The metathesis of *-Hu- and *-Hi- in PIE

1. ‘Long diphthong roots’ and laryngeal metathesis

1.1. In Pokorny’s *Indogermanisches etymologisches Wörterbuch* (IEW) we find a category of roots where a long diphthong takes the place of the e-grade, e.g. dâu-, dau-, dū- ‘brennen’, alongside roots with a final schwa dheja-, dhjā-, dhī- ‘sehen, schauen’. From a laryngealist perspective, the difference between these two root shapes must be in the position of the laryngeal: *deh₂u- ‘to burn’ but *dʰeiH- ‘to see’. However, in Sanskrit, both verbs form a participle with a long root-vowel, viz. dūná-, dhītá-. On the surface, it appears that the form *dh₂u-nó- is phonotactically identical to dhīta- < *diH-tó.

1.2. Winter (1965: 191-192) was the first person to discuss this concept in terms of the laryngeal theory. He noted pairs such as Hitt. pahhur ~ ToB pāwar, OHG brāwa ~ ToB pārwāne, and formulated three rules, namely that a metathesis of high vowels and laryngeals occurred when the laryngeal was not preceded by a vowel, was not word initial, and was followed by a consonant. In more simple terms, we can say that metathesis occurred between two consonants. This will be the null hypothesis in my paper.¹

Mayrhofer (1986: 174) compares Skt. aor. á-pāt, caus. pāyāya-, Gr. imp. πῶθ. Since the Skt. root aorist must continue a root *peH-, he assumes an i-extension in the other forms. To explain the long vowel in Gr. πῶθ < *ph₃-i-dʰi, he assumes laryngeal metathesis. Several dissenting opinions have been voiced. Rasmussen (1989a: 264) assumes loss of laryngeal before a tautosyllabic stop, e.g. *peh₃i-t > *peh₃-t and explains the long zero-grades as analogical. Lindeman (1997: 121) and Gerasimov (2006 passim)² both suppose dissimilatory loss of *i. Of these solutions, only the last has merit. Gerasimov proposes a primary *peih₂-, whose yod dissimilated to a yod-present (*peih₂-i- > *peh₃-i-). The new stem was subsequently analysed as an i-present to a root *peh₂-, which was taken as the aorist stem.

While this solution works to some extent, it requires several additional assumptions: most notably the sound law *iHi > *Hi,³ and the subsequent reanalysis within PIE. If we accept laryngeal metathesis, the various root shapes (*peh₂-, *peih₂-, *peh₃-i-) can be considered essentially equivalent, while in Gerasimov’s theory, they must represent different analogical formations and all must be projected back to PIE. This multiplies the number of entities we work with. Therefore, Occam’s razor states that we must first exclude laryngeal metathesis before adopting such an alternative. Gerasimov’s rejection of the theory is primarily based on the fact that “the context for its operation ... is unclear”. He also mentions several exceptions, which I will

¹ Lubotsky (2011: 110) states that “it seems probable to me that [the metathesis] was operative in a prevocalic position, too. At least, I do not know of any evidence precluding this”. In other words, Lubotsky believes that *CHI unconditionally became *CHH in Proto-Indo-European. This is conceivable, but in view of the great difficulty in distinguishing between these two sequences prevocally in many branches, I have chosen to limit the current study to the inter-consonantal position. Besides, there is counter-evidence, e.g. Av. zauruuan- ‘old age, decrepitude’ < *gruh₂-ur/uen-, cf. ypaōcs ‘old woman’, where the position of the laryngeal in the nominative (**gruh₂-r) must have been restored after the oblique cases.

² I refer the reader to this paper for a summary and criticism of Lindeman’s proposal.

³ This dissimilation rule is contradicted by Hitt. pejè- ‘to send (away)’ < *h₂po1-h₁ieh₁.
discuss in the following. His theory cannot explain the same patterns which we find in nominal roots of the type Hitt. *pahhur~ ToB *pûwar.

Special pleading is also required to explain Hittite yod-presents such as *ishai-, *dai-, etc. This effort is nullified by A. Kloekhorst’s article of the same year (2006). According to him, PIE i-present forms show ablaut in the suffix, not the root. This is the situation we find synchronically in Hittite pai-~/ pi- < *h₁p- (o)j-* bind’, Skt. kṣēti, 3pl. kṣyānti ‘dwell’ < *tǩ- (e)i-, Old Prussian *tūrei, 3pl. *tūri ‘have’ and Latin pariō, paritum (Kortlandt 1987, 1989: 109, de Vaan 2011).

1.3. Lubotsky (2011) brings into the discussion the Sanskrit roots of the type sīvyati, etc. sūtā- which show the shape Cív- (i.e., ChiHu-) before a vowel or -y- and Cyū- (i.e., CiuH-) before a consonant. This alternation is synchronically automatic within Sanskrit, and can hardly have any analogical source. The distribution is matched by Go. siujan, Lith. siūtas, and can be posited for PIE. This evidence is important for the theory of laryngeal metathesis, and cannot be adequately explained within any of its proponents’ frameworks.

Lubotsky (l.c.) concludes that these verbs are ultimately denominalizations of u-derivatives of *CH-ei-roots, which are in turn derived from roots of the shape *CeH- . He offers the following examples:

*deh₂- ‘to distribute’: Skt. dā-→ *dh₂-ei-: Skt. dāyate, Gr. δαίεται ‘to divide’→ *dh₂-i-u-: Skt. dīv-, dyū- ‘gambling, play’→ * dh₂-i-u-: Skt. div- ‘to play dice, gamble’

*gh₁eh₂- ‘to gape’: Gr. χάος→ *gh₁h₂-: Lat. hiō, OCS zižati, ToB kāy- ‘open one’s mouth’→ *gh₁h₂-ei-u-: ToB koyn’ mouth’→ *gh₁h₂-i-u-e/o-: Scr. ziževati, OHG gīwēn ‘to yawn’

*gʷeh₃- ‘to tend’: Gr. βόσκω→ *gʷh₃-: Lith. gyti‘to heal’→ *gʷh₃-i-u-o- ‘alive’: Skt. jīvā-, Lat. vivus, Lith. gývas→ *gʷh₃-i-u-e/o-: Skt. jīv-, Lat. vívo, Lith. siūtī ‘to sew’

*seh₂- ‘to fasten, fetter’: Skt. sā- → *sh₂-ei-: Hitt. išai- ‘to bind’→ *sh₂-i-u-: Skt. syú- ‘seam, cord’→ *sh₂-i-u-: Skt. sīv-, Go. siujan, Lith. siūtī ‘to sew’

*spēh₁- ‘to be full to the rim’: Skt. sphāṭi- ‘abundance’→ * spēh₁-: Hitt. ispai- ‘to be satiated’, Skt. sphāya→ *spēh₁-i-u-→ * spēh₁-i-u- ‘to spit’: Skt. sṭhīv-, Lith. spūtūti, Lat. spūo

1.4. In addition, Lubotsky derives i-perfects from *CeH-roots:

*peh₃- ‘to swell with milk’: Skt. pipāya, Lith. pūti ‘to give milk’← *peh₃- ‘to drink’

*d₁eih₁- ‘to consider’: Skt. dīdhaia← *d₁eh₁- ‘to put’

*deh₁-i- ‘to suck’< *d₁h₁-ei-< *d₁eh₁- ‘to suckle’

1.5. I have collected some other examples below:

− *bʰh₂eu- ‘to come into being’< *bʰeh₂- ‘to appear’

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4 I rather analyze SCR. zižev ‘muffle’, etc. as deverbal, see §2.2.2.3, but this does not affect the overall proposal.

5 An alternative way of connecting the verbs goes back to Rix (2003: 366), who assumed a full-grade *bʰuəh₂- was simplified to *bʰeh₂- in PIE. The most troubling aspect of this etymology is Rix’s assumed preservation of *u in the ‘Lindemann-variant’ *bʰuəh₂- (cf. Lat. fuōs), which would imply the loss was phonetic and automatic, not phonemic, and unlikely to have had the far-reaching effects implied by Rix.
The verb *bʰeh₂u- is attested in Skt. bhav- ‘become, come into being’, Gr. φύομαι ‘grow, arise, become’, perf. ‘exist’, Go. bauan ‘live’, Lith. būti, OCS byti ‘be’, Lith. būvinti, Ru. bávit ‘linger’. It seems rather attractive to derive it from the root *bʰerH. This verb is usually glossed as ‘to shine’ (e.g. LIV ‘gla\nzen, leuchten, scheinen’) on the basis of Skt. bhā- ‘shine, be bright’, Gr. φῶς. ‘light, daylight’ and derivatives. However, several forms exist meaning ‘to appear’, e.g. φάει ‘appear’; Gr. qaixw ‘show’, med. ‘become visible, appear’, Alb. běj’dó; appear’, Skt. usás-vi-bhātī ‘the dawn appeared’. Presumably both meanings existed alongside one another in PIE. 6A u-verb *bʰh₂-eu- ‘to come into being’ seems to represent the same non-volitional semantics argued by Lubotsky (2011: 120f) for i-perfects.

- *bʰreiH- ‘scratch (off), chafe’ < *bʰerH- ‘overpower’

A root *bʰreiH- is reconstructed on the basis of Skt. bhray- ‘injure, hurt’, YAv. bṛi- ‘shave, shear’, CS bruti se ‘shave’, OIr. -bria 3sg.subj. ‘damage’, Lat. friō ‘pulverize, crumble’, fricāre ‘rub, chafe’. Already in Pokorny (IEW: 135), it was connected with *bʰerH-, as seen in Lat. forō ‘bore through, pierce’, ON berja, OHG berjan ‘beat’, Alb. bie ‘fall, lay down, beat’, Lith. bárti ‘scold, accuse, forbid’, Ru. borót ‘overpower, throw to the ground’, boroná ‘harrow’. In LIV 80, following Pokorny, the root is glossed as ‘mit scharfem Werkzeug bearbeiten’, but I would perhaps go for ‘to beat down, overpower’. A connection is possible, but the exact semantic path is unclear to me.

- *gʷeuh₂- ‘to sing, wail’ < *gʷeh₂- ‘to sing’

Alongside Skt. gav(0)- ‘call, sing praises’, OHG gichewen ‘call’, OCS govoriti ‘make a noise, talk’, we find Gr. γοα ‘groan, weep’ ~ ἀγα ‘cry’, which alternation suggests an old labiovelar (cf. Beekes 2010: 280). Evidently, this word can be connected with Skt. gā- ‘sing’, YAv. fragātra- ‘prayer’, Ru. gâjat ‘talk, curse’, pointing to < *gʷeh₂/ɜ-. 7

- *keuh₁- ‘to be wary of’ < *keh₁- ‘to make aware’

A root *keuh₁- can be reconstructed on the basis of Skt. kav- ‘to intend’, OCS čuti ‘sense, notice’, Lat. caveō ‘take care, beware’, Gr. κω ‘pay attention’. I propose to derive it from the root *keh₁-, attested as an s-present in Skt. sās- ‘teach, command; punish’, Av. sāh- ‘teach’, To. kāś- ‘scold’, Go. hazjan ‘to praise’, Alb. thom ‘say’. Forms without -s- are OP dātiy ‘declare’ and Alb. ptc. thēnē / thānē. The original meaning might be ‘to make aware’.

- *leuh₁- ‘set free’ < *lh₁-eu- < *leh₁- ‘let, allow’

The root *leh₁-, seen in Hitt. lā- / l- ‘loosen, release’, Alb. alb. lē / lā ‘let’, OCS lētv jests ‘it is allowed’, was extended with *u- in Gr. λύ ‘loosen, liberate’, Lat. solvō ‘release, set free’, Skt. lav- ‘cut (off)’, OIr. as-lob’ ‘escape’, Cz. leviti ‘alleviate, diminish’, etc. (IEED s.v.).

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6 Perhaps the identical root *bʰeh₂- ‘to say’ also represents a specialized use of this verb, cf. Gr. φημί ‘say, explain, argue’. Words for ‘explain’ are frequently derived from ‘bright, clear’, cf. Lat. déclaro, OCS ob-jasnití, Lith. aškinti, etc. (cf. Beekes 2010: 1567) However, none of the other languages seem to have preserved a trace of the meaning ‘explain’, however, and rather point to a meaning ‘to tell tales’ or ‘say magic chants’ (Lat. fātum ‘prophecy’, fābula ‘rumour, tale’, OE bōn ‘to brag’, Ukr. bújati ‘tell, practise sorcery’, OCS balīi ‘physician’).

7 Most likely, laryngeals caused depalatalization already in IE (Kortlandt 2010). In the satam languages, the plain velar was generalized from the full grade *kh₁-eu-, and then the root was reshaped after the metathesized zero grade *kah₁i > *kehil₁i, before laryngeal aspiration was phonemized.
A barely attested root ‘to churn’ is seen in Lv. nît ‘to churn, thread (a needle)’, Lv. pa-nijas ‘buttermilk’, Shughni nay-, nid, Talysh niya ‘to churn’, Skt. nává-níta ‘fresh butter’. It is possibly an i-extension of the root *(s)neh₁-in Gr. νέω, Lat. neó, OIr. sniíd ‘spin, weave’.

