

# Laryngeal Developments: A Survey

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Here I give a survey of the developments of the laryngeals in the different branches of Indo-European. In recent years many new insights have been gained, so that a survey of the results may be useful.<sup>1</sup> (I have not seen the articles in the present volume.) I discuss the following languages:

Sanskrit 61	Hittite 79	Celtic 93
Iranian 66	Tocharian 85	Germanic 96
Greek 70	Balto-Slavic 88	Albanian 100
Armenian 76	Latin 90	(Phrygian 105)

This is a *personal* view. I have accepted and rejected what I find probable or improbable; the most improbable ideas I have simply not mentioned. As the survey is vast and complicated, I may have overlooked some points. I will be grateful for additional evidence to complete the picture. To save space I have cut down references to a minimum.

In order to present a picture as complete as I could, I follow for each language the same order, viz.:

<i>H</i> -	<i>-H</i>	<i>-CH-</i>	<i>-VH-</i>	<i>-RH-</i>
1a <i>HC-</i>	2a <i>-CH</i>	3.1a <i>CHC</i>	3.2a <i>VHC</i>	3.3a <i>RHC</i>
1b <i>HV-</i>	2b <i>-VH</i>	3.1b <i>CHV</i>	3.2b <i>VHV</i>	3.3b <i>RHV</i>
1c <i>HR-</i>	2c <i>-RH</i>	3.1c <i>CHR</i>	3.2c <i>VHR</i>	3.3c <i>RHR</i>

and 4. *HRH* and 5. *HH*.

*R* = *i*, *u*, *r*, *l*, *m*, *n*. When further distinction must be made, I use *i*, *r*, *n* for (*i*, *u*), (*r*, *l*), (*m*, *n*). With *R* I always mean *R* before or after consonant (where it *could* be vocalic).

I do not distinguish between *r* and *ṛ*, *i* and *ī*, as this leads to misunderstandings. As *r* and *ṛ* are one phoneme, they should be noted with one sign. Therefore Eva Tichy's proposal to distinguish *H* and *H̄*, and even *ə*, is most unhappy (see note 2). Especially with the laryngeals the notation will lead to confusion (*H̄* being taken as a second phoneme). Thus, a notation

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<sup>1</sup>Though we have now Mayrhofer's rich description (Idg. Gr. 1986, 121–150) — the author was so kind as to send me his proofs — I think that my survey may have some use because of its different organisation, its different emphasis and a few different views.

$CRHC$  blocks a right understanding of the development of Tocharian,  $CRaC$ , which derives from  $[CR\check{H}C]$ . A notation  $eH\check{g}C$  blocks the understanding of Tocharian and Germanic  $-ēnC$ , where the  $n$  was not vocalic (whereas it was in Indo-Iranian, e. g.  $/vaHata-/$  'wind' <  $*h_2ueh_1nto-$ ). Thus  $h_1\check{g}C-$  blocks the understanding of Gr.  $en-$ , which requires  $[h_1nC-]$ . In PIE there was only one phoneme,  $H$ ,  $r$ ,  $n$  etc., the vocalization was different in the separate languages.

I assume three laryngeals,  $h_1$ ,  $h_2$ ,  $h_3$ . (On the nature of these sounds, probably  $ʔ$ ,  $ʷ$  and  $ʷ$  respectively, see my lecture at the VIIIth Int. Conference for Hist. Lingu. in Pavia 1985.)

The colouring of  $e$  by  $h_2$  and  $h_3$  will not be illustrated. (But see on Hittite, Armenian, Albanian and Sanskrit for the possibility that  $h_3e$  was not identical with  $h_3o$ .) The habit of writing  $h_2a$  and  $h_3o$  instead of  $h_2e$  and  $h_3e$  makes the morphology of PIE less transparent and denies part of the progress made possible by the laryngeal theory (and phonological notation). I assume that  $h_2$  did not affect  $o$ .

In those languages where  $HV-$  gave  $V-$ ,  $-VH > -\bar{V}$ ,  $VHC > \bar{V}C$  and  $VHV > \bar{V}$ , I will not give illustrations.

One phenomenon could not be seriously represented, because of lack of basic studies, the metathesis. In many languages a sequence  $HR$  (only  $i$ ,  $u$ ?) was changed to  $RH$ . The problem is under what conditions in which languages. This phenomenon had far-reaching consequences as new full grades of the type  $eRH$  were made on the basis of the metathesized form. It seems that Hittite did not know this development, whereas e. g. in Sanskrit it was widespread, probably regular.

