be used as evidence for *k > z in Luvian. On alleged zarru-; 'live' see 2.3.3 below.
There is also no viable source for Luvi. za-zi/zi other than the obvi-
ous *ko/ihi- suggested by Hitt.-Pal. ka/ihi-. Laroche, RHA 63:109, n. 2, la-
mely tries comparing Hitt. i- 'this, that', but the only regular Luvi-
avian equivalent of Hitt. i is likewise (see the examples cited in 15 below).
Laroche's alleged examples for Luvi. z = Hitt. i are false: zak-
kar beside šekkar 'excrement' and zamukkar beside šamanak 'beard'
are inner-Hittite alternations (cf. parazadenlam/plitahamnam, ĕliš hakururis-
pahhuriti, gāzliq/gāzliq etc.).
Nor can Luvi. za-zi-'this be derived from *tyo- (cf. Skt. rya/rya-
'this, that').
24 The reason is phonological: Luvi. za- cannot continue
*tyo-, because the product of assimilated *tyo in Anatolian is in all clear-
cases etiyo wherein *tyo is not at all. Hittite locativial adjectives in *tya-
appear in OHitt. as -ziya, later as -zi (e.g. leyanar/a). Lyc. hrezzi- 'upper'
shows the same development. Within Luvi-an itself compare
HLL. Mu₂, 21-21 for consrform Mi-li-li-ya (Malaya), as cited by
Hawkins, Morpurgo-Davies and Neumann, HILL 161f. We now
have also HLLav. ka-zi-mi-na 'we will inscribe', cognate with Hitt. baz-
ziya- 'strike, inscribe'; < *ht-ey-e, as per Oettinger, Stammbildung 346
and MS2 34:125.25 Unlike assimilation of *tya after syllabic *i, which
is unique to Hittite, the change *ty > zi (tuiy) appears to be Common
Luvo-Hittite, and the only attested outcome in the 'Luvoi' languages is.

24 This irregular development of i to z next to a consonant (principally a sonant) is
shared by Luvi, most notably in the *-ta particle regularly postposed to newer nom-
sc. singulars: beside clv. sám, we also find ziti-za and addem-za.
The means that in a particular example one might find Luvi a matching Hitt. i next to a sonant (or vice versa). Aside from this special environment, however, Hitt. i equates to Luvi. z.

25 Although to my surprise I have not been able to find this etymology in print, it is
well-known and we have sought independently to more than one person.

26 Since this creative solution has been based hereafter largely on the mere phonological
resemblance, it is worth examining the single occurrence of HLLav. bazizima in some
re-mi-na /u-zi-1a /i-zi-1a (INFANS: u-zi-1a-he-temi-1a (VINCEER) hi-i-
zi-mi-na). These two attestations are immediately followed by a long list of personal
names in a repeated formula from such-and-such a city out-and-out and his son and-
so. I believe that this context makes the interpretation of the preceding sentences
reasonably clear. We will be able to inscribe the name in order (e.g. 'the lord of zimia' and
we will bind a kilit on the father and son.) HLLav. Akklu-RAM/RAE/AS would be *ka-
šumma (a) 'circle, series, cognate with CLV. šumma'(a)'Ident', a verbal noun to the verb
stem in Neo-Hittite oḫiši- 'make the rounds of, worship in' secter. On the alterna-
tion HLLav. *re'okis(ay)-/CLV. išoši(a)- see note 23 above. For Hitt. ištaka as
'arskwa, 'engineer' see KBo IV 10 Ra 22.

that which preserves the *ya as i. Thus Luvi. za < *tyo with loss of the 
*ya is impossible.

Since Hawkins, Morpurgo-Davies and Neumann, HILL 180ff,
allow other examples of a change *tyo > Luvi. za, I must propose this point
in detail. They propose that Luvi-an stems in -nza- continue
*tya-. Specifically, they suggest that an -n-stem such as Tarhuntas-
was extended by -i (attested in Tarhunta-). The -i-stem then acquired an alternate
accurative as *-tyan (cf. tatim/tatian 'father'). By assimilation
the new accusative *Tarhuntian became Tarhuntas, whence analogi-
cally a new nominative Tarhuntas.