Another word worth mentioning here is *gʷrih₃ ‘to dominate’, Skt. grívá ‘neck’, Ru. gríva ‘mane’, Lv. gríva ‘mouth of a river’, which Rasmussen (1985) derives from *gʷerh₂ ‘to swallow’, cf. Gr. βιβρώσκω ‘devour’, YAv. prijati- ‘to drill, twist, rub’, note that primitive drills were operated by twisting a stick rapidly by means of a rubbing motion with the hands.

**Implications of laryngeal metathesis**

1.6. While the reality of laryngeal metathesis in PIE is fairly frequently assumed, several papers, particularly from Leiden, and most of all those from Frederik Kortlandt (e.g. 1975, 1981, 1986, 1988a), have argued that this metathesis is a post PIE development. Kortlandt has pointed out several environments where he believes a contrast between *HI and *IH sequences has been preserved between consonants. Other papers, however (e.g. Rasmussen 1989a, Lubotsky 2011), present a good case to consider laryngeal metathesis a PIE phenomenon.

If laryngeal metathesis did indeed occur in PIE, it would result in the effective merger in the zero grade of four distinct root shapes (*CHEI-, *CEHI-, *CEIH- and *CIEH-). In such circumstances, we might well anticipate that speakers would occasionally make the ‘wrong’ choice of full-grade or innovate new full-grade forms. While most scholars appear to assume a direction *CEHI->*CIIH-G->*CEIH- for innovation, from a logical standpoint, the opposite is just
as conceivable, as there is just as much analogical basis to create a full-grade *CEHI-on the basis of a zero-grade *CIH-. We may take any alternation in the position of laryngeals in a root as evidence for metathesis.

If we are to accept the idea of laryngeal metathesis for PIE, we must (a) identify cases where a particular metathesis must reasonably be dated to PIE (the “evidence”), (b) account for the evidence adduced by Kortlandt and other scholars for a reflex of PIE *CHIC (the “counterevidence”). If we conclude that laryngeal metathesis did not occur in PIE, we must then provide a reasonable phonetic explanation for the phenomena attributable to it in each branch.

2 Evidence for the position of laryngeals

2.1 General Observations

We can assume that laryngeals already had a colouring affect on the adjacent vowels in PIE, therefore in *-Hei- and *-eHi-we find colouring, and in *-eih-, colouring should not occur. Another Indo-European development appears to be the palatalization of velars before a laryngeal (Kortlandt 2010: 38, 2013: 14), exemplified by PSl.*gøygoose’ < *ǵʰh₂-ens-as against Lith. žąs < *ǵeh₂-ns- (with analogical accentuation), where only the laryngeal can explain palatalization in Slavic.

As a brief illustration of the methodological issues involved in ascertaining the regular reflexes of laryngeal diphthongs, I offer the following case study:

IE 'husband’s brother’ is generally reconstructed as *deh₂-i-uer- on the basis of the long vowel in Gk. δᾱήρ and Arm. taygr; yet the Verscharfung in OHG zeihhur, OE tacor points unequivocally to *deih₂-u(e)r- (see §2.2.7.1), while Iranian evidence (Oss. tiw / tew, Pash. lewár, etc.) may point to *dh₂ei-uer- (see §2.2.3.1). In Lat. lêvir/laevir, the position of the laryngeal is ambiguous.

All things being equal, it is quite clear that the Lat. word cannot be used as evidence for the regular outcome of IE *-eh₂-i- in this language, any more than it can be used as evidence for the outcome of *-eih₂- or *-eih₂-. As a result, we may simply state that the position of the laryngeal in Latin is unknown (however, see §2.2.5.1. for another account).

In the following study, I will limit myself to identifying oppositions present within the daughter languages. External evidence may only be invoked in determining whether a root possessed a laryngeal, while the position of the laryngeal will be determined on the basis of internal evidence alone. Where no opposition is found, the position of the laryngeal must be viewed as ambiguous. Of course, since this approach eliminates most sources of counter-evidence, we must be very careful when assessing the positive evidence, taking due account of sources of analogy and alternative analyses.

In order to determine the behaviour of the laryngeals in each of the relevant languages, I will examine the regular reflexes of the following clusters: *CHV, *VHIC, *VIHC, CIHC and *CHIC.

2.1.1 Nasal Presents

Rasmussen (1999: 425) noted that IE nasal presents are consistently formed to the metathesized stem, Skt. dũnóti ‘kindle, burn’ < *du-n-h₂- alongside Gr. δαίω, Gr. κρινω < *kri-n-h₁- + *-ie/o- < Slav. *krǿb < *kreh₁-i-. Further, we have Skt. dhinóti, OIr. denait < *dʰh₁-ei- ‘to suck’, OHG ginēn <
*ḫ₂h₂-ei-, Skt. sināti < *sh₂-ei-, Lat. sinō, < *sh₁-ei- and Skt. lunāti < *lh₁-eu-, for which reconstructions see above.

The only exception I can find is Gr. γάνυμαι ‘brighten up, be glad’ < *ḫ₂h₂-n-u-? Perhaps it is better explained as a nu-present to a root *ḫ₂h₂-e:, seen in γνήθω ‘rejoice’. However, a u-extension is also probably seen in the form γαύων ‘rejoicing?’ < *ḫ₂h₂-ie/o- as well as Lat. gaudēō ‘be glad, rejoice’, which makes this solution quite uneconomical. Nevertheless, it appears that these nasal presents, which are in principle formed to the zero grade, must have post-dated the metathesis. The result of this is that a nasal present of the shape *Cl-n-H cannot, as is traditionally assumed, provide evidence for a set root-shape.

2.2.1 Anatolian

2.2.1.1 *CHV

In a series of publications (2010, 2013, 2015, 2016), Kloekhorst has argued that the distribution of signs in Hittite spelling reveals a three-way distinction between fortis, lenis and glottalized (ejective) stops, the latter of which reflect *TH-. For example, dat-i ‘to put’ reflecting *dh₁-oï- (cf. Kloekhorst 2006), is consistently spelled with the sign DA-, while words such as the conjunction ta, reflecting *to, are consistently spelled with TA- (Kloekhorst 2010: 203). Further, initial KE-/i- is used in all periods to represent PIE *k- while GE/- is used to represent PIE *g⁰h²-. In one word, kino-/gim(o)-‘to open up’, we find both spellings. According to Kloekhorst (2010: 216), this points to a MH glottal stop [k²], which was in NH simplified to lenis [k]-, <GE/-i-. This is supported by the reconstruction *g⁰h₂-i-nu- and connection with Lat. hiscō ‘open up, yawn’, OCS zēvati ‘yawn’.

In Kloekhorst 2015, it is pointed out that the distinction between /tː/ and /tˀ/, as observed in the spelling, remains intact in the MH and NH periods. However, word initial /tː/ appears to undergo lenition throughout MH and NH (idem: 13). On the other hand, /kː/ is only distinct from /kˁ/ in OH, with the latter merging with lenis /k/ in later times (cf. 2010: 216). While PIE *TH regularly yields /tː/, in post-consonantal position we find only /tː/ (2015: 8). An example is haštai-, haštia-, which should reflect *h₂estH- in view of the failure of -ti- to assimilate to expected **-zi-. However, -t- might easily have been restored from the strong cases.

The table below summarizes the cuneiform signs used to represent the three different phonemes in Hittite. Note that Kloekhorst 2015 discusses a number of details about the spelling in post-consonantal and word final positions, but as glottalized stops are not attested in these positions, they need not concern us here.

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<tr>
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<th>Word initially</th>
<th>Word Medially</th>
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<tr>
<td>fortis</td>
<td>T</td>
<td>KE/-, KA-/GA /R</td>
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<td></td>
<td>TA- (&gt; DA-)</td>
<td>⁰T-TA-, ⁰N-TA-</td>
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<tr>
<td>lenis</td>
<td>KE/-, GA(?)*</td>
<td>V⁻/A-, ⁰N⁻/A⁻</td>
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<td></td>
<td>GE/-, GA(?)</td>
<td>⁰T⁻/A⁻, ⁰N⁻/DA⁻</td>
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<tr>
<td>glottalized</td>
<td>DA-</td>
<td>KE/- (&gt; GE/-)</td>
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<tr>
<td></td>
<td>⁰T⁻/A⁻, ⁰N⁻/DA⁻</td>
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*Neither of the examples supporting GA- < *g⁰h²- provided in Kloekhorst (2010: 210) are probative.

The sequence *sh₂V- gives PAnat. sh:ə- (cf. Hitt. ışıha- ‘to bind, wrap’ < *sh₂-oï-) while in *sh₁V-, the laryngeal is simply lost (ša- ‘impress, seal’ < *sh₁-oï-), PIE *RH₃V- gives PAnat. *R:V- (ārr- ‘to wash’ < *h₁:ōrh₁-, ḥarra-/barr- ‘to grind, splinter up’ < *h₂:ōrh₃-). At least orthographically, this *R: merges with *R word initially, cf. mai- ‘to grow’ < *mh₂-oï-. 
2.2.1.2 *VHIC*/VHI

With *h₂ the regular outcomes are PIE *-eh₂u-, *-eih₂-, *-euh₂- > PAnat. *-ah₂u-, *-eh-, *-oh-, cf. Hitt. pahhur ‘fire’ < *peh₂ur, lahhu- ‘container’ < *leh₂u-, mēhur ‘period, time’ < *melh₂-ur; sūh₂- /sohH- / ‘flat roof’ < *seuh₂- and *-oh₂u- > *-āhu-, cf. lāhu-. With other laryngeals, we get PIE *-ehH-, *e/oH/-euH- > PAnat. *-eű- > Hitt. -ū-, -eʔ-, -oʔ-, cf. karū ‘early’ < *ḫār₂u, hēuś ‘rain’ < *h₂eih₂- -u-, sūns ‘full’ < *seuh₁/₂u- (see Kloekhorst 2008: 96-97). The only difficulty might be distinguishing between *-eh₁/₂u- and *-euH₁/₂- which both seem to give Hitt. /ū/, it is likely the situation would be the same with IE *-i-, however I am aware of no examples.

2.2.1.3 *CHIC*/CHIC

Evidence for laryngeal metathesis is limited. An important case is Hitt. suhha- / suhh- ‘to scatter’, which is used interchangeably with ishuayai- / ishui- (Kloekhorst 2008: 773). The verbs must reflect *suh₂- and *sh₂u-oi- respectively. The absence of ablaut in the former verb suggests that the original strong stem was replaced. Most likely suhha- is a metathesized variant, which under my formulation could have arisen e.g. in the 1pl. and 2pl. forms *sh₂u-ue-, *sh₂u-te- and in the 3sg. preterite *sh₂u-s. Unfortunately, none of these forms are actually attested. Melchert (2011: 129) sees a parallel example in Hitt. lāhu- ‘to pour’, CLuw. lāḫ(h)u- < *loh₂/3- u- ‘to wash’ and CLuw. lūya- ‘to pour’ < *lüh₂/3-.9

The spelling of the verb kānu-zi, gīnu-zi ‘to open, break open’ (2010: 216) points to /kʰīnu-/, i.e. *gʰh₂i-nu- without metathesis. However, the verb is most likely a recent nu-causative of a more primary *kāi- / ki- (like huīnu-zi < huaii- / hui-, zīnu-zi < zai- / zi-). It is conceivable that the phoneme /kʰ/ was generalized in forms where metathesis did not occur, e.g. 3sg. *gʰh₂o-oi, as consonantal alternations are generally not permitted in Hittite. The plene spelling in several of the oldest attestations - 3sg.imp.act. ki-i-nu-ud-du (OH/MS), 3sg.pres.act. ki-i-nu-z[i] (MS), part. ki-i-nu-an-t- (MS) – could rather point to a phonetically long vowel which must have arisen by metathesis.

Kloekhorst (2010: 64) shows that Hittite exhibited a lowering of */u/ > */o/ in the vicinity of *H-. Thus lu-u-rī- /lorī- / ‘disgrace’ might reflect *l̩u₂h₁-rī- alongside lu-u-ři- > leh₂u-ři- (ibid.: 75); similarly. A further potential example of metathesis is the broken attestation [t]i-i-j-iš-te-ni (OS) 2pl.pres.act ‘to put’ < *dʰh₁-i-stel-.10

The best counter evidence is after *s-: ishiman- ‘string, line, cord, rope’, ishiske/a-impf. ‘to bind, wrap’, which clearly show *sh₂iC- . Since the key example of metathesis (namely suhha- / suhh-) also has initial *s-, we cannot argue for a phonetic explanation. We must assume analogy to the verb ishai-/ ishi- ‘to bind’. Additionally, Kloekhorst (2010: 797) assumes that “a laryngeal metathesis has taken place” in the two homonymous verbs, suye/a-‘to fill’ and suye/a-‘to push away’ because a reconstruction *suH-ie/o- would be in conflict with his rule *VHIV > VI (in hujanzi 3pl. ‘to run’ *h₂uh₂-i-enti). However, his metathesis *suH- > *šHu- is completely unmotivated and the opposite development from what we observe elsewhere. We might assume that both of these formations postdate the loss of the laryngeal, or posit *šHu-ie- and assume that metathesis did not take place before *-i-.

9 I will leave aside the debate as to whether this root contained *h₂ or *h₃, see Melchert (2011), and footnote 44, below.
To summarize, it appears that laryngeal metathesis did occur in Anatolian, but analogical developments have obscured much of the evidence.