I assume that PIE had no phoneme  $a$ ; and no initial  $r-$  (always  $HR-$ ; cf. Lehmann, *Lg.* 27, 1951, 13 – 17); and no reduced grade  $e$ ; and no initial vowels (i. e.  $e-$ ,  $o-$ ;  $i-$  and  $u-$  in zero grades were possible).

## PIE DEVELOPMENTS

I assume that the laryngeals were in all positions preserved down to the separate languages, perhaps with the following exceptions.

1. The loss of a laryngeal in the second member of compounds, and after reduplication, may be of PIE origin, as traces of it are found in several languages.

$*(neuo-)ǵno-$  <  $*-ǵnh_1o-$  'born', Gr. *neognós*, Goth. *niuklahs* <  $*-kna-ha-$ , *ainakls* <  $*-knaz$ , Lat. *prīvi-gnus*, Gaul. *Trutiknos*, Av. *ā-zna-* 'innate', Phryg. *ouegnōi* <  $*sue-gno-$ .

But Skt. *kāma-pra-* 'fulfilling desires' <  $*plh_1o-$  may not be of PIE date.

\**ǵi-ǵn-o-* < \**ǵi-ǵnh<sub>1</sub>o-* ‘be born’, Gr. *gígnomai*, Lat. *gignere*.  
But Skt. *jajāna* rather analogical than from \**ǵégone*.

However, traces of this development are very rare. Later the laryngeal may often have been restored.

## 2. *eh<sub>2</sub>m* > *ām*

In the accusative, *-eh<sub>2</sub>m* became *-ām* with non-acute intonation in Lithuanian (Stang’s law; Eichner, Lautgesch. u. Etym. 1980, 129 n. 41). Therefore the laryngeal must have disappeared very early, perhaps already in PIE. However, as the acc. pl. has acute intonation (from where it spread to the *o*-stems), it did not disappear in \**eh<sub>2</sub>ns*.

Voicing of a preceding stop by *h<sub>3</sub>* has been assumed in:

\**pi-ph<sub>3</sub>-e-ti* ‘drink’, Skt. *píbati*, Arm. *əmpem* (< \**pi-n-b-*), OIr. *ibid*, Lat. *bibit*.

This is the only example (except perhaps Gr. *ógdoos*, which is much more doubtful), so the development remains uncertain. And it becomes impossible if we realize that voice was not distinctive in PIE (the easiest interpretation of the glottalic theory is a system *p* : ‘*p* : *p<sup>h</sup>*). Kortlandt thinks that the root of ‘to drink’ had *b-* (in an earlier phase of PIE), which became *p-* in anlaut: \**bi-bh<sub>3</sub>-e-* > \**pi-bh<sub>3</sub>-e-*; thus Thurneysen, IF 22, 1908, Anz. 65.

## SANSKRIT

### 1a. *HC-* > *C-*

*rudhirá-*, *laghú-*, *meha-*: Gr. *omeíkhō*, *meghá-*: Gr. *omíkhlē*; *márjmi*, *nár-*, *náva* ‘nine’, *nakhá-*, *vásati*, *varṣá-*, *stár-*, *su-*, *dánt-*.

The laryngeal can be seen in:

- 1) a long augment: *ānat* < \**h<sub>1</sub>e-h<sub>1</sub>nek-*;
- 2) reduplication: *íja-* < \**h<sub>2</sub>i-h<sub>2</sub>ǵ-* from *aj-*; *vāvṛṣ-* ‘rain’ < \**h<sub>1</sub>ue-h<sub>1</sub>urs-*;
- 3) negative adjectives: *ásat-* < \**n-h<sub>1</sub>snt-*, *ādhrá-*;
- 4) length in compounds: *viśvā-nara-* ‘belonging to all men’;
- 5) intensive reduplication type \**varī-vart-* < \**Huer-Huert-*.

### 1b. *HV-* > *V-*

*ákṣi-* ‘eye’ < \**h<sub>3</sub>ek<sup>w</sup>-*.

*áyu-* ‘life(time)’ < \**h<sub>2</sub>oiu-*; Brugmann’s law shows that the *o* was not changed by *h<sub>2</sub>*.