In addition to contradicting the clear examples above of Luvi.
*tya < *tyo, this account faces other serious difficulties. Hawkins, ANTI 25
(1975) 143, has convincingly interpreted HLLav. VIR-taya//= as ziti-
yan-tyan za-'male(ness), virility', a substantivized nt. nom.-acc. sg of the
adjective zitiyan-tyan- 'male' (with postposed particle -za, as often). As
elsewhere in HLL-vian, the i-stem adjective has a secondary nt.
nom.-acc. sg. in -tyan. Note, however, that the sequence remains unambigu-
ated! We would thus expect the proposed secondary animate accusa-
tives in -nt(i)yan such as *Tarhuntian to remain unambiguous, and in
fact the evidence suggests that they do. The personal name HALPA-
parnaytius (i.e. *Halparnaytius) cited in HILL 182 presupposes an
accusative *Halparnaytius, likewise without assimilation.

This name cooccurs in MARAŞ 1,1-2 with Tarhuntas, and in BOHCİA
3-4 we find (DEUS) TONITRUS-BAZAS /Tarhuntas/ together with (DEUS) CERVUS-2-taryas /Rustiyas-. How can the stem Tarhuntas-
reflect Tarhuntis-contemporaneously with preserved (Hal)parynaytius?
All the evidence we have argues that secondary sequences of -nt(i)yan
which are created in Luvi remains unambiguous, as we would predict if
*tyan > *tya is Common Luvo-Hittite as indicated above. Stems in
-nza- (NB: all examples have -nt:) continue -nt-i directly: see Stefanini,
Fl/Meriggi (1979) 62f.27

27 Stefanini speaks of 'thematicatia' of -nt, without going into details. I assume that at
some point the nom. sg. in -nt, as the functionally 'unnamed' or zero member of
the paradigm, was uncontracted as stem -nta- plus 8 ending. The new stem -nta-
then spread to at least the accusative, producing -nta-ya, whence analogically a new
nom. sg. -nta-ya. This scenario is not purely hypothetical, since in Hittite an original
*basronakhtis paradigm nom. sg. *bas(a)-i/t-(a)-e acc. sg. *bas(a)-i/t-(a)-e (cf. Ger.
*bera) appears as nom. sg. lwam(m)/lwam(m)/lwam(m) acc. sg. lwammun(c) 'world',
where the noun. nom. sg. ending -nta-ya has become the stem of the accusative, leading
ultimately to a new nom. sg. in -nta-. The situation in the Hittite Example is com-
pleted by a further oblique stem lam(m)/lam(m), but the latter only reinforces the main
Luvian adjectives in *-az- are another matter: e.g. LHVm. nimmi- 
unia- 'child, son' (NB MARAS 4,1 INFANS) ni-ma-zi-1-ta-za- and 'ethnic' adjectives like LHVm. Karkamissia-: > Karkanissia- and LHVm. mi-mi- Taurissia-: > Taurisa-, Hawkins, Mbu-Davies and Neu-
mann, HHL 183, compare this suffix to Lyc. *-i1- which also forms eth-
nic adjectives as Aniauza, Spartarizai, Szerzi as well as pronomi *oistlo. Gussmann, AION 3 (1961) 43f., has plausibly derived the Luvian suffix from locativally *-po- (as in Arzazi 'upper' cited earlier). From its original locus of forming locatival adjectives from adverbs, the suffix would have spread to 'house' and then place names, all interpretable as 'locatives'. The supposed equation of Luv. *-iz- with Lyc. *-i1- is extremely dubious, however. The Lycian suffix may be taken in all cases as simply *-2i- as expected from *-po-, with the preceding vowel 
belonging to the stem of the basic noun. The Lycian vowel is in any 
case always a e, reflecting Luvoi an *a, never i. However, note that the 
Luvian suffix is not *-za-, but *-iz-, with an i- before which the final 
voiced of the base noun is deleted (Karkamia- > Karkanissia-). This 
difference is not trivial, and taken together with the evidence cited 
earlier for *po > [Luv. *iz] it argues that Luv. *-iz- (sic) has nothing to 
do with Lyc. *-i1-. For a possible source of Luv. *-iz- see 2.3.6 below. 
Luvian verbs in *-iz- will be treated below in 2.3.5. Again, there is no 
good evidence that any of them continue *-i1-.\footnote{point: *-iz/ has spread directly from the nominative singular to other parts of the 
paradigm. See Melchert, Sprache 29(1) (1983) 9f., and compare Oettinger, KZ 94 (1988) 45f.}