2.2.2. Balto-Slavic

2.2.2.1 *CHV

We only find distinct reflexes in the velar series, namely in Slavic *x, which can reflect PIE *kʰH-. The key example is ORU. soxa 'wooden plough', cf. Skt. śākhā 'branch'. Probable examples include Ru. xápat', Sln. hāpati 'seize', cf. Lat. capiō (REW: II 230) 10 and Ru. dial. xájat', SCR. hājati 'to care' < *k(e)h₂, cf. Skt. kā- 'to desire, like' (Pronk 2013: 299, against Bičovský 2008: 17). OCS sėra, Cz šerý 'grey' could be borrowed from Germanic, cf. ON hárr 'id.', but could reflect *kʰ₁oi-ro- (Lubotsky 1989: 56). This is particularly attractive in view of the potential connection with Lith. šyvas 3 'light grey' < *kʰ₁uo-. The corresponding reflex in Baltic is k, cf. Lith. šakā 'branch'. In my view, the phoneme *kʰ > *x only need be supposed for Pre-Proto-Slavic. I do not see any necessity in projecting a phoneme *kʰ back to PBS.

2.2.2.2 *VIHC/*VHIC

The difference between *VIHC and *VHIC has sparked much debate. Illič-Svityč (1963: 80f) concluded that the Balto-Slavic retraction of the stress onto an acute syllable, which resulted in fixed radical stress (Hirt’s law) did not operate if the laryngeal was preceded by the second element of a diphthong (as in *VIHC), cf. Lv. tiěs < *tenh₂-uó-, cf. Gr. ταυνάς, where the Lv. broken tone points to an originally unstressed acute. Examples of Hirt’s law are Lv. ilīgs 'long', cf. Skt. dhirghā- < dhīh₂, Lith. duōna 1 'bread, corn, grain', Lv. duōna 'slice of bread' < *doH-neh₂-. This has important consequences for the PIE reconstruction of certain words, e.g. Lith. káulas 1, Lv. kaūls 'bone, stem', cf. Gr. καυλός 'stem, pole', must be reconstructed *kēh₂u-ló- in Balto-Slavic.

2.2.2.3 *CHIC/*CHIC

Kortlandt (1975: 3-4) argues that Hirt’s law did not apply in the sequence *CHIC-. However, this would be incompatible with the theory of laryngeal metathesis, where *CHIC-would have already merged into *CHIC- in PIE. Therefore, Lubotsky 2011 suggests that the laryngeal metathesis was reversed in Proto-Balto-Slavic. This indeed appears to be the case: roots for which we find only zero-grade forms always show reflexes of *CHIC Slav. SCR. dīm, Lith. dūmai, Lv. dūmi 'smoke', cf. Skt. dhūmā-, SCR. līko 'bast', mīš 'mouse', pīr 'spelt', cf. Lith. pūras, Lv. pūrs 'corn measure', Gk. πῦρ of 'wheat', SCR. žīla, Lith. gūsia 1, Lv. dzēša 'vein' 11. Note particularly SCR. nīt, Lith. nýtis, Lv. nūtis 'thread', Lv. grūts 'heavy', SCR. ūtī, Ru. šūla, Lith. siūtī, Lv. sūt 'to sew', which must represent metathesized forms of the roots in Gr. věω 'to spin', Skt. grū- Hitt. išha- 'to bind' (for the latter reconstruction, see Lubotsky 2011: 109f), a fact Kortlandt does not account for. Ru. kivát‘ ’to nod’ must be seen as an extended zero-grade intensive to *kʰw- < *kuh₁-, and cannot reflect *kʰ₁ur-, pace Derksen (2008: 267).

It appears to me that nýtis, siūtī, Lv. grūts are best analysed as archaisms, thus we may envisage the following scenario: (1) the sequences *CHIC and *CHIC first merge into PBS *CIC, 10 Slavic should represent an extended-grade *kh₂ep-, cf. the full-grade in ORu. xopiti, Cz. chopiti ‘strike’. Derksen (2008: 202) does not mention this etymology, preferring to see it as an onomatopoeic variant of *jabati (Bel. habāć, Cz. habati ‘seize’).
11 Broken tone by secondary association with dzīt ‘to heal’.
(2) at a certain stage (prior to Hirt's law), PBS no longer tolerates such root alternations, therefore 
*bū̱-tei, *pū̱-tei, *gū̱-tei, *pi̱-tei, *ui̱-tei are replaced by bū̱-tei, pū̱-tei etc. on the analogy to the full-grades 
*zāun, *plo̱̱u-*, *g̱̊oi̱-, *p̱̊oi̱-, *u̱ei̱-; cf. Ru. bāvit, plāvat', SCR. gōjiti, pōjiti, Lith. 3sg. 
vēja,'(3) Hirt's law takes place, leaving restored bylā, plylā, žilā, pilā, vileā exempt.

Both for my point (2), and also for Kortlandt's original theory to be correct, we should not 
expect to find any metatheses of laryngeals synchronically in Balto-Slavic. In view of this, I would 
like to make the following modifications to the reconstructions provided in Derksen 2008 and 2015:

(a) Slav. *kvāsˇ 'fermented drink' in view of *ḵ̊ysati 'turn sour', Lv. ḵ̊sāt ꞏboil'12 < *ku̱ũ-, 
should be reconstructed *ku̱ũasˇ as *ku̱ũasˇ would yield OCS *ḵ̊vəsˇ. (b) SCR. zija timid, zjat ꞏyawn, 
shout' must reflect *žji̱-aʔ and not *žji̱-aʔ which should have given PSlav. *ži̱tgi ꞏgape' 
(not žijot), Lv. sezja, sejja 'face' cannot reflect *s̊ən̊a (> *s̊əja), but points to *s̊e̱i̱-aʔ, or have been influenced by *tēns ꞏid.’. (d) In 
view of the numerous forms pointing to *r̊i (Ru. gлина, glīva, SCR. glista, Lith. glén̚e, glén̚ės), Slav. 
*g̱̊j̱̊sˇ 'clay, loam' (Ru. dial. gļ̱̊j̱̊, SCR. gļ̱̊j̱̊) must be formed after *ḵ̊sḻ̊j̱̊ ꞏglue'. It cannot reflect IE 
*g̱̊ḻ̊h₁-i-o- directly, as this would give PBS *giḻ̊ṉ̊-*, Ru. *žoḻ̊* (e) It appears that original *-ep̱̊ (- *- 
ei̱ẖ̊-om) in the present of several verbs in Slavic was replaced by -ėj̱̊, cf. OCS lėj̱̊, smēj̱̊, zēj̱̊ to 
lijati, smijati, zjat, but Lv. leju, smeju; perhaps by analogy with e.g. sēj̱̊, dēj̱̊. I do not believe that 
these are old.

A small number of forms still present problems: the acute of SCR. žîto ꞏcorn, wheat', OPr. 
geits 'bread' seems to require *gei̱t̊o-, which does not match the *g̱̊n̊i- in Ru. žil̊a 'lived'. I think it 
quite possible that the word for 'grain' was not associated with the word for 'live' already in 
PBS. Slav. *s̱̊n̊h̊n̊ce ꞏsun', with non-acute diphthong, must be the result of levelling: the laryngeal 
was probably lost early in obl. *s̱̊un̊- Slavic generalized *su- in the strong cases resulting in *sul̊- 
In Lith. ẕ̌̊s̱̊s̱̊s̱̊ < *g̱̱̱̊ēẖ̊₂-ns- as opposed to Slav. *g̱̊s̱̊s̱̊s̱̊ 'goose' < *g̱̊ẖ̊₂-ens- (Kortlandt 2013: 14), 
the accentuation of the weak cases must have spread to the strong ones. SCR. kraj̱̊, gen.sg. krâ̱ja'end, 
edge' is difficult to reconcile with kṟ̊jîti ꞏto cut', Lv. kri̱jat ꞏto skin' which point to *kṟ̊(a)i̱î-. 
Apparently, *kra̱n̊- is an archaism which had lost its association with the verb *kri̱i̱- in Proto- 
Balto-Slavic.

To conclude, sîjat, nỳtís, Lv. grūts and Slav. *zjat ꞏrepresent metathesized roots from IE 
*sh₂i̱u-, *n̊h₁i̱-, *g̱̊ẖ̊₂-u- and *g̱̊ẖ̊₂-i- respectively. I therefore conclude that metathesis 
of laryngeals indeed did occur in Balto-Slavic, but its effects were reversed wherever a model 
was available. Since this rule appears to work with remarkable consistency, I do not think 
Rasmussen's idea (1985) of an analogical spread of mobility has much merit.

2.2.3 Indo-Iranian

2.2.3.1 *CHV

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12 An intensive formation with broken tone.
13 Via *zjat, compare Ru. ževat’, žâju, Bulg. žüna 'lip' = Lith. žiauna 'jaw' < *gieuH-.
Indo-Iranian provides the key source of evidence for post-consonantal laryngeals. We find aspiration of PIE *tenueae at least after *h₁ and *h₂, cf. YAv. nom.sg. paṇṭā-, abl.sg. paṇḍ < *pnt-H-és ‘path’, tīṣṭhāti ‘to stand’ < *sti-sth₂-, 2pl. athematic primary ending Skt. -ṭha, Gr. -te < *-ṭh₁e, Skt. sākhi-, YAv. haxi- ‘companion’ < *sokʷ-“H-oi”.14 See further Mayrhofer (2005: 110). There seems to be no foundation to the widespread idea that only *h₁ can aspirate (cf. Beekes 1988: 87f, Rasmussen 1999: 490-504). A potential example for *h₂ is phéna- ‘foam’, where the o-vocalism in Lat. spūma, Nw. feime, OCS pěna might point to *h₂.15 This matter is complicated, however, by pibati < *pi-ph₂- ‘to drink’, which seems to imply that *h₂ had a voicing effect. Lubotsky (2011: 115) argues instead that the word for ‘foam’ belongs with *speh₁- ‘to full to the brim’.

There is some limited evidence for a similar effect on PIE mediae in Skt. duhitar- ‘daughter’ ~ ṭuyáṭṃr ‘daughter’, mah- ‘great’ ~ μεγα and sádhis- ‘seat, abode’ < *sed-h₁-s-, cf. Lat. sèdes ‘id.’. A counter-example is vad- ‘speak, talk’ = Gr. αὐδάω < *h₂uedH-, where the absence of aspiration is difficult to explain (so *h₂?).

Kümml (2012) observed a distribution between the root variants maz- and mas- ‘big’ in YAv.: -s is only found in positions immediately preceding a laryngeal (e.g. gen.sg. masso < *meg-h₂-és), while -z is found elsewhere (e.g. nom.sg. maza; comp. mazīah-). The same distribution can be observed in e.g. daśqmī < *dḗd-e-eh₁-mi and ptc. daḥat- < dḗd-h₁-ent-. He concludes that a laryngeal had a devoicing effect in Iranian.

Other examples include YAv. vaēthā ‘I know’ < *uoid-h₂-e, alongside vaēð-, and relevant to the present study: Kurd. ʧi, Osset. tiw / tew, Pashto lewār ‘husband’s brother’ < *ṭai-uar- and Sogd. ṭw-, Khot. thū-, Khwar. ṭw- ‘to burn’ *ṭau- as against Skt. devār- and dāv-. Kümml (idem) argues for a morphological conditioning, with the rule only affecting restored *H at morpheme boundaries. More probably, a post-consonantal laryngeal was lost in the zero-grade of ablauting paradigms, and subsequently restored after the oblique cases.

2.2.3.2.*VIHC/CHIC

Lubotsky (1995) showed that the laryngeal was lost in *-VIH- already in PIIR, with the hiatus only restored at morpheme boundaries. The reflex of *VIHC is only distinct with *u, viz. *eHuC > avIC, cf. pavitār- ‘purificator’ < *peuH-tor-, asāvīt3sgaor.act. ‘to impel’ < h₁-e-seuH-t, but *eHuC > oC, cf. óhate < *h₁e-h₁-ug(m)h.

2.2.3.3.*CHIC

The two sequences merge in *CHIC, e.g. Skt. Ḗṣa- = Hitt. hissa- ‘carriage pole’ < *h₂ih₁-so-, Skt. pā- < *peh₂- ‘to drink’, ptc. pita- < *ph₁i-tó-.

Lubotsky (1988: 50ff, 1992) demonstrates the tendency for Indo-Iranian i- and u-stems to become oxytone if a laryngeal follows the vowel in the root. Among the few exceptions, we find dhū-ti-, bhū-mi-, bhū-ri-, sé-tu-. After excluding dhū-ti as unreliable, Lubotsky concludes that the other words were not subject to this rule as their laryngeal preceded the vowel, viz. *bh₂-zer-, *s₂eI-. However, we find oxytones in bhū-ti, as well as pī-ti-, jī-ri- < *ph₂i-, *g₁h₁I-. Thus, the evidence for a distinction between *CIHC and *CHIC is limited to two forms, bhū-mi- and bhūri-.

14 cf. also Lat. socius. This Hr. word might be a derivative of the adverb seen in sácá ‘also; at hand, together with’, hacā ‘from, out’, where the palatalization implies *h₁.
15 If the word is indeed an mn-stem, as proposed by Matasović (2004: 126), we should expect e-grade.
Particularly the former, which is matched by Av. būmi- ‘earth’, must be old. Analogy looks to be “out of the question” (Lubotsky 1992: 268), however one might suppose earlier *bhómi- < *bh₂h₂éu-mi- was replaced by bhūmi- in line with the prevailing zero-grade attested in the verb and derivatives.