*h<sub>3</sub>e-* may have been distinct from *-o-* in that it did not follow Brugmann’s law: *ánas-* ‘cart’ < \**h<sub>3</sub>enos*, not \**ānas*.

**1c. HR- > R-**

*ǵjrá-* < \**h<sub>2</sub>rǵro-*;

*abhi* < \**h<sub>2</sub>mbhi*.

The special forms with augment like *áicchat* < \**h<sub>1</sub>e-h<sub>1</sub>is-*; *árdhnot* < \**h<sub>1</sub>e-h<sub>1</sub>rdh-* are due to the laryngeal. (The laryngeal must have been retained (restored) analogically, as elsewhere \**-eh<sub>1</sub>i-* etc. gave a short diphthong. See 3.2c.

**2a -CH > -Ci**

*-mahi* < \**-medhh<sub>2</sub>*;

ntr. pl. *-i* < *-h<sub>2</sub>*;

1 sg. middle *-i* < *-h<sub>2</sub>*;

*ásthi* ‘bone’ < \**HostH*.

**2b -VH > -V̄**

instr. sg. *-ā* < \**-eh<sub>1</sub>*.

Shortening in sandhi before vowel, in pausa (vocative), or at the end of a pada may be explained through loss of a laryngeal:

*vṛki*, *tanu* voc. sg.; *asura* voc. du. < *-ih<sub>2</sub>*, *-uh<sub>2</sub>*, *-oh<sub>1</sub>*;

*prayukti* instr. sg. < *-ih<sub>1</sub>*.

**2c. -RH: iH > ī; ṛH > īr/ūr?; ṷH > ā**

*devī* nom. sg. < *-ih<sub>2</sub>*;

*śīrṣā* ‘heads’ < \**krh<sub>2</sub>sn-h<sub>2</sub>*.

**3.1a CHC > CiC, rarely CC**

Rather rare in the first syllable:

*pitár-* < \**ph<sub>2</sub>ter-*;

*sthitá-* for \**stita-* < \**sth<sub>2</sub>to-*;

*jihmá-* ‘oblique’ < \**žižhma-* < \**dižhma-* < \**dh<sub>3</sub>ǵhmo-*; Gr. *dokhmós*;

Often in second syllable, from set-roots (TeRH-):

*ániti* ‘breathe’, *ánila-* < \**h<sub>2</sub>enh<sub>1</sub>-*; Gr. *ánemos*;

*arítár-* ‘rower’, \**h<sub>1</sub>erh<sub>1</sub>-ter-*; Gr. *erétēs*;

*kravíṣ-* ‘flesh’, \**kreuh<sub>2</sub>s-*;

*átārīt* 3 sg. *s*-aor. \**tāris-* < \**tērh<sub>2</sub>s-*;

*pu-n-ī-mas* 1 pl. pres. ‘cleanse’, \**pu-n-H-*;

Also after non-resonants:

*iṣírá-* ‘vigorous’, \*(H)*ish<sub>1</sub>ró-*; Gr. *hierós*;

*gabhīrā* ‘deep’, \**gmbhHro*-; Av. *jafra*.  
*duhitār* < \**dhugh<sub>2</sub>ter*-; Gr. *thugātēr*;  
*pṛthivī* ‘broad’ for \*-*ti*- < \**plth<sub>2</sub>uih<sub>2</sub>*, to *pṛthú*- < \**plth<sub>2</sub>u*-.

As a suffix:

*jāni*- ‘wife’, \**g<sup>w</sup>enh<sub>2</sub>*;  
*pathī-bhis* < \**pnt-H-bhi*.

-CC is rare:

1) *vānitā* (RV 3.13,3) but pl. *vantāras* suggests that the laryngeal was not vocalized in some forms of the paradigm. *duhitār*- must have its *h* < *ǵh* from forms where *H* was not vocalized. (Note that this proves that aspirates originated also before consonant.) Cf. on Avestan. The question is complicated by the fact that in some cognate forms the laryngeal was phonetically lost (*vana*- < \**u(e)nH-e/o*), on which *aniṭ* forms could be formed, and that PIE seems to have had doublet roots with and without a final laryngeal.

2) *asnas* gen. ‘blood’, \**h<sub>1</sub>esh<sub>2</sub>nos?*; rather analogical after *asṅk* < \**h<sub>1</sub>esh<sub>2</sub>-ǵ* (Hitt. *ēšhar*), or from gen. \**h<sub>1</sub>(e)sh<sub>2</sub>-en-s* > \*(*a*)*sans*.