\footnote{It is true that one does find occasional ethnic adjectives in *-aze-: e.g. CAR-
CHEMISHA 146,2, KAR-KA-MI-aza-: *-aze- vocal Kar-Ka-ma-iz-: or BOBYTH-
NAMATI 1 B 93-42. This suffix is not an affect for *-aza- as the original form of the suffix. Starting from an 
original *-az-, there is no way to motivate *-iz-. Oh the other hand, it is hardly surpris-
ing that the synchronically peculiar process by which stem-final *-i- is replaced by 
the -i- of *-iz- 
would occasionally be 
suppressed.} 

\footnote{In fact, the LHVm. *-iz- probably the true representative of a 
verb stem in *-po-. See the comparison by Eichler, Sprache 25(2) (1979) 205, 
with ON ade 'do' < i1 *d(d) ('em. stem). However, from an i-stem we would 
expect a demonstrative verb *i1-ize- (as in *-ize), and *t should not assimilate before *i in the 
Luvian. Syncope to *-ize- would lead to the desired result, but we have no inde-
dependent 
basis for such a syncope. Contrast in fact Clew. *-ize- ('malki': the words of 
-ikati: 'circle'. These issues remain problematic. Since some skeptics still doubt the 
reality of this stem (see Pahlevi, HET 344f.), it is worth pointing out that its existence 
as Common Arzazi-Hittite is assumed by the Hittite middle context (pol). *appears, material-
istic of (a ghost) at KB 971 157v. cf. Pahlevi, HET 504, and Tischler, HEG 458, for 
previous attempts to explain away this example.}

To return to our point of departure, Luv. za-'thir < *po- is 
phonologically impossible, since *po leads via z(1)y[a] to Luv. zi. Obvi-
ously, neither the parallelism with Hitt.-Pal. *za- nor the lack of any 
other convincing etymon for Luv. za- 'this' proves that it continues 
*Ko-ri-. Hence this phonetic etymology by itself has not convinced 
a majority of scholars to accept the sound change which it presupposes: 
PIE ** > Luv. za. In what follows I will attempt to show that there is in 
fact solid support for such a development.}

2.3.2 LHVm. *tayar(s) is < *tep- \footnote{Cleom. *tepur occurs in a broken context at KB 76.XXV 68,8, 
while ziyar is found in the following ritual passage KB.A.XXXV 54 II 29f. (dup. 
KB 82.XXII 2 II 8f.): *tayar sastis a dita kallan menai zawi ziyar NUMUN-HLA-na [p]jama inazagaw *thewa. The 
duplicate KB-XXIX 2 II 9 has [2]jama Larooche, DLI 115, leaves ziyar 
and ziyar unasynthesized, but Neu, StB 7 (1968) 212, already hesitantly 
identifies the forms as pres. 3rd sg. middle of a verb stem *tay-. This 
analysis is undoubtedly correct. The unusual position of the verb is 
probably conditioned by the deictic adverb xawi 'here, this'; cf. KB 
XXXIX 6 Vs 19 zawi-xata latla.} 