2.2.4 Greek

2.2.4.1 *CHV

Any discussion of laryngeal aspiration in Greek must start with the form οἴσθα, 2sg. ‘to know’, whose ending matches Skt. vēttha, Hitt. 2sg.pret. -tta. To me, the most plausible explanation goes back to Cowgill (1965: 171-173), who analyses the suffix as *sta, and assumes that the aspirate was generalized from stems in *-C (but not *d, *t, where we would not find aspiration), as in ἔφθος from ἔψω + -τός. Problematic, however, is that none of the potential sources of this analogical spread he proposes are actually attested. Thus, Gr. -θα remains difficult to account for convincingly (Beekes 1969: 181, de Decker 2011).

There are very few other cases of laryngeal aspiration. In most of the words where we would expect it etymologically, it is absent, cf. πλατύς, Skt. prthú-; πάτος, Skt. pathás; μέγα, Skt. mah-; θυγάτηρ, Skt. duhitā-.

Other connections are highly uncertain. Either the distribution and semantic field imply we are dealing with likely loanwords, e.g. κόγχη ‘mussel, cockle’, which in view of variants κόχλος, κόχλης can only be connected to Skt. saṅkhd- ‘mussel’ as a Wanderwort (see Beekes 2010: 728); similarly, πτόρθος πόρθος ‘sprout, shoot, branch’ and Arm. ort’ ‘vine’ (cf. Martirosyan 2013: 115). Several words can be accounted for by Siebs’ law (Siebs 1904), e.g. σφάλλω ‘bring down, ruin’ < *sgʰ-health-IE/o-, cf. Skt. skhálate ‘stumble, stammer’, Arm. šelim ‘go astray’, σθένος ‘strength, power’ < *sgʰ-strength-IE/o-, cf. Skt. saγhnóti ‘to be match for’ (cf. Beekes 2010: 1325). 16 Other etymologies bring up additional phonetic issues, e.g. the comparison of καθαρός ‘clean, spotless’ with καθαρίζω ‘to clean, wash’ is exactly what we should expect etymologically if the latter were derived from *καθάριζω. Two examples are phonetically and semantically plausible: ἄσκηθης ‘unscathed’, if < *n-skeht₁-h₂-ēs, cf. Go. skápís ‘damage’, but also note OIr. scís ‘tiredness’ < *skeht₁-t-tur-, which if related cannot derive from a form with laryngeal (Rasmussen 1989b: 154). Second, σχάζω ‘tear open, let flow, release’ might be connected to Skt. chyati’ ‘cut open, skin’. We can also adduce σχίζω ‘to split’ (Lat. scindō, Skt. chináti), which shows σχ- from *skh. Here, I again would not exclude an anlaut *sgʰ.

In conclusion, the only good example of laryngeal aspiration is the perfect ending –(σ)θα, which has to be explained otherwise.

2.2.4.2 *VHIC/*VHIC

16 Despite Lubotsky (1995), who showed that Skt. knew no distinction between *sK- and *sK, we cannot a priori assume that *sK also merged with these sequences. Woodhouse (2014) argued that the rarity of the sequence *sK* in IE is exactly what we should expect statistically, taking into account the overall rarity of labiovelars when compared to palatovelars. Besides, such a sequence is found in Gr. πρέμβος/Cret. πρείγος < *preis-h₂(e)ju- and Skt. uccd < *ud-s-kʰε-h₁.
In *VIHC, the laryngeal is lost, colouring the vowel, e.g. ποιμήν ‘shepherd’ < *poh₂i-men-, cf. Skt. pāyū- ‘guard, protector’, νοῦς ‘ship’ < *neh₂-u- cf. acc.sg. νῆα (see Beekes 1969: 173). Beekes (2010: 232) states that the circumflex in βοῦς points to a lost laryngeal, however Olander (2007: 5) would rather see the circumflex as regular in monosyllables with a single consonant in auslaut (note also σκόρ, μῦς, where no laryngeal was present), however his explanation of Zένος < *dīeus as analogical after the βασλέος type and of θήρ as analogical after nouns in –(τ)ήρ both leave something to be desired. Therefore, I would rather side with Beekes in assuming that the circumflex represents a lost laryngeal.17 Lubotsky (1988: 123) suggests that a pre-form *t(u)eh₂us could have been rendered as disyllabic ταῦς, however Beekes (1010: 1456) states that the "disyllabic pronunciation [of this form] is far from certain".

For *VIHC, the question is whether the laryngeal was vocalized. Where *l = *u, this seems quite likely on the basis of examples such as Myc. re-wo-te-re-jo /lewotreioś/, 'epithet of bathtubs', and metathesized Hom. λευτρόν < *leuh₂-tro-, and κρέος ‘meat’ = Skt. kruṇī ‘raw flesh’ < *kreh₂-s. For *l the situation is much less clear. Kortlandt (1992: 237) and van Beek (2011: 134) raise the example of 3sg. thematic optative -οι < *-o-ih₁-t. The form is scanned disyllabic, so Kortlandt (l.c.), proposes that the vocalized laryngeal assimilated to the preceding *i. This explanation is ad hoc, but it is difficult to justify metathesis (> *-o-ih₁-t) in a thematic form, thus I have no alternative. A counter-example might be δεάτο ‘seemed’ < *dejh₂-to, which Kortlandt dismisses as secondary (cf. van Beek l.c.). Therefore, we can only be sure that *VIHC was regularly reflected in Greek as *VHIC where *l = *u.

2.2.4.3 *CHIC/CHIC

On the basis of Gr. φυτός φόσις, φυτήρ, against φῦμα, φύλη, φυσι- (all < *bʰh₂u- ‘to become’), Schrijver (1991: 512-525) convincingly argued that the vowels going back to *CHIC remained short in pretonic position, but metathesized in stressed position, thus confirming the hypothesis originally put forward by Kortlandt (1975: 76). He observed a parallel pattern in λῷo (λυτός, λοσι-) and ειλόω (ὁλυος, ἐλύμα), which he reconstructs as *IHU- and uelH-u-, respectively. We must note however, that the present tense of these forms can only reflect a metathesised root φῦμα < *bʰuh₂-e/o-, as opposed to -φῦμα. Schrijver (l.c.) states that present has been restructured after the aorist φῦνα (cf. also Beekes 2010: 1597). We may then ask ourselves whether the nominal derivatives might also reflect a ‘restructured’ ablaut.

Indeed synchronically, we find similar patterns in verbs containing no laryngeal, e.g. δῦo : δοῦμα : δῦσι : ἐν-δυτήρ (< *deu=), and in roots with final laryngeal, θῦo : θῦμα : θύτηρ (< *dʰeuH₂-, cf. Hitt. tugh‘ae-), τρῦo : τρῦμα : τρῦσις : τρῦσι (< *treuH-, cf. OCS tryti, SCR. tròvati). Further, we find preservation of a long vowel in archaic formations like ῥῦ-τήρ ‘rein, rope’, which can hardly be analogical after pres. ῥῦόo. None of the Greek formations are certainly old: φῦμα ‘growth, tumour, swelling’ is not attested in Homer and semantically too distant from Skt. bhūman- ‘earth, world, being’ to warrant a direct comparison; Gr. φύσις ‘growth, character, being’.

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17 The word for ‘cow’ is almost universally reconstructed without a laryngeal, however *gʷh₂u-sus, acc.sg. *gʰh₂eûm, gen.sg. *gʰh₂(e)ûs accounts not only for the Greek circumflex, but also for the absence of Brugmann’s law in Sanskrit (Lubotsky 1990: 133-134).

18 This etymology is quite possibly incorrect. Beekes (2010: s.v.) connects δείλος ‘of the evening’. Skt. upādāya- probably rather belongs with dav- ‘to kindle, burn’ (Mayrhofer EWA l. 707).
Skt. bhūti-, bhūt- 'being' are productive deverbal formations, and need not be old. Finally, φυτήρ, φυτόν, φυτός and φυλή were almost certainly inner-Greek formations.

What is the origin of this quantitative ablaut? It seems rather obvious that it simply follows the pattern of roots with *CeHC-/ *CHC-ablaut, cf. ἀρόω: ἄρωμα: ἄροσις; βήμα: βάσις: βατός; σχέσις: σχήμα, etc.

Another key argument is πῦρ, gen.sg. πῦρος. Yet there is again a likely source of analogy, namely the model of ὄς, ὄς 'swine' (cf. Simms 2009: 304 who argues that the genitive is old), μῶς, μῦς 'mouse', and possibly πούς, ποδός 'foot', compare the equally secondary δρῦς, δρυός 'tree, oak'. Even Beekes (2010: 1260), who in principle accepts the hypothesis of pretonic shortening, believes the quantitative ablaut in πῦρ to be secondary.

Next, σκύτος, κύτος, ἐγκυτί: with Schrijver (1991: 239) and de Vaan (2008: 154), we can probably distinguish two separate roots, *skHt- 'skin' (whence σκύτος 'leather') and *kut- 'bag, scrotum'. There is no semantic necessity, but it is otherwise phonetically difficult to account for the short reflex in Lith. kutys 'purse'. We can probably further connect W cwd 'bag, scrotum', OHG hödo, OFr. hôte 'testicle' (< *kout-, see Kroonen 2013: 217), Lat. cunnus 'vagina', Gr. κύτος 'rounding, vault, vessel, body', κυσός 'vagina, buttocks, bladder'. Gr. ἐγκυτί - παρά τὸ κύτος 'close to the body' is certainly derived from κύτος.

This leaves the derivatives of *sh₂i-men- (cf. Hitt. ḫḫim-an-, ON simi 'rope'): Here we find short ιμάς, -άντος 'leather strap; thong; beam' (also attested long in Homer), ιμαίος 'song while scooping water' but long ιμονίδ 'well-rope' (Beekes 2010: 589; Schrijver 1991: 519). Zair (2012: 130) dismisses this example as too unclear. By way of an explanation, we may note that the meanings of the words with a short vowel tend to diverge rather dramatically (cf. also the almost unique suffix -άντ-), so we might imagine a substrate word was secondarily confused with inherited ἴμον-, although this explanation is not particularly satisfactory.

In conclusion, the evidence for pretonic shortening in Greek rests on ιμάς, ιμαιός alone. All other examples are the result of productive analogical patterns.

### 2.2.5 Italic

#### 2.2.5.1 *CHV

Schrijver (1991: 270) offers two likely examples: laevus 'left' (cf. Gr. λαυός) and spūma 'foam' (cf. Skt. phēna, with aspiration). The position of the laryngeal cannot be confirmed with the Italic data.

One trace might be found in lacrima 'tear', lautia 'state reception' vel sim., lēvir (also laevir) 'husband's brother' if these reflect *dh₂e-ruk- (cf. Gr. δάκρυον), *dh₂-eu- (Skt. dūvas 'gift, homage') and *dh₂-ευ-er (see §2.1.3.1). Traces of these words with *d- (dacrima in Andronicus Odys. frag. 19.1, dacrima and dautia in Paul. ex Festo) may be hypercorrections after Gr. δάκρυον (Hd., Aesch.), Lat. dāre. This phonetic explanation is slightly preferable to inter-dialectal

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19 As glossed in Etymologicum Gudianum. It is generally used in conjunction with the verb κείρω 'to cut the hair', e.g. ἐγκυτί κεκαρμένος 'close shaven'.

20 Also in ἀνάρης, -άντος 'statue'.
borrowing, of which there is no evidence (cf. Weiss 2009: 475 fn. 59). Note lingua ‘tongue’ for older dīnguā is clearly secondary after līngō ‘to lick’, and does not belong here.  

2.2.4.2 *VIHC*/*VHIC*

Again, important is evidence for a vocalic laryngeal in *VIHC-. Schrijver (1991: 285-288) provides just two clear examples. The first is Lat. cūdō ‘to strike, beat’, which he derives via *keyad’o-(< *keuH-dʰ-) to avoid the expected vocalism to **caud- and preserve the equation with Toch. kaut- /kot- ‘to split’. He is then forced to explain Lat. über: since in view of vacuus, iacere, vannus (idem: 318-319) 22, he expects *HuHIC- > *uAC-, he must posit a full-grade form. He concludes that the ‘udder’ represents o-grade where the laryngeal was lost, which is an ad hoc solution. On balance, the old formation über carries more weight than cūdō, which may be recent: Latin *keh₂u-dʰ- may continue different extensions (see de Vaan 2008: 161).

A much better example is lavāre ‘to wash’. Here, Schrijver (1991: 397) reconstructs *lava-ē-, consistent with Cowgill’s (1973) interpretation of stāre < *sta-ē-. He assumes that the disyllabic root *lava- arose in pre-consonantal position, cf. the instrument noun lābrum ‘basin’ which must derive from *lava-ōro < *loùh₂-dʰ’ro-. This example seems fairly decisive in favour of vocalization. The dearth of evidence overall can be put down to the fact that the Latin syncope often causes the evidence for vocalization to be lost. We have found no examples for vocalization with *-i-, so it is possible that only *-u- triggered vocalization, as in Greek.