3) Before *i* the laryngeal seems never to have been vocalized. (Pinault’s work on this subject was not accessible to me.)

*syāti* ‘bind’, \**sHiéti*; Hitt. *ishiyanzi*.

*kravīṣ* but *kravyá*-;

*sákhā* < \**sok<sup>w</sup>h<sub>2</sub>-ōi* but dat. *sákhye* < \**sok<sup>w</sup>H-i-ei* (where the absence can easily be analogical).

4) In compounds we have:

*devá-tta*- < \**dh<sub>3</sub>to*-.

### 3.1b CHV > CV

*jānas* < \**ǵenh<sub>1</sub>os*;

*punánti* < \**punH-enti*.

The following traces are found:

1) Preceding stops became aspirated:

*mahás* gen., \**meǵ-h<sub>2</sub>-ós*;

*pathás* gen., \**pnt-H-ós*.

-*tha* 2 pl., \**-th<sub>1</sub>e* (Hitt. *-tani* does not prove a-vocalism; note that it occurs in the primary ending.)

*sádhiṣ*, *sadhás-tha*- ‘seat’, \**sed-h<sub>1</sub>*- (*h<sub>1</sub>* because of Lat. *sēdēs*).

Instances with labial are not found; perhaps *raphitá*- ‘miserable’.

2) Apparent exceptions to Brugmann’s law point to a postconsonantal laryngeal:

isolated words: *jána-* 'man', \**gónh<sub>1</sub>o-*; Gr. *gónos*;  
 causatives: *janáya-*, \**gónh<sub>1</sub>eie-*;  
 compounds: *á-hava-* 'invitation', \**-ghouHo-*;  
 1 sg. pf.: *cakára* < \**k<sup>w</sup>e-k<sup>w</sup>or-h<sub>2</sub>e*.

### 3.1c CHR

*CHiC* > *CiHC*

*CHrC* > *C<sub>r</sub>C?*

*CHnC* > *CaC*

*pítá-* 'drink', \**piHta-* < \**ph<sub>3</sub>itó-*.

### 3.2a VHC > $\bar{V}C$

*VH* before voiced unaspirated stop seems to have given *VC* (without lengthening) before a second consonant:

*pajrá-* 'solid' from *pāj-* < \**peh<sub>2</sub>ǵ-*;

*yaj-* 'sacrifice', \**ieh<sub>2</sub>ǵ-*; Gr. *hágios* < \**ih<sub>2</sub>ǵ-*.

Probably the laryngeal coalesced with the glottalic element of the voiced stop (*g* was PIE *ǵ*) with the effect that it disappeared as a (separate) segment (Lubotsky, MSS 40, 1981, 133–138).

### 3.2b VHV > $\bar{V}$

*bhás* 'light' = /*bhaas*/ < \**bhaHas*, \**bheh<sub>2</sub>os*;

*gnás* 'wife' gen. = /*gnaas*/ < \**gnaHas* < \**g<sup>w</sup>neh<sub>2</sub>-* (with secondary *-as* < *-os* for *-s*).

*-ām* gen. pl. ending = /*-aam*/ < \**-aHam*. This was an IIr. development (Slav. -ǔ, Balt. -ų, Lat. *-um*, OIr. -Ø < \**-om*).

### 3.2c VHR

*VHi* > *Vi* (traces of disyllabic forms)

*VHr* > (no evidence; cf. 1c)

*VHn* > *Va* (if possible) with contraction (traces of disyllabicity)

*iyésthā-* = /*jyaiṣṭha-*/ < \**jyaH-istHa-*.

As other forms (*dhenú-*, *stená-*) are monosyllabic, the laryngeal/hiatus may have been preserved longer before strong morpheme boundary (like *-istha-*).

(There developed no *y* before *i*; *rayim* does not reflect \**Hreh<sub>1</sub>-im* directly.)

vāta- 'wind' /vaata-/ < \*h<sub>2</sub>ueh<sub>1</sub>nto-.