NUMUN-HLA-na is nt. nom.-acc. plural 'seeds'. The meaning of 
pindanu is unknown, but it clearly is a result noun in the nt. nom.-acc. 
plural to the verb (and) *pina- which occurs earlier in the same ritual at 
II 15. It may or may not be the collective plural to the animate noun 
puntat- (DIL 82), for which compare tatus to tawi- 'eye'. The form 
inazagawan is now assumed as a noun (nt. nom.-acc. sg.) by the new 
occurrence inazgaway at KB 76.XXV 6 25 with the postposed particle -in-
zat which often accompanies nt. nom.-acc. singulars. Larooche, DLI 155 
and 108, tentatively identifies *thewa as pres. 1sg. of a verb, but this 
does not fit the context. Actually, *thewa is perfectly regular nt. nom.-acc. 
plural of the adjective *thewati- 'scatized, purled' (or *simbarat). which is 
used in KB 77 68 II 6f. to describe various ritual offerings and those 
who present them.\footnote{For nt. nom.-acc. plural *thewa beside *thewatiy 
compare Hitt. *tawati beside *tawapya to *tupya: 'pure, taboo' and see note 
23 above.}
We thus have a middle verb, three neuter nouns and a nt. nom.-acc. plural adjective. The middle verb and the lack of any animate subject (or object) argue that the neuter nouns are the subject of the verb, which is either intransitive or passive (3rd singular as usual with a neuter plural subject). The meaning of the verb is established by the ritual action prescribed in the preceding Hittite. The celebrant offers down-(wardly) (at) the various objects. The verb of motion with *he[t]-no(-) hand over, offer* is to my knowledge unique, but the meaning here is clearly the same. The ritual objects are being placed either on the ground or in a sacrificial pit (hartešar, āps). We are thus led to the following interpretation: ‘One offers down... and inserts the following words: “Here lie are placed the seeds, the p. (and) the ṣ, sanctified.”’

Functionally ziyyarati matches Hitt. kitta (ni) ‘lie(s)’ and ‘is placed’ (see Neu, StilT 5.87, for both meanings). Formally, ziyyarati continues *kēy-*, the older 3rd sg. middle ending -*a*-o (cf. Skt. kēya ‘lies’ < *kēy-*) vs. Hitt. kitta with *-o* (cf. Skt. kēya < *kēy-*) (16). The existence of CLuv. ziyyarati ‘lies’ renews the question of whether Lyce. ziwyna is a form of ‘lie’, although the ending remains problematic (cf. 2.4 below).

2.3 CLuv. zār-zaḫ NLuv. zar-za ‘heart’ < *kēr*

CLuv. uždušra occurs at KUB XXXII 7.12 in a broken context, but the determinative assures us that the body part is a body part. In KUB

parallel-sa KLINK x-x-x-s KLINK madda KLINK x-x-x-i KLINK ušNINDA- DUDU-s KLINK ušNINDA; DUDU-s KLINK ušNINDA TAM-s KLINK ‘They sit down(-) to rest. The m is pure; the k is pure; the z̄ar is pure. The bread is pure, the z̄ar, the vessel, the crumb-cake, the (and) wine, the wine look alike. The wine is pure, the baker, the drink-server and the chamberlain likewise.’

It is possible, though likely, that tāšu is a substantivized adjective parallel to the neuter nouns. kēwa, p. i, (and) the sanctified things’.

CLuv. ziyyarati is in the animating cognate of Skt. ṣāṃjā which Watkins, Idem. Gram. III/1 (1960) 495, sought to find in Hitt. ziya (KUB XXXIX 129. 51), a form which has subsequently been shown to be kēy- ‘also locative.’ The root-middle kēy- is with roots in a grade of the root *kē* (see Watkins, Idem. Gram. III/1, 113, and already Brugmann, Gr. 2.9.7). We cannot therefore derive zār- from a zero-grade *kē*. Furthermore, the *-i* in *kēy*- would not have formed a denominal intercalary. Since kēy is not found in Lyassic as well as in Vat. (cf. note 23), I assume the following development: *kēys-* > *kē-i* > *kē-s* > *kē-ya* (see note 19) > *kē-s* > *kē̄-ya* (with new hiatus-filling after i) (note). The rule that the rule which produced *kēs*- from *kē*- here also led to kē: *kē-s* ‘comb’ at the same time. Hence the different outcome of the consonant cannot be attributed to the following vowel.
Hawaiian, uku(i)- occurs in a figure example in ASSUR L 3:1 and in the translation of the peace treaty with the Lomas, 70.2. The actual meaning of the word is unknown, but it is believed to be related to the concept of "demand." It is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

In addition to the figure example, there are several other examples of the word in the Hawaiian language literature. For instance, in the Hawaiian language, the word is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

The word is also used in the Hawaiian language literature to describe the concept of "demand." It is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

In conclusion, the word uku(i)- in the Hawaiian language is used to describe the concept of "demand." It is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

Hawaiian, uku(i)- occurs in a figure example in ASSUR L 3:1 and in the translation of the peace treaty with the Lomas, 70.2. The actual meaning of the word is unknown, but it is believed to be related to the concept of "demand." It is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

In addition to the figure example, there are several other examples of the word in the Hawaiian language literature. For instance, in the Hawaiian language, the word is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

The word is also used in the Hawaiian language literature to describe the concept of "demand." It is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.