2.2.4.3 *CIHC*/*CHIC*

Schrijver (1991: 248) claims that pre-tonic shortening took place in constellations of *CHIC but not in *CIHC. The evidence for this rule is meagre, see the table below:

<table>
<thead>
<tr>
<th>probably pre-tonic</th>
<th>unclear</th>
</tr>
</thead>
<tbody>
<tr>
<td>vir ‘man’ &lt; *uIH-ró-</td>
<td>puter ‘rotten’ &lt; *puH-tr-i-</td>
</tr>
<tr>
<td>cutis ‘skin’ &lt; *kuH-tí-</td>
<td>su-bulcus ‘swineherd’ &lt; *suH-</td>
</tr>
<tr>
<td>futāre &lt; *bh₂u-tó-?</td>
<td>lucrōm ‘gain, profit’ &lt; *lh₂u-tlo-</td>
</tr>
<tr>
<td>putus ‘clean’ &lt; *ph₂u-tó-</td>
<td>culex ‘gnat’ &lt; ëkuH-ík-</td>
</tr>
</tbody>
</table>

For the position of the laryngeal in *uIH-ró- and *kuH-ti-, cf. Lith. vyras 1 and kiąutąs 3, kęvalas < *keuH-. Lat. putus, putāre ‘to prune’ may be related to paviō ‘to thump, pound’, although it is semantically closer to pörus ‘clean’. Both etymologies presuppose a laryngeal. Lat. fū-, sü- in futāre, futūrum and su-bulcus may have been generalized from antevocalic position (thus de Vaan 2008: 239). Lat. bū-bulcus ‘who ploughs the oxen’ is probably analogical after subulcus (Schrijver 1991: 239). Finally, culexis of uncertain value due to its limitation to Italo-Celtic. 23

The short reflexes in Lat. vir, puter, futāre, cutis match those of OIr. fer, othar, buith, W cwiđ. Other strong cases are lucrēm and putus. However, numerous counter-examples are available: vivus ‘alive’, fūmus ‘smoke’, sūtum ppp ‘to sew’ < *gʷh₂-i-uó-; dʰuh₂-mó-, sh₂iu-tó-, cf. Skt. jīvā,

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21 Lat. oleō ‘to smell’ beside odor ‘smell’ and solium ‘seat’ beside sedeō most likely also represent a separate development.

22 The etymology of vannus is doubted on formal and semantic grounds by de Vaan (2008: 653). The initial laryngeal of vacuus is entirely dependent on Gr. ἔκω ‘to let go, leave alone’ (Nussbaum 1998: 73f), which is uncertain (ţóct cannot be cognate, Beekes 2010: 481). Thus, the sound law rests on iacere alone.

23 The connection with Skt. šula- ‘spear’ is uncertain.
dhūmā-, sūtā.- 24 In addition, we find several formations with long vowels where we would morphologically expect oxytonesis: hiscó 'to yawn', invítus 'reluctant', pūrus 'clean', trítus, sólitus, rūtus. While analogy can be invoked for trítus and sólitus, it is more difficult for the isolated invítus.

Kortlandt (1981) supposed that the short reflexes in Latin reflect cases where the laryngeal preceded the resonant. In reality, the examples and counter-examples both encompass several cases of *-HI- and of *-IH-. With the former we find vivūs, hiscó, sūtum but pūtus, lūcrum, while with the latter we have fūmus, invítus, rūtus but vīr, cútis, pūter. To account for vīr, Schrijver (1991: 343) adapts an idea of Dybo (1961) that all long vowels underwent pre-tonic shortening in Italic before a resonant. To explain pūter, Schrijver (1991: 236-237) proposes a law *RHTC > *-RTC. As noted by Zair (2012: 131-132), the latter law could equally account for lūcrum. Thus, the original pretonic shortening law only possibly accounts for pūtus, which is hardly enough. I conclude that Kortlandt’s proposal has not stood up to scrutiny.

Dybo’s law still encounters exceptions. Although, vivūs might be analogical after vivō, fūmus can hardly be analogical after much rarer fūligō (Zair 2012: 144, pace Schrijver 1991: 342). With non-high vowels, we have ulna, sērēnus, fērus. The IE word for ‘elbow’ is difficult. The long vowel in Gr. ὀλης, Arm. uln, Lith. iolektis, Skt. ārnti- and short vowel in Gr. ὀλέ-κρανον, Arm. ohn, Lith. alkanė, Skt. araniti-, Lat. ulna, Go. alleina, OIr. uilen can hardly reflect anything except *Heh₁-l-beside *H₁₃-el- (Lubotsky 1990: 132). 25 The presence of a laryngeal in serēnus ‘clear, unclouded’, ξηρός ‘dry, arid’ is in conflict with the short vowel in ξερόν ‘dry land’. The connection with OHG serawēn ‘to dry out’ is in any case best put on hold in view of the potential rule *Ks > PGm. *sk- (see Kroonen 2013: 91).

Thus, the only certain example of shortening of a non-high vowel in Latin is ferus ‘wild, savage’. An important case which is accounted for by Dybo’s law in Italic is Umb. pir ‘fire’, abl.sg. pure-to. Here, the oblique cases, which attest a short vowel, must be attributed to pre-tonic shortening.

I make the following conclusions: Kortlandt’s law of *CHICĪV- > *CĪCV- should be abandoned. Dybo’s law has an important exception (fūmus) but accounts for three important cases of shortening: vīr, ferus, Umb. pure. Schrijver’s laryngeal deletion law explains pūter and lūcrum. I think that the problem of fūmus can be solved by limiting the application of Dybo’s law in Italic to liquids (or perhaps just *r). 26 Despite its morphology, pūrus was probably barytone, in view of the long vowel in OIr. úr. Neither law can account for cútis or pūtus. I am therefore tempted to derive Lat. cutis ‘skin’ and MW cwd ‘scrotum’ from *kut-, with no laryngeal. 27 I regard the origin of putus ‘pure’ as unclear. 28

2.2.6 Celtic

24 Note that Lat. vivō ‘venom, poison’ rather reflects *ueis-o- in view of the short vowel in Skt. visā-.
25 The n-stem attested in most branches is in each case secondary: cf. Go. -eihn < *-ihn does not match Gr. -ην, Skt. -atni-. The suffix *-n- was productive in body parts (cf. Pronk 2015).
26 Under this formulation, we could also accept Dybo shortening in serēnus, ulna, and culex. For the latter two, such a possibility is perhaps worth pursuing.
27 The Latin meaning ‘skin’ is difficult to derive from the root *kat- ‘leather bag’, cf. §2.2.4.3 on Greek. Thus, we may have to reckon with the merger of original *(s)kuHt- ‘skin’ and *kat- into a single lexeme.
28 Since the original meaning of Lat. putō is not ‘to reckon’, but ‘to prune’, I do not think we can seriously consider the old connection with OCS pytāt ‘examine, scrutinize’, Cz. ptáti se ‘ask, inquire’ (IEW: 827).
2.2.6.1 *CHV

No reflex of the laryngeal is found. Hamp’s reconstruction (1972) of OIr. *aub, MW *afon ‘river’ with the ‘Hoffman’ suffix *h₂ep-h₃en- is circular (*h₃ is reconstructed only to account for the Celt. *b). Furthermore, the evidence for the ‘Hoffman’ suffix in Proto-Indo-European is essentially restricted to the word for ‘young’, *h₂i₄-Hn-, where the colour of the laryngeal is unclear (Prónk p.c.).

2.2.6.2 *VIHC/*VHIČ

As in other branches, there is debate as to whether the laryngeal should have vocalized in *VIHC. The evidence is very clearly laid out in Zair (2012: 225-240). There are a couple of convincing examples of vocalization after *u: OIr. *loathar ‘trough, vat, tub’ < *lew₂-tro-, cf. Gr. λευτρόν, OIr. cuár, MW *cawr ‘giant, hero’ < *keu₁-tro-, cf. Skt. शुरा- ‘strong, powerful, heroic’. After *i we only have root etymologies: OIr. *biál- ‘axe’ OW *bahell ‘axe’ < *b³eiH- ‘to strike’, MW *gwialen ‘rod, twig, withe’ < *ueiH₁- ‘to wind’.

Where we find a monosyllabic reflex, we cannot exclude a word-internal laryngeal by metathesis in e.g. OIr. *cian ‘long, enduring, far’ < *kʷeiH₁-/kʷeHi₁-, MW mwyn ‘tender, mild’ < *meiH₁-/meH₁-, OIr. *dian ‘swift, rapid’ < *deiH₁-/*deHi₁-. A word internal laryngeal must, however, be excluded in MW *bwyt, bwyd ‘food, nourishment’ < *gʷeHi₄-to-, cf. Scr. *zőto ‘corn, wheat’. Due to the absence of colouring by the laryngeal. Another interesting case is disyllabic OIr. *riáthor, OW *réáitır ‘torrent’ < *h₃reiH₁-tro- as against OIr. *rian ‘the Rhine; sea, ocean’ < *h₃reiH-undo-. Here again *h₃reiH₁ is not possible to exclude, but is made much less attractive by the co-occurrence of a different full-grade within Celtic.

Joseph (1980: 375) pleads that the laryngeal was regularly lost and supposes secondary suffixes *-ano-, *-atro-, etc. to account for the aberrant forms, this view seems to have been followed by Matasović (2009: e.g. 314). As an example, the suffix in *loathar may be analogical after *ar-athar ‘plough’. However, it is notable that we never find this particular suffix applied to roots without a final laryngeal. Zair (2012: 242) argues that the laryngeal was only lost before a single plosive, however he is forced to suppose an *ad hoc additional rule to account for *dian, *rian, MW mwyn.

In view of the exceptional case in Slavic also (§2.2.2.3), I do wonder whether the similarity of IE *gʷeiH₁-to- ‘food’ to the word for ‘live’ might not be coincidental. A reconstruction of *gʷeHi₁ would much more easily account for the forms in both branches. All in all, it is difficult to decide whether the evidence points more towards vocalization or laryngeal loss in this environment.

2.2.6.3 *CHIC/*CHIC

In view of counter-examples such as OIr. *lán, W *lawn ‘full’ < *plh₁nó- (cf. Skt. पूर्ण-, Lith. pilnas), OIr. *grán ‘grain’ < *grh₂-nó- (Lat. *granum, Lith. žirnis) and OIr. *gnáth ‘known’ < *gnh₃-tó-, I am not convinced that the law was operational in the case of resonants other than *i and *u. In my view, the examples given in favour of Dybo’s law in these environments can be divided into the following groups: (1) neo-ani forms which may have been extracted from nasal presents: OIr. *rath ‘virtue’ ~ *ernaid ‘bestow’, OIr. *mrath ‘deceit’ ~ *marnaid ‘betray’, OIr. *fith ‘sovereignty’ ~ OIr. *follnadar ‘to rule’, OIr. *srath ‘valley’ ~ *sennaid ‘broaden’ (2) speculative etymologies: MW

29 OIr. *biáđ ‘food’ might be from *gʷih₃-eto- (Schrijver 1995: 246).
ffraeth ‘fluent, lively’ (compared to Gr. σφαργέομαι ‘crackle, hiss’, Skt. śphūrjati ‘break up’), OIr. glan ‘clean, bright’ (Gr. χλωρός ‘greenish’), OIr. cladaid ‘to dig’ (Lith. kálti ‘to strike’) and (3) roots which may not contain a laryngeal: OIr. braigid ‘to fast’ might be from *bʰreǵ- ‘to break’ (LIV: 91, Lat. frangō, Go. brikan), rather than to Lat. fragrō ‘to smell’. For OIr. raith ‘fern’, the Baltic forms may be metatonical. Finally, I would not give too much mind to the short reflex *gnato- attested in modern Welsh compounds (yn-gnad ‘judge’, dir-nad ‘comprehension’), in view of the long reflex attested everywhere else, cf. MW gnawt ‘known’, W gnaw ‘custom’.31

The table below shows the good examples and counterexamples of Dybo’s law with the high vowels in cases where the vowel is morphologically likely to be in pre-tonic position (after Matasović 2012):

<table>
<thead>
<tr>
<th>Short reflex</th>
<th></th>
<th>Long reflex</th>
</tr>
</thead>
<tbody>
<tr>
<td>OIr. béó, MW byw ‘alive’ (Skt. jivā-, Lith. gývas)</td>
<td>OIr. ro-bith ‘struck to benaid ‘strike’</td>
<td></td>
</tr>
<tr>
<td>OIr. fer, W gwir ‘man’ (Skt. vīrā-, Lith. výras)</td>
<td>OIr. ro-críth ‘bought to crenaid ‘buy’</td>
<td></td>
</tr>
<tr>
<td>OIr. buith ‘being’ (Skt. bhāti-)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIr. othar ‘ill’ (Lith. pūtī ‘to decay’)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIr. guth ‘voice’ (Skt. hū ‘to call’)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIr. suth ‘offspring’ (Skt. sū- ‘to give birth’)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On W cwd ‘scrotum’, see the discussion in §2.2.4.3. In reference to OIr. ro-bith, ro-críth, Matasović (2012: 132-133) notes the á-stem verbal noun OIr. críth ‘buying’, W prid ‘price’ and argues that the long vowel was generalized from a baritone collective formation *k”rítā formed to the participle *k”rít-. The same is argued for ro-bith (cf. OIr. bíth ‘striking’, W bid ‘lopped hedge’). While these explanations are relatively weak, the positive evidence for Dybo’s law, in my view, carries more weight than these words, which could have been formed at any time within Celtic. While in view of the probability of Italo-Celtic unity, it would be attractive to propose a variant of Dybo’s law which encompasses both branches, this does not seem possible at this time.