### 3.3a RHC

CiHC > CīC

CrHC > CīrC; CūrC in the neighbourhood of labials (p etc., labio-velars, m, ũ)

CnHC > CāC

dīrghá- 'long', \*dlHgho-;

tīrṇá- 'crossed', \*trh<sub>2</sub>no-;

śīrsṇ-ás gen. 'head', \*krh<sub>2</sub>sn-os; Gr. krāata;

pūrṇá- 'full', \*plh<sub>1</sub>no-;

pūrva- 'first', \*prHuo-;

jātá- 'born', \*ǵnh<sub>1</sub>to-;

sātá- 'gained', \*snHto-;

uttāná- 'stretched out', \*tnh<sub>2</sub>no-.

### 3.3b RHV

CiHV > CiV

CrHV > CīrV (CurV near labials)

CnHV > CanV

tanúas gen. 'body', \*-uh<sub>2</sub>os;

tiráti 'to cross', \*trh<sub>2</sub>e-ti;

śíras 'head', \*krh<sub>2</sub>os;

purás 'before', \*prh<sub>2</sub>os;

purú- 'much' < \*plh<sub>1</sub>u-;

urú- 'broad', \*urHu-; Av. vouru- < \*varu-;

uráṇa- 'ram', \*urh<sub>1</sub>en-; Gr. arén;

tanú- 'thin', \*tnh<sub>2</sub>u-;

sánam a-aor., \*snH-o-m;

hváyati 'call', RV /huayati/ < \*ghuHeieti;

In compounds the laryngeal may have been lost:

á-bhva- 'monster' < \*n-bhuh<sub>2</sub>o- (not \*abhva-);

kāma-pra- 'fulfilling wishes' < \*plh<sub>1</sub>o-?

sú-ṣuti- 'good birth-giving': sūte;

The same is found after reduplication:

carkṛtí- 'praise': kīrtí- id.

The latter instances seem of IIr. date, the earlier have parallels in other languages, so may be of PIE date. Did it affect only zero grades (CRH)?

The laryngeal may often have been restored.

(In the first member it is not well documented: *gru-muští-* 'handful', with *\*g<sup>w</sup>rh<sub>2</sub>u-* 'heavy', which occurs only once (beside *guru-*), may be just a mistake for *guru-*.)

### 3.3c RHR = RHR

*CiHiC* > *CīC*

*CiHrC* > *CirC?*

*CiHnC* > *CiyaC?*

*CrHiC* > *CiriC?*

*CrHrC* >

*CrHnC* > *CiraC?*

*CnHiC* > *Canic sanutar* 'without' if < *\*snH-u-*

*CnHrC* > *CanrC?* *CarC?*

*CnHnC* > *CanaC?* *CaaC?*

*CuHiC* > *-uvi-*:

*tuvi-* 'powerfully' < *\*tuHi-*; cf. Av. *təvīš* < *\*teuH-s*.

*\*-uHr* is found in *svār = súar* 'sun' < *\*suHr* < *\*sHur*; cf. Gr. *ēēlios* < *\*seh<sub>2</sub>u-*.

### 4. HRH: HRHC- > *īrC-*; HRHV > *irV*

*īrmá-* 'arm' < *\*HrH-mo-*; Goth. *arms*;

*īrmá* 'quietly' < *\*HrH-mo-*;

*īrsyá* 'envy' < *\*HrHs-*;

*iláyati* 'be quiet' < *\*HrH-eie-ti*;

*irasyáti* 'to envy' < *\*HrHes-ie-*; Av. *aras-ka-*.

### 5. HH

*tman-* < *\*h<sub>1</sub>h<sub>1</sub>tm(e)n-* from *átmā* < *\*h<sub>1</sub>eh<sub>1</sub>tmōn*, OHG *átum*.

## IRANIAN

In principle I discuss the Gathic situation (Gathic forms not labelled; L. = Late). I assume that in Gathic the laryngeal was represented by a separate phoneme, probably a glottal stop, *ʔ*. Cf. my grammar of Gatha Avestan (Leiden 1988).

**1a. HC- > C-**

*nar-*, *nāman-*, *vāta-*, *star-*;

*yaos̄* gen. 'life(time)' < \**h<sub>2</sub>ieus* from *āyu* < \**h<sub>2</sub>oiu*.

The former presence of a laryngeal can still be seen in:

- 1) compounds: *kamnānar-* 'having few men' < \**kamna-Hnar-*;
- 2) reduplication: see under 1c.