In conclusion, the word uku(i)- in the Hawaiian language is used to describe the concept of "demand." It is used in the context of the promise to the Lomas, 70.2, where it is stated that the Hawaiians will not demand anything from the Lomas.
there is no good evidence for loss of voiceless *k* in Lupian (1.2). The equation of Lupian *iti(-)* with Hittite *ēr* is thus without foundation. Since Tocharian assures us that there is an *-s* suffix parallel to *-ēr/* -ē, it seems more reasonable to equate Lupian iterative *iti(-)* with Hittite *ēr* (and Tocharian ‘causative’ *-ē*). I repeat that the only solid equivalent of Hittite *ēr* in Lupian is *iti(-)* e.g. HLV.lav. Cluv. at-tāl-‘be’ < Hitt. ta.tal- ‘beget’; Hitt. bal(l)-, Cluv. tan.lus-‘fill’ < Hitt. tan.ta. Cluv. čam. ‘above, upon’; Hitt. eter, Cluv. kat- ‘cut’ < Hitt. kar-, etc.

We have already seen independent evidence for *ēr* > Lup. *z*. This means that the iterative suffix *-ēr-* would have been the first instance lead to Lup. *-z-. That *-z* might be simplified to *-z*, giving attested *-za*, seems likely, given such a simplification in Hittite. Eichner, MSS 31 (1973) 88, cites taktiti (1x for taktiši; *ti*-verbs, renders), āzi (1x for ərt(a)ti- ‘flows’), and āppa parra beside pari(a)za ‘backwards’. In the verb forms the simplification *z* > *z* is usually blocked/ undone by the pressure of the rest of the paradigm. In the case of the isolated verb form pari(a)za, the simplification is normal, and the original form parra is rare. In the Lupian iteratives, where the sequence *-s* > *-za* throughout the paradigm, there would likewise have been no model for restoring *-z* > *s*.

The apparent equation of HLV.lav. *asa-‘love* with Hitt. altap- ‘be beloved’ (HHL. 182), which contradicts the weight of evidence for Lup. *-i(-)* > Hitt. *it*, may also be accounted for by a change *-s* > *-z*. If we assume that the base verb was athematic (as suggested by Hitt. alt- ‘middle’ be pleasing’), then the iterative would have been *as-tēr-, whence HLV. *asa-ta* and by cluster reduction *asa-ta*. The attestation of *asa-ta* as the first or second member of personal names suggests that *asa- is synchronically an ordinary verb, not an iterative. This is entirely compatible with the proposed derivation from *-ēr-*, however. Compare Hitt. diwke-rejoice < *τω-ēr-, synchronically an ordinary verb capable of forming its own iterative dual/mite. Likewise Hitt. iškē, paške- and iškē-undoubtedly reflect old iterative stems: see Oettinger, Stammbildung 326.

HLuvian *asa-* as well as all other Lupian stems in *-za*- may thus be interpreted as iteratives in origin. Given the Lupian pair of iterative suffixes *-i(-)* > Hitt. *it*- > Hitt. *ēr*- > *-ēr*- two possibilities: (1) *-za*- beside Hittite *ēr*- < Hitt. *ēra*; the equation *-za*- < Hitt. *ēra* imposes itself. The derivation of *-za*- from *-ēr*- via *-sa*- is also phonologically plausible in view of other examples for *ēr* > Lup. *z* and the Hittite evidence for *s* > *z*. Since iterative *-sa*- is functionally parallel to *-i(-), the unexpected *hi- conjugation of *-za*- verbs (3rd sg. *zai vs. Hitt. *hi-si-zi*) may be analogical after those in *-sa*, where *hi- conjugation is old (cf. Hitt. *iši*- makes’).