2.2.7 Germanic

2.2.7.1*CHV

I am not aware of any proposed reflexes of the laryngeal in this position.

2.2.7.2*CVHI/*CVIH

Kroonen (2013: 22 after Mahlow 1879: 29-34) states that *-eh₂/3u- and *-Hu- give PGm. *-ō-in open syllables, but *-au- (with Osthoff’s law) in closed syllables or word finally, cf. Go. fon ‘fire’ < *peh₂ur*-eh₂u-, ON stór ‘big’ < *steh₂-u-ro-; but ON naust ‘boathouse’ < *neh₂-u-sth₂-o-, Go ahtau ‘eight’ < *h₃ekt-eh₂-u. In other cases of *CVHI and *CVIH, the laryngeal is simply lost, cf. Go. flaiza,

30 Lith. papārūtis 1, Lv. papařde, alongside Lith. papařūtis 2, papartys 3. It seems reasonable to presume that papārūtis replaces *papārūdis, similar to the Latvian form (and Cz. kaprad’, Slk. paprad), and has its acute from Winter’s law. A reconstruction without laryngeal would also be supported by the usual derivation from *pter- ‘wing feather’, Gr. πτέρος. The origin of the d-variants remains enigmatic.

31 I have no explanation for this phenomenon, but it is probably better explained within Welsh, rather than at a proto-Celtic level.
maiza 'more' < *ploh₁-is-on-, *meh₂-is-on-; Far. deymur 'strong smell' < *dʰouh₂-mo-, cf. Skt. dhūmā 'smoke, vapour'.

Worthy of note here is the Germanic sound law (Austin 1946, Kortlandt 1988b: 356), which supposes *H₂u in post-sonorantal position became PGM. *kw (per Kortlandt, the change was *ʔu > *ʔkw). The most convincing example of this is OE tācur, OHG zeihhur 'brother-in-law', which are clearly cognate with Skt. devār-, Gr. δᾶηπ, Arm. taygr ʿid', yet exhibit an unexpected *k. We can propose that the origin of the *k is in a zero-grade form, e.g. Asg. *dih₂-uér-m > *tikweran, whence it spread to the rest of the paradigm. Other clear examples include the dual oblique personal pronoun Go. u̯gkis, ON okkr < *φh₁u-e, cf. Skt. āv-ām and ON kvikr, OE cwicu 'lively' from *gʷih₃-uō-, cf. Lat. vivus, Lith. įvyas (pace Gąsiorowski 2007).

2.2.7.2. *CVH/*CHIC

Both sequences merge into *CĪC. There is a lot of evidence for pretonic shortening of the high-vowels before resonants, exemplified by Go. sunus 'son', wair 'man', qiwana 'alive' < *suHnú-, *uiHró-, *gʷh₃i-uó- (Schrijver 1991: 351-357). The evidence for the shortening of non-high vowels is much less conclusive: OE delu 'teat' can reflect *dʰ₁i-leh₂-. On Go. aleina 'cubit, ell' and OHG serawēn 'to dry', see on Latin ulna, serēnus, above (§2.2.5.3). That the short vowel in ON, MoE egg is due to shortening is dependent on the derivation of 'egg' from 'bird', which is a hypothesis full of phonetic problems. It appears this shortening only occurred after a resonant, cf. OE hýd < *hūti 'skin, hide'.

2.2.8 Tocharian

Lit. Winter 1965, Pinault 2008 Chrestomathie tokharienne (Entrance 5)

2.2.8.1 *VHIC/*VIHC

The laryngeal is vocalized in *VIHC; compare To. kau- ~ ko- 'to kill' < *keh₂-u-, ko ~ ke₃ 'cow' < *gʷe₃h₂-u-, on the one hand and To. ļowa- 'send' < *leuh₁-, waya- ~ wā 'lead' < *uēih₂- on the other.

2.2.8.2 *CVH/*CVH

The reflex of *CVIC in Tocharian has drawn a lot of attention from scholars (Winter 1965: 190, see Adams 1988: 31, Ringe 1996: 22). The communis opinio appears to be that *h₂ and *h₃ are vocalized to *a (as with other resonants), while *h₁ is lost causing compensatory lengthening (as with vowels). The evidence for this dual reflex is rather strong, despite the number of examples being small: To. swāre ~ swār 'sweet' point to PTo. *swāro- < IE *suH₂d-ro-, to the root of Gr. ἰδός, Skt. svātú- 'sweet'. The verb šāw- 'to live' probably reflects *gʷih₃-u as in Lat. vivō, Skt. jīvati, etc.

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32 Or dʰ₂ou-mo-.
33 Gąsiorowski mentions two issues with the related verb (Skt. jīvati, Lat. vivō, OCS živo): baritone stress in a zero-grade syllable (only evident in Sanskrit) and the rarity of verbs derived directly from nominal stems.
34 Not least the fact that we find no trace of *-u- in YAv. aēm, Scr. jāje. The -v- in Lat. ovum is a hiatus filler, while from *h₂ou-iom we should expect Lat. **ōvium. Besides the problem of o-grade, vṛddhi derivatives are an inner-Indo-Iranian phenomenon (Beekes & de Vaan 2011: 182). All in all, the data call for a reconstruction *Hōiöm. Perhaps this is a thematicization of a root noun nom-acc.sg *Hōi, gen.sg Ḡai-ēs?
35 Notation: I will write Tocharian lexemes as B ~ A. Where only one form is listed, this means that the word is identical in the two languages. Words only attested in one language are marked ToA or ToB.
For *₃h₁ the best examples are To. ikām ~ wiki ‘twenty’ < PTo. wīkan < *₃h₁ui h₁₁kmt₃⁶ and the optative suffix ToAB -i- (with palatalization).

A note on the word for ‘fire’

To. pūwar ~ por ‘fire’ was a key word in opening the discussion of laryngeal metathesis. Winter (1965: 190) derived the word from the zero-grade *puh₂-r- which contrasts with *peh₂UR found in e.g. Hitt. pahhur. In my view, this reconstruction is untenable. ToB pūwar clearly points to phonological [p̥uwar], with the -ū- representing a stressed schwa in this position. I do not believe it can simply be epenthetic.₃⁷ Adams (2013: 421) attempts a derivation from a collective stem, following Schindler’s view of r/n stems (1974: 10). However, his options, namely *puh₂r or *peh₂r, both extracted from the metathesized zero-grade, can probably not give the attested ToB form, either. The evidence for PIE *ē/*ōH > PTo. *a is very limited. It appears that in a final syllable at least, *-ē gave *-u > ū in okt ~ okāt < *h₂ekēh₂ ‘eight’ or -u /aw/ (perhaps only after *w), cf. ku ‘dog’ < kūn, wu ‘two’ < *duō, (w)u pf. participle *-uō.₃⁸ Therefore I would expect *p(e)uh₂r or to give PTo. *iʔa(w)awr, perhaps > ToA por, but hardly pūwar.

I think Adams (l.c.) is correct in assuming that the ToA and ToB forms cannot reflect a single preform. However, I think that his reliance on the purported collectivestem is misguided. Go. fon is frequently also derived from the collective (cf. Schindler 1974), but is better derived from *peh₂ur = Hitt. pahhur (see Kroonen 2013: xxv). Likewise, there is also no reason to derive To. yasar ~ ysār from *h₁₁esh₂-ōr instead of *h₁₁esh₁-r = Hitt. ēshar.₃⁹ Thus there is no evidence for extended-grade collective forms except in the word for ‘water’ (Hitt. uidār; Gr. ὀδώρ). For the ‘fire’ word, we most likely have to depart from a NASg. *peh₂ur, obl. *puh₂n > PTo. *paúr, obl. *pwar (with elimination of heteroclisis). This opaque ablaut led to different levellings: ToA generalized the nominative-accusative stem, while ToB might have generalized the weak stem, later creating a new strong stem [pawar] to [pwár-], as [yósar] ‘blood’ to [yśar-]. Whatever the details, the ToB word must represent a metathesized form.

2.2.9 Armenian
  2.2.9.1*CHV

Various phenomena have been suggested to show laryngeal aspiration in Armenian: (1) cases where *t avoids lenition after a resonant, as in Arm. yalt ‘wide, broad’ < *ᵲ-faltʰu- < *plth₂-u-, cf. Skt. prthú -‘id.’, and more doubtfully ort ‘calf’ < *fortʰu- < *port₂-u-, cf. Gr. νόρις νόρταξf. ‘calf, heifer’; (2) cases where *t is lost after *n, as in -sun, in e.g. ere-sun ‘thirty’ < *sunth₁ < *h₁₁komt₂, cf. Gr. -κοντα, Lat. -ginta, hun ‘fourth’ < *funtʰ < *pont-H; (3) cases of x < *kh₂-, mainly c’ax ‘branch, twig’, dial. c’ak’, cf. Skt. śákha -‘id.’, ORu. soxa ‘wooden plough’, also xacanem ‘bite, sting’, cf. Skt. khād- ‘chew, bite’.

₃⁶ This word is problematic in every branch where it is attested, but the analysis as from < *₃dui dākmt- is probably correct, which means the second laryngeal can be identified as *₃h₁ (see Kortlandt 1983: 98). I prefer to assume univerbation post PIE in view of the short reflex of OIr. fiche, etc.
₃⁷ Despite Pronk (2009: 88): pūwar differs from all the other cases of sporadic epenthesis in ToB. First, the proposed epenthetic vowel is stressed. Second, the epenthesis is within the root, not on a morpheme boundary.
₃⁸ M. Peyrot (p.c.) informs me that tāno ‘grain’ might be a borrowing from Iranian.
₃⁹ In fact, judging by the ‘water’ collective *ud-ōr, we would expect root zero-grade *₃h₁₁sh₂-ōr > ToB **sår. This makes the reconstruction of a collective for To. ‘blood’ even less attractive.
In some environments, it is possible that we see \( *kh > c' \), however, cf. Arm. \( c'awt \) `stem, stalk' < \( *c'aul- \) < \( *kh_{2}eu-lo^{-} \), cf. Gr. \( καυλός \) `id.' Arm. \( p'u'l \) `fall, ruins' might be derived via PArm. \( *p'ol- \) from \( *h_{2}po-h_{3}lh_{1}- \), although the details are difficult (see Martirosyan 2010: 653).

All in all, there is not a great deal of evidence for laryngeal aspiration in Armenian, but it does help to explain a number of otherwise unexplained anomalies.

2.2.0.2 \(*\text{CHIC}*/\text{CIHC}\)

The main debate is whether we find laryngeal “breaking” with \( *h_{2} \) and \( *h_{3} \) (Olsen 1999: 770-773, against Clackson 1994: 41-49). I will leave this debate aside, since it is not relevant for the purposes of this study. I have to say that very few of Olsen’s collected examples have any plausibility at all, and in the vast majority of cases, the colour of the laryngeal is unknowable. As an example of metathesis, Martirosyan (2010: 324) mentions Arm. \( xayt' \) `sting, bite' < \( *kh_{2}eid-to- \sim xit' \) `pain' < \( *kh_{2}id-to- \), but there are numerous other variants of this word which cannot be accounted for in PIE terms.

2.2.10 Albanian

Due to the small number of available etymologies, we cannot really use Albanian data to determine the position of laryngeals. Perhaps one could argue that a similar Dybo shortening to Germanic before resonants took place in Albanian, however all the examples are rather speculative root etymologies.\(^{40}\)

2.3 Initial Conclusions

2.3.1 \(*\text{CHV}\)

Evidence for \(*\text{CHV}\) can be drawn from: (a) Hittite spelling, gemination of resonants, and direct reflex after \( *s- \) (b) Indo-Aryan aspiration, (c) Iranian secondary voicing, (d) Armenian aspiration, (e) Slavic \( *x \). No secure evidence is available in Baltic, Greek, Italic, Celtic, Germanic and Tocharian.

2.3.2 \(*\text{VIHC}/\text{VHIC}\)

The two sequences are distinct (a) always in Tocharian and perhaps Celtic, (b) in Balto-Slavic pre-tonic syllables, (c) only with \( *h_{2} \) in Hittite, (d) only with \( *u \) in Greek and Sanskrit, and perhaps Italic. The sequences merge completely in Germanic. However, it should be noted that the two sequences can often be distinguished in pre-vocalic position.

2.3.3 \(*\text{CIHC}/\text{CHIC}\)

A difference between these two sequences has been argued for in relation to (a) Hirt’s law in Balto-Slavic, (b) the Indo-Iranian stress shift in \( i^{-} \) and \( u- \) stems, (c) vowel shortening in Greek, Italic and Celtic. In assessing all of these theories, I have found that for (c) there simply is not enough evidence and for (b) the evidence consists of a single root, but is admittedly difficult to account for. For (a), I found that while the evidence appears to support Kortlandt’s idea in principle, we

\(^{40}\) burrē ‘man, husband’ < \( *b^{h}u_{2}h_{2}-r^{o} \), brumē ‘dough, paste’ < \( *b^{h}ruh_{1}-m^{o} \) (Lat. \( fervēd \) ‘to boil’), lē-kurē ‘skin, hide’ < \( *kuh_{1}-r^{o} \), shurrē ‘urine’ < \( *suH-r-n^{V} \). Compare the long reflexes in \( d^{l}i \) ‘to dawn’ < \( *dh_{2}r^{o} \), shi ‘pig’ < \( *suH^{\prime} \), mi ‘mouse’ < \( *muH{s} \).
must make adjustments to account for exceptions. The distinction between these root shapes must therefore post-date PIE.