2.3.6 Cluv.HLV.lav. *iti(z)za* < *iti(z)ka* < *iti(z)ka*< (1) The examples offered above in 2.3.1–2.3.5 for PIE *ēr* > Lup. *z* also suggest a possible () source for the Lupian secondary suffix *-tait-* cited in 2.3.1. Recall that *-tai-* forms ‘ethnic’ adjectives (-< *suri Taurit-* and HLV. *nimmuisa* ‘child, son’, which may be interpreted either as an adjective of appurtenance or as a diminutive, depending on whether one interprets the base *nimmua* as ‘lack of strength’ or ‘(one) having no strength’ (all these functions are attested for PIE *-i(-)k-*: cf. Gr. άγχος *Achaeia* < ἀγχος, *Iliou* ‘equine’ < ἱλιος Skt. puraski ‘little son’ < puri-. As the Skt. example shows, this suffix (especially in the form *-i-ko- with *i-*) regularly continues a PIE velar *-k*. However, a secondary suffix *-ko-* with similar function is also old: cf. Skt. yuvati = Lat. iuvencus ‘young (of animals)’. As Brugmann, Gr. 2/1, 238, points out, it is possible that various examples from centum languages conventionally ascribed to *-ko-* may continue *-ko-* instead. A PIE *-ko-* is therefore conceivable. Note that Palai shows a secondary suffix *-i-ko- or *-i-ka* (< *gulān* or *gulstara*: see Carruba, StilfT 19.61, and Melchert, KZ 97.37.

J. Jasanoff has reminded me that the simplification *-s* > *-z* also accounted for another possibility *-i-z*, namely equation with Germanic *-is-ka* (Goth. barn-isk ‘childlike’ < barn, Germ. *ısch-, Eng. *ish*). Since the Balto-Slavic forms (Lith. *-isk-, OCS *-isko*) may be borrowed from Germanic (see Brugmann, Gr. 2/1, 261), and more positively Vaillant, Gr. comp. 2.162), the quality of the velar is indeterminate: an *-isko-* is quite possible. As Brugmann notes, the origin of the suffix is obscure. While the isolation of the suffix in Anatolian gives pause (Luw. *-i-za-* < *-i-ko-* would preclude connection with Pal. *išk(a)-), one should recall that a suffix as widespread as PIE primary *-i-ko-* is scarcely represented in Anatolian (perhaps in Pal. taras- ‘curse(d)’ and indirectly in Hitt. latāti (-i-) ‘perform sick-maintenance’).

2.3.7 Lup. *zu* < PIE *fēw*

Having seen evidence for PIE *ēr* > Lup. *z*, we may now return to the famous cases of alleged *ēr* > *bi*: HLV. *asi-asi* ‘horse’, *swa- mai-’dog’, *tarni ‘horns’. As discussed above in 1.1, these three words
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are written with HLuv. sign 448, read by Gelb as su. Laroecho, HHI 231, reads su (?), but stresses that the nature of the consonant is uncertain, since the sign occurs only in the words given and a few names for which cuneiform equivalents have not been found. Hawkins, 25.58 (1975) 154, still reads su. Evidence for the reading with z is weak. There is the place name Suru (CARCHESHISH A 15b, 4 z + ra/su-zi/ti-ti (UBRS), i.e. surawumanti, abl. of surawumanni- 'of Suru'). This recalls the ethnic name in CARCHESHI A 6.2-3: su + ra/su-zu-ba (UBRS), i.e. surazza, dat. pl. 'the Sura' (NB in ss 320). However, the contexts of the two occurrences are rather different: surawumanni- occurs together with Assyria and Taiman (?), while surazza is grouped with mesast (Lydians?) and mar(a)tessa (Phrygians?). Note further that surawumanni- presupposes a noun base sura- (a city), while surazza is an adjective naming a people. Equation of the two is thus far assured.

J. Wills has kindly called my attention to the recent equation of HLuv. (DEUS) J.le-ah-ta/-tis with cuneiform 4-ul-an-an-zu (as with Hawkins, AnSt 31 (1981) 172 with references). As Hawkins indicates, this equation is buttressed by the fact that the goddess Atlanza in Hitite typically accompanies Sarruma, while both instances of Atlanza in HLuvian immediately follow Sarruma as well. This distribution can hardly be accidental. While Hawkins makes no comment on the HLuvian spelling, the equation Atlanza- = Atlanza clearly argues that sign 448 should be read not su, but za. We should then read HLuv. azu (usu): 'horse', zuwanama 'dog', and zuwiri 'horse's', with the same change of *k > Luv. z as seen in the examples above in 2.3.1-2.3.6.