There is hardly any compelling evidence that these sequences were distinct in any branch of Proto-Indo-European. It therefore seems highly probable that these two sequences had merged already at a PIE date. See the final conclusion for a more detailed discussion.

2.3.3.1 Dybo’s law

Throughout the study above, I have proposed various laws for pretonic shortening laws in Greek, Italic, Celtic and Germanic. I did not find enough convincing evidence for Greek. While in Germanic, the shortening seems to have affected (at least) the high vowels before resonants only, in Celtic, the law seems to have affected all pre-tonic high vowels. In Italic, the law must have affected all vowels, and appears to have only operated with liquids.

Of course, reconstructing three different pre-tonic shortening laws is not particularly attractive, particularly since Italic and Celtic may have formed a single branch (Cowgill 1970, Weiss 2012). However, these shortening rules could well have post-dated Italo-Celtic unity.

3 Roots which show laryngeal metathesis

3.1 Verbal stems

In the following, with no attempt at exhaustiveness, I will provide some representative examples of Indo-European roots and words in which we find alternations in the position of the laryngeal. In each case, I will conclude that metathesis is the most plausible explanation for such alternation. I will avoid discussing words which have been dealt with in detail either above, or in Lubotsky 2011.

3.1.1 *bʰh₂eu- ‘to become’

This root has been discussed extensively in the literature (Kortlandt 1986: 90f; Rix 2003, Jasanoff 1997 and others). I will simply discuss the evidence for the position of the laryngeal in this root. As I have argued under the respective sections above, none of the evidence listed by Kortlandt (l.c.) can prove a zero-grade *bʰh₂u- C-; all relevant developments arose independently within the individual branches.⁴¹

A full grade *bʰueh₂- is evident in Ru. báviti, Go. bauman ‘live, dwell’, OIr. 1/2sg. pret. -bá (Kortlandt 1986: 90-92). Av. perf. buuāuua, Skt. imper. bodhi (secondary acc. to Jamison 1997) can equally reflect *bʰh₂eu-. A metathesized full-grade *bʰueh₂ is probably seen in the Lat. imperfect suffix -bā-, Osc. jufans (Rix 2003: 365, pace Rix, Lat. fuās is rather from *bʰuh₂-eh₂- and not a ‘Lindemann variant’). An alternative full-grade *bʰueh₂- is seen in Skt. fut. bhaviṣyāti, intens. bobhaviti; bhavītra ‘creature, being’.

Note the potential connection with *bʰeh₂- ‘to appear’ (see §1.5). We find several forms with *-i-ː most notably Lith. dial. Zietela, OLith. 3pret. bit, biti’was’ which is completely isolated and must be archaic. It is possible that bit represents *biH-t, with shortening of final acute syllables (Leskien’s law) as in tù < *tuH, while thematicized Lv. biju ‘I was’ suggests *biH-, OPr.

⁴¹ i.e. the Balto-Slavic accent: Lv. bāt, Ru. bylā (analagical after full-grade *bāviti); short vowels in Italic (analagical from pre-vocalic position), and Celtic (pre-tonic shortening); the Gr. short vowels (analogy). Note also IIr. *bhūmi, which perhaps replaces older *bhēumi.
bēi, be, OCS imperfect bě,SCR. bjēh might represent a derived stative formation *bʰi-eh₁- (Stang 1966: 380f). Lat. fō ‘happen, become’,OIr. bid rather point to a preform without laryngeal (Kortlandt 2007: 136),OE bēo ‘I am’ is ambiguous.

It seems probable that we are dealing with an old suppletive paradigm with *bʰeh₂u-alongside *bʰei-. Alternatively, we could propose two different root extensions *bʰ₂-eu- and *bʰ₂-ei-, but in this case, we are obliged to explain the laryngeal loss in the individual branches (as attempted by Kortlandt l.c. for Italo-Celtic). Pace Lühr 1981, Rix 2003, and others, I think it unlikely that any of these forms ever contained a *-u-, and such an idea cannot be maintained without an ad hoc rule of the type *bʰuV > *bʰV (Rix 2003). As we will see in the following, finding u- and i- extensions side by side is by no means infrequent, cf. *deh₂u-, *gʰneiH-, *leuh₂-

3.1.2 *deh₂u- ‘to kindle, burn’

An old form is probably the reduplicated perfect Gr. δέδην, ptc. δεδαυμένος,Skt. gram. dudāva < *de-deh₂u-. We find a non-metathesized zero-grade before yod in Gr. δαίω, MW deīyōw,OBret. deu ‘kindle, burn’ < *dh₂u-ie-o- (Matasović 2012: 92), and pre-vocally in δεύς < *dh₂u-o-. Skt. dāv- ‘forest fire’ must reflect *dvḥ₂u-ō-. Metathesized *douh₂-o- is impossible as the laryngeal would block Brugmann’s law (Kuryłowicz 1927).

The metathesized zero-grade is found regularly in the nasal present dunóti (for *dunáti, cf. LIV: 104, and §2.1.1.) and ptc. dūnó-(AV+). Later participle dunā-(SrSū.), and dūtā- (AĀ) are neo-anit forms built from the nasal present. The passive dūyate must be secondary like sunóti, pass. sāyate ‘press out (Soma), since the expected form is *divyate < *dh₂u-ie-/o-. MHG zāscen ‘burn’ represents a sk-present < *duh₂-ske-/o-.

Also worth mentioning is the possible link with *deh₂i- ‘to shine’, seen in Skt. didāya, ptc. didiyant-, su-dītī- ‘shining beautifully’ < *dh₂i-,Gr. δήλος < *δέλαλος ‘clear’ δέλτο ‘seemed’ < *deiH-. Lv. daǐš ‘refined, elegant’, Lith. dāilyti, -inti ‘refine, smoothen’, if related, can point to *déiH-, or *deh₂-i-. The meanings ‘shine’ and ‘burn’ are often interchangeable, cf. Gr. φλέγω trans. ‘ignite, burn, light’, intr. ‘burn, flame, blaze, shine’. In this case, we are dealing with different extensions, viz. *dh₂-eu- ‘to kindle’, *dh₂-ei- ‘to shine’ to an original root *deh₂-.

3.1.3 *gʰeuH-’to call, invoke’

The Skt. athematic middle hūmāhe 1pl. ‘call upon, invite’ points to *gʰuH-, a full-grade set-form is inf. hávitave (RV), but this need not point to *gʰeuH-, cf. inf. srāvitave (RV) from the anit-root srāva- ‘stream, flow’. More probable is the intensive jōhavīmi (RV+), but cf. yāmyamiti (RV) < yam-. The latter formation is perhaps matched by Gr. καυχάμαι ‘boast, be proud’, if < *gʰh₂eu-γʰh₂eu-e/o-, however the semantics are not ideal. Other cognates are OIr. guth ‘voice’ (cf. §2.2.6.3.), ToB kwā- ‘call out to, invite’ < *gʰuḥ₂/3, OCS zvāvi, zov̂o < *gʰ(o)uH or *gʰh₂eu-?

All forms except the Greek can reflect a set-root, so the claim of metathesis depends on this word, whose appurtenance is uncertain. On the other hand, a connection with *gʰeh₂- ‘to gape’ is conceivable. One might imagine a connection between καυχάμαι ‘boast’ and χαύνος ‘slack, bloated’, and the connection between open one’s mouth and ‘call out’ is obvious.

3.1.4 *gʰneiH- ‘to rot, grind’ / *gʰneh₂- ‘to gnaw, grind’
Here I will mention the possibility of connecting these two roots. The first is seen in Scr. gṇjīti ‘rot’, Ru. f. gnilá ‘rotten’ < *ǵʰneH₁, and probably also Ru. znižá’t, znejat’ ‘smoulder’ < *ǵʰn(e)H₂, Gr. Hesych. χνία ‘drips, breaks into pieces’ < *ǵʰniH₁. With a dental extension, we have OE gnidan ‘rub’ < *ǵʰn(e)H₁-t-One (< *guH₃). The second root is seen in Gr. χνῶ ‘to gnaw (off), nibble’ < *ǵʰneH₂-u, ON gnúa ‘to rub’ < *ǵʰnHoH₂u. All the meanings seem to have some connection with gradual deterioration or wear, nevertheless it is uncertain that all these words belong together.

Nevertheless, if there is at least some crossover between the two roots, which seems likely, we can then operate with i- and u-extensions of an older *ǵʰneH₂-or *ǵʰneH₂-. The i-present has undergone metathesis.

3.1.5 *keh₂u- ‘hew, forge’

A full-grade *keh₂u- is attested in To. kau ~ ko- ‘kill’, Lith. kāva ‘fight, battle’, while Lv. kaūt, ON hɔggɔa point to *kουH (the latter may also reflect *kHou-). Lith. kūjís 1, RuCS kyi ‘hammer’ show a zero-grade *kuH-. Lat. cūdō probably also represents a zero-grade, cf. §2.2.5.2.

3.1.6 *leuh₂- ‘wash, pour’

If Melchert (2011) is correct in supposing *h₃ for Anatolian, then a full-grade *loh₂u- is found in Hitt. lāhu- ‘pour, cast’, Cluw. lā(h)un(a)- ‘wash’. A metathesized *luh₂- is found in Cluw. lùya- ‘to pour’ (§2.2.1.3). Continuing a metathesized full-grade are Gr. λοέω ‘wash’ < *λε̃φίω < *leuH₂-, Lat. lāvō ‘wash, bathe’, Arm. loganam ‘bathe, wash the body’ < *louH₂-, and perhaps To. lāv- ~ lyā- ‘rub, wipe away’ < *leuH₂-, although with divergent meaning. The metathesized form and the meaning ‘to wash’ seems already to have been generalized in ‘core’ PIE.

A related i-extension is probably seen in OCS liti, lijjo, Lv. lièt ‘pour’, lit ‘flow, rain’ < *l(e)h₃-i-, if the Slavic vocalism is secondary. A zero-grade may be seen in Go. leiptables ‘fruit wine’, Olr. li(a) ‘flood’.

3.1.7 *peh₂- ‘guard, herd’


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42 The palatalized initial is probably from *gnōj- ‘rot’. A zero-grade *ǵʰnH₁, analogical after *gnōj- (then < *ǵʰnH₁-o-Ż) is less likely, as we would expect the nasal to vocalise, and we would also expect a plain velar before syllabic nasal, cf. Kortlandt (2013: 14).

43 This form is a little problematic, as it seems to show metathesis within Balto–Slavic. This word, along with Lith. kovà, might represent an extended-grade deverbial formation, in which case theLv. broken tone would be analogical after the verb.

44 We may alternatively posit two separate roots: *leh₂-u- ‘to pour’ and *leuh₂- ‘to wash’, and we might connect the former with Slavic *liti (see below). In view of the Luwian meaning ‘to wash’ and the u-extension in Anatolian, this seems unattractive, not to say that it isn’t correct.

45 These words may not be related directly. As Lubotsky (2011: 106 fn. 3) has pointed out, there seems to have been a general tendency to derive u-nouns from stems in -i-. The Gr. word has more claim to being archaic since its meaning is more distant both formally and semantically from the synchronic verbs (see van Beek 2016).
Most interesting here is the connection of Gr. ἰδαυ' 'pastoral god' and Skt. Pūṣān- 'god who protects and augments the herds', which can go back to an ablauting *pēh₂us-ōn, *puh₂s-n-ēs. The word is probably derived from the active participle suffix plus an individualizing n-suffix (Pronk 2015: 327f).

3.1.8 *pieh₂u- 'strike, knock'

Several forms can be mentioned here, not all of which are necessarily cognate. We find full-grade Lith. pjāutī 'cut' < *pieh₂u-, a yod present without metathesis: Gr. παίω 'strike, hew, hit', πταίω 'nudge, crash into, stumble', Lat. paviō < *pih₂u-ie/-o-. The -i- was probably lost regularly in Latin (cf. Hackstein 1992; I would rather keep ToB pyāk- 'strike' separate.). With metathesis, we find Lith. pjūklas 1 'saw', and slightly more speculatively CLuw. pūya- 'pound, crush' < *piuh₂-ie/-o-?

3.1.9 *terh₂u- 'overcome'

The verb is attested in Hitt. tarhu- as 'prevail, conquer' and Skt. tūrvasi 2sg.act. 'to overcome, overpower'. Here I would simply like to point to the form tarūsas- 'superior' which appears to represent a metathesized *teruh₂-.

3.1.10 *ueh₂i- 'wrap, wind'

Despite LIV: 695, and others, there is no evidence for a full grade *ueh₂i-. Skt. 'cover, wrap, veil, envelop' only attests the zero-grade: pres. vyāyati < *uēh₁-éie-, aor. á-ýyat < *uēh₁-e/-o-, ptc. viṭā-< *uēh₂-i-. The Iranian forms like Sogd. pr-w'-'y- 'wrap up', Sariqoli par-wēy- 'cover, veil' clearly show a full-grade *ueih₁-, *ueh₂i- or *uēh₁-ī-. Lith. vīṭi, 3pres. vēja; Lv. vīt 'twist, wind' are best reconstructed as *uh₁(e)i-, cf. also CS povojž 'fascia'. OCS vēja 'branch', where Sln. vēja speaks against a laryngeal, might have extended-grade, viz. *wēižāi-. Note that a pres. -ēja to an infinitive in -yti is a rare pattern in Lith. so is likely old. A secondary full-grade is found in Lith. viésulas, Lv. viēsuls, ORU. ŭixērž 'whirlwind', SCR. vihār < *ueh₁-ī-.

Other than the Skt. forms, we also find metathesis in Gr. ἰτέα, Hesych. γιτέα 'willow', and the gloss γίς 'belt', if related. Lat. vieō 'plait, weave' probably stands for *uīh₁-ēh₁-ie/-o-, and OIr. imm-fen 'hedge round, enclose' might stand for a nasal present *ui-nh₁-.

3.2 Metathesis in nominal ablaut

3.2.1 *deh₂i-uer- 'husband's brother'

Although this word was already discussed in §2.1, I think it is worth reiterating the facts here. To *deh₂i-ue-r- point Gr. δοήρ, (cf. also late dat.sg. δαυρι), Arm. taygr, Lith. dieveris 1, Lv. diēveris, SCR. djēvēr. Forms such as Lith. dieveris 3sg., -yš 3sg., and Slv. devēr nevertheless point towards accentual mobility. The Germanic forms OHG zeiḥur, OE tacor require *deiḥ₂-. They point to an older *taikwer where laryngeal hardening took place in *RH₂y- (§2.2.7.2). NP (dialect) (h)ēwar, Oss. tiw / tew and Pashto lewār may point to *dh₂ei- (§2.2.3.1), as might Latin. lēvir (§2.2.5.1). We must therefore conclude that PIE possessed an ablauting paradigm, e.g. nom.sg. *dēh₂i-ur, acc.sg. *dh₂-i-er-, gen.sg. *diuh₂r-ēs.

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46 In these two forms, I cannot exclude a non-metathesized *uh₁-ëie-.
47 I have only found the homonym vēťi, vēja 'to pursue', which can easily be analogical, and šēťa, dial. šēja 'inclined, lean'. The productive pattern is nasal presents in this type of verb, cf. usual šēja, and gēja, gēya, 'recover, heal', lēť, lēja 'pour', pēťi, pēja 'become wet, give milk', all of which have, dialectally, variant presents in -ia and -yna, but none in -ēja.
3.2.3 *dh₁-eu-‘gift’ or ‘to give’

The full-grade is found in Lat. lautia ‘state reception’, which most simply reflects *dehy₂-st- with *euv- > -aeuv- (Vine 2006), but if my theory *dh₁- > *l in Latin is correct (§2.2.3.1), we may consider *dh₁eu-et-. Similar is OIr. dása ‘gift, reward’ < *dehy₂-u/*dh₁eu-t-teh₂-. A different full-grade is seen in the Baltic n-stem dovanā, -enā, Lv. dāvana, dāvāna ‘gift’. A metathesized form is seen in Skt. dūvās- ‘gift, obligation, reverence’, which implies the existence of an original paradigm containing *duh₂-s-.

There are also a number of verbal forms, e.g. Lv. dāvāt, OCS -davati’‘give’, Lat. duim, Fal. 3sg. subj. douiad, U 3sg. ipv. purtuvitu, whose derivational history I suspect is heterogenous to the noun above. Nevertheless, the Italic forms seem to imply metathesized *duh₂-.

3.2.3 *gerh₂-ou-‘crane’

Besides the n-stem in Gr. γέρνων, Co. garan, Oss. zæryng, Pash. zána, all ‘crane’, we find an ablauting u-stem noun with nom.sg. gerh₃-ou and gen.sg. grh₂-u-ės in OCS žeravš, Lith. gėrėvė,48 with a metathesized Lat. grūs < *gruh₂-s and perhaps Arm. krunk ‘crane’, cf. Martirosyan 2010: 377. The Latin metathesis is important it must have been formed post-PIE, bus still have pre-dated that vocalization of *r. Less impressed is Gasiorowsky (2013).

3.2.4 *gʷrh₂-u-‘heavy’, *gʷreh₃-u-n-‘millstone’

Gr. βριαρός, Skt. gurū- Go. kaurus*‘heavy’ reflect *gʷrh₂-u-. As with metathesis we should expect nom.sg. *gʷruh₂-s, the nom. was probably analogically reshaped after the oblique cases *gʷrh₂-eu (see the conclusion, below). To B krāmār, Skt. garimān- ‘heaviness’ rather reflect a compound suffix than the vanishingly rare *mr/n-. With metathesis, we find Lv. grūts, Lat. brūtus ‘heavy’ and perhaps Skt. agrū- ‘voluntary, unmarried woman’ < *n-gʷruh₂ (Lubotsky 2013).

With an i-suffix, we have Gr. Hesych. βρι ‘great, strong, fierce’ and βριαρός ‘strong’ < *gʷrih₂-er-ś-, βριţω ‘be laden with’, which connection Beekes (2010: 239) rejects on formal grounds, without considering the possibility of metathesis. Skt. grīśmā- ‘midsummer’ might also belong here (Rasmussen 1989a: 95). All these forms clearly demonstrate that the metathesis pre-dated phonemic syllabification.

3.2.5 *h₁.erh₂-u-‘ploughed(field)’

A u-stem noun is seen in Lat. arvus ‘ploughed’ < *h₂erh₂-u- or *h₂rh₂-eu-o- and potentially OCS ravuna ‘even’ (otherwise to *h₂er-, Pronk 2013: 295) while a derived r/n-stem is seen in OIr. arbor, arbe ‘grain, cereal’, Skt. urvārā- ‘arable field’, etc. Perhaps PIE had a further s-stem with obl. *h₂ruḥ₂-s-, and secondary full-grade *h₂reuh₂-s- in Lat. rūs ‘country, land’, OIr. róe ‘level field’, Av. ravah- ‘space, distance’.

3.2.6 *h₂b³ruḥ₂- ‘eyebrow’

Besides the prevailing zero-grade in the word for (eye)brow – Skt. bhrū-, ḍṛppū, OIr. for-brú, OE brū, Lith. brūvis, ToB purwāne etc., we find a possible full-grade in ON bró, brá ‘eyelid’, OHG, OS brāwa < *h₂b³reh₁-u-, which points to metathesis in the zero-grade. The word for ‘bridge’ may

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48 I presume a BSI paradigm nom. *gérōw, obl. *grōw, with depatalalization before *r in the zero-grade. The Iranian forms prove a palatalovelar in this word.
ultimately be the same word, cf. ON brú ‘bridge’, and derived bryggja ‘pier, quay, bridge’ < *h₂br₃ruH-iah₂-<, cf. full grade Gaul. brīva ‘bridge’. Perhaps also here is briaunā ‘edge, crust’, Lv. braūna ‘scale, flake’. I do not think it can be definitively excluded that the full-grade forms derive from nom.*h₃brēuH-s (Beekes & de Vaan 2011: 209).

3.2.7 *iHu₃s- ‘broth, soup’

The Indo-European word for ‘soup’ is attested in Skt. yūṣ- ‘soup, broth, stock’, OPr. juse. Ru. uxda, Cz. jica, SCR. jīh₄a ‘soup, broth’ all point to a circumflex, i.e. *iHeus-eh₂-. 49 Lat. įūs ‘broth, sauce’ is ambiguous. As I will argue elsewhere, I do not believe that Lith. įūsē is native to this language. We can reconstruct a paradigm nom.sg. *iHēu₃s, gen.sg. *iHu₃s-ēs.

3.2.8 *keh₂u-el- ‘hernia, lump’ / *keh₂u-lo- ‘stalk, bone’

An old l-stem must be reconstructed for Greek, κήλη ‘tumour, rupture, hernia’ < *keh₂u-el- and Att. κάλη < *kh₂u-el-. On haułl, OE hēa₁la most simply reflects *kh₂eu₁-l-, but the implied Schebeablauch can perhaps be avoided (Kroonen 2013: 216), besides, ON hölll apparently reflects *keh₂u₁-lo-. The metathesized zero-grade is seen in Lith. kūla(s) 1 dial. ‘lump, hernia’, CS kyla, SCR. kāla ‘hernia, outgrowth’. The PIE paradigm is comparable to that of ‘sun’. The semantic side of the connection with *keh₂u₁-lo- ‘stalk’ is not very strong. Lith. dial. kūla(s) ‘stalk, leaves’ is probably secondary to ‘lump’. 50

Lith. kāulas ‘bone’, Gr. καυλός ‘shaft, stalk’ is a classic example of Hirt’s law (§2.2.2.2), unequivocally pointing to *keh₂u₁-lo-, with which Lat. caulis ‘stem, stalk’, OIr. cúal ‘faggot’ are consistent. However, Arm. c’awl ‘stem, stalk’, as discussed in §2.2.9.1, might instead reflect *kh₂eu₁-lo-. Alternatively, it can represent a form with s-mobile. Neither solution is particularly attractive.

3.2.9 *kiH₄₁ - ‘dark, grey’

In §2.2.2.1, I argued that RuCS sērō, OCz. sērý ‘grey’ might reflect *k₁h₁₁oi-ro- (after Lubotsky 1989: 56) and be cognate with (i.e. not borrowed from) ON hārr; OE hār ‘grey, hoar’. Perhaps this full-grade is secondary to the more frequent *k₁eh₁₁-, with a mo-suffix in Skt. śyāmá- ‘black, dark-coloured’, Lith. šėmas ‘ash-grey, blue-grey’, and a vo-suffix in Skt. śyāvā- ‘dark-brown, dark’, and possibly OE hēven ‘blue, azure, purple’. The metathesized zero-grade is found in Lith. švys, OPr. sijwan, SCR. švů ‘grey’ < k₁h₁₁-.

3.2.10 *seh₂u₁-n- ‘sun’

The original heterocotile is best preserved in Go. sau₁l, dat. sunnin < *seh₂u₁-el, *suh₂-n- (with pretonic shortening). Variants of the nom.sg. are preserved in Lith. sáulē, Lv. saule < *seh₂u₁-l-, Gr. įlēos < *seh₂u₁-el- Italo-Celtic has preserved a hysterodynamic l-stem nom.sg. *sh₂u₁-ōl > Lat. sól, obl. *suh₂₁- > OIr. súul ‘eye’. Indo-Iranian preserved generalized the zero-grade, cf. OAv. huuaraḥ, gen.sg. xwāng < *suh₂₁-, *sh₂u₁-en-s.

3.3 Final Conclusions

49 Only in the phrase i kūlas/kūlus išeiti, which is said of a plant which has produced leaves, branches, instead of the desired product (e.g. cabbage, swede). LKŻ glosses kūla as ‘stiebas, lapas’ = ‘stem, leaf’, but kūlas as “gumbas” = ‘lump’, with the example Kopūstai i kūlus išejo. Clearly, this is the same word.
To me, the evidence in favour of laryngeal metathesis is conclusive. I have yet to encounter any examples which cannot be explained with the rule *CHIC > *CIHC, and there is no convincing counter-evidence. On this basis, I feel we can safely posit such a rule for PIE. Several forms, e.g. Lv. grūts, Lat. rūs, grús, show that the metathesis must have pre-dated phonemic syllabification. Other forms, e.g. Gr. πῦρ ‘fire’, huuarā are post-PIE forms, and suggest that metathesis was still automatic at the time of their formation. These facts demonstrate that laryngeal metathesis was an automatic phonetic rule during all of PIE.

Metathesis did not appear to occur before PIE *-i-, cf. Skt. sīvyati, Gr. δαίω, Hitt. suye/a-. I also wonder whether it occurred after *-i-, too. I have provided one such example above in *iuHs- (§3.2.7), but a counter-argument is Hitt. mēhur gen.sg. -unas, whose inflection points to an old static noun (Kloekhorst 2008: 567) *meih₂ur/n-. Under my formulation, we should expect metathesis to *meiuH₂-, and as an isolated static noun, there would be no model for restoration. Nevertheless, the noun need not be dated to PIE, as it has no direct cognates. It could therefore have been formed within Anatolian to a hypothetical verbal root *meih₂- (acc. to Kloekhorst l.c., here belongs Lat. meō ‘proceed’).

Potential counter evidence is found in u- and i- stem nominals derived from laryngeal-final roots, such as *gʷrh₂-u- ‘heavy’ (§3.2.4), *tnh₂-u- ‘thin’, *plth₂-u- ‘wide’, *plh₁-u- ‘many’. In each case, we should expect metathesis in the strong cases, viz. *gʷruh₂s, *tnuh₂s, etc. Which we generally do not find. However, restoration most likely occurred in the daughter languages on the basis of the oblique cases, where metathesis did not occur. Also note that metathesis would not have occurred in feminine forms with an i-suffix, e.g. Skt. prthivi, Gr. Πλαταία. Occasionally, traces of the metathesized strong case-forms have been left, e.g. Skt. sup. purūṭāma << *pluh₁-tmH-o- and Skt. tanū-’body, self’, if derived from *tnh₂-u-.

I therefore conclude that laryngeal metathesis was indeed a PIE phenomenon and should be duly taken into account in future etymological treatments.
Bibliography


IEED = *Indo-European Etymological Dictionary*. Leiden University. (Unpublished)