2.4 Lycian < PIE *k?<

We have just seen that HLuv. 'horse' should be read azu(usu): with zu za. (WallisBudge, 'stable-master' (or similar) in the Hitite horse-training texts with .zwi, a borrowing from Indic (skt. atica- 'horse'). This difference and the other evidence presented for Luv. z < PIE *k argue that HLuv. azu(usu) is inherited, not borrowed. This makes it less likely that Lyc. azo 'horse' is borrowed rather.

Neumann, Westerlichen 52 and HOCh 694, conceives that Lyc. azo is a noun (left, probably a decade, but argues against the interpretation 'hundred' on the basis that other decades also end in -aia: aitaka, suntaka (perhaps 'eighty', 'ninety'). On the other hand, the fact that azo may be

41 I read za because za is already reserved for sign 432: see Laroecho, HHI 233, and Hawkins, AnSt 25.155.

compounded with kha 'two' (khunata) seems to argue for a meaning 'hundred' and derivation from *kunum. The Lycian word isiyni occurs immediately after ebe 'here', and in a tomb inscription the interpretation 'isintu' (Kie saeter) immediately comes to mind. However, the ending -ni raises difficulties. Pedersen's comparison, LII 17f., with the Hitite 'duraitive' suffix -anini (iyannili-march etc.) cannot account for the apparent occurrence of isiyni with anan (see Gussmann, IF 67 (1962) 162, with n.12). Gussmann suggests a particle, and in principle one could assume a participle in -ni, comparable to German -an- < *an-, but there is no evidence to support such a participle type in Anatolian.

In sum, Lyc. ebe, isi, and isiyni suggest, but do not now prove, a change PIE *k > Lyc. i (via Common Luvian *e).
putible with the above conditioning. Including *wu* as a palatalizing
environment is not a problem: cf. the Armenian treatment of velars and
labiovelars as palatals after *u* (e.g. dastur ‘daughter’ < *daghurter*)
and see the remarks of Solta, IF 70 (1965) 278ff. I stress again, how-
ever, that even by this second scenario Livian shows a three-way con-
trast of velars before front vowels.

I will not attempt to pursue here the implications of the Livian
facts for the vexing problem of centum/satem and two vs. three sets of
velars in PIE. It is obvious that by the strict tenets of the comparative
method Livian requires reconstituting three sets of velars for PIE, sup-
porting evidence from Albanian and Armenian for such a distinction
(see for Albanian Pedersen, KZ 36 (1920) 277ff., and Jokl, Mel.
Pedersen (1937) 127ff.; for Armenian Pisani, Ric. Ling. 1 (1950)
165ff.). However, more than one scholar has suggested that this is not
the only (or necessarily the right) way to view the problem: see among

In conclusion, I wish to stress one point regarding centum/satem in
Anatolian. By the first interpretation above, Livian (CLivian, HLiv-
ian, Lycian) is neither centum nor satem, since it would show neither a
merger *k, k > k nor *k, k > k, but a three-way contrast. By the sec-
ond interpretation Livian would show a conditioned merger of *k, k > k,
while *k* is kept distinct. In that case Livian would clearly be a cen-
tum language, one where the merger of *k* and *k* was conditioned
rather than complete, just as Albanian and Armenian are clearly satem
languages, albeit where the merger of *k* and *k* is conditioned. By
either interpretation the change of PIE *k to Luv. z has nothing what-
ever to do with the dialect development designated ‘satem’.

Postscript: the first draft of this article was completed away
from Chapel Hill. Upon my return, I turned to an unpublished manuscript
(ca. 1970–72) on Anatolian historical phonology which Warren Cow-
gill, with characteristic generosity, had made available to me, in order
not to what he had written on the subject of PIE velars in Anatolian. In
point of fact, working with considerably less evidence than is now avail-
able, Professor Cowgill had already tentatively concluded that the
Livian subgroup shows the three-way treatment of voiceless velars
claimed here (his formulation was that of an unconditioned three-way
contrast). It seems particularly fitting that these few lines supporting his
analysis appear in a volume dedicated to his memory.

University of North Carolina

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