**1b. HV- > ?V-**

The ? is shown by hiatus after the augment and in compounds:

*as* /*ʔaʔas*/ 'he was' < \**h<sub>1</sub>e-h<sub>1</sub>es-t*;

*ārəm* /*ʔaʔaram*/ 'I reached' < \**h<sub>1</sub>e-h<sub>3</sub>er-m*;

*vištāspa-* /*višta-ʔaspa-*/;

*parāhūm* /*para-ʔahum*/;

*xvāēta-* 'easily passible' ? /*hva-ʔita-*/.

**1c. HR- > ?R**

The ?R can be seen in reduplication:

*rārəš(y)a-* /*raʔrš(y)a-*/ 'estranged' < \**Hra-Hrs-*;

*irəidyāi* 'rise' /*i-ʔrdyāi*/ < \**h<sub>3</sub>i-h<sub>3</sub>r-*.

**2a. -CH > -Ci**

*-maidī* 1 pl. middle ending, \**-medhh<sub>2</sub>*;

*-i* 1 sg. middle ending, \**-h<sub>2</sub>* (*aojī*);

*-i* ntr. pl. ending, \**-h<sub>2</sub>* (*sāxvənī* /*sāhvani*/).

**2b. -VH > -V̄**

*-ā* 1 sg. pres. ind. < \**-oH*.

**2c. -RH**

*-CiH* > *-Cī*

*-CrH* > *-Car?*

*-CnH* > *-Cā?*

*-ī* nom. sg. f. < \**-ih<sub>2</sub>* (*vaṇuhī* /*vahvī*/);

*-ū* instr. sg. < \**-uh<sub>1</sub>* (*vohū*).

**3.1a CHC > CiC, CC**

CiC always in final syllable (cf. 2a):

/*jani-*/ 'wife' \**g<sup>w</sup>enh<sub>2</sub>*;

*tāvīš* /*taviš*/ 'strength' < \**teuHs*.

CC always in inlaut:

/mrautu/ 'he says', \*mleuH-; Skt. bráviṭi;  
 /vrntai/ 'he chooses', \*ulnHtoi; Skt. vgnīté;  
 /vanta-/ 'praise', \*uenH-; Skt. vānitar-;  
 /padbiš/ instr. pl. 'path' < \*pnt-H-bhi; Skt. pathíbhī.

In initial syllable the situation is not certain:

/siša-/ aor. 'teach' may be \*kHs- (root sāh- < \*kéHs-) or from a root with -i-;

L. hita- 'bound' may have its -i- from other forms (cf. pf. \*sišāya, haētu-, Skt. sétu-);

ptā 'father' must be \*ph<sub>2</sub>tēr, but dat. piθrē has an i.

stāta-, dāta- etc. replaced \*stta-, \*tta- rather than \*stita-, \*dita-.

The word for 'father' must have had forms with and without i. Gathic has ptā, ptaram and piθrē, which is probably older than fədrōi < \*ptrai. Therefore the laryngeal was probably vocalized (in IIr.) before two consonants.<sup>2</sup> Note that this rule may also obtain for Armenian. Skt. duhitár-, which has h < gH and i < H, can be explained in the same way.

The development in IIr. may be represented as follows:

	in	init.	medial	final	syllable
PIE	H		H		H
PII	i	H	i	H	i
Ir.	i	∅	i	∅	i
Ind.	i	i, ∅	i	i, ∅	i

### 3.1b CHV > CV (a voiceless stop became a spirant)

/pai/ inf. of pā- from \*pHai (with restored p?);

/dadat/ subj. pres. of /dadāmi/ < \*da-dH-a-t;

/prθu-/ 'broad', \*plth<sub>2</sub>u-, Skt. pṛthú-;

/paθah/ gen. 'road' \*pntHos, Skt. pathás;

/hušaxā/ 'good friend' < \*sek<sup>w</sup>Hōi, Skt. sakhā́.

<sup>2</sup>Eva Tichy (MSS 45, 1985, 229-44) thinks that the i came from the vocative \*pítar (not attested in Avestan), where the laryngeal was vocalized under the stress. This is improbable. First, the vocative was often unstressed. Then, the question arises whether a laryngeal could be stressed. If so, it would be ununderstandable why there never was a stressed H (or ʰ) that gave Ir. i or Germanic, Balto-Slavic a in interior syllable. — Against her notation H : ʰ see the introduction. She proposes to write stressed H (i. e. ʰ) as ə, which is unnecessarily complicated: it would just be an allophone of H (and it could be noted Ĥ, if it existed). — Her suggestion that H had become a (very short) vowel in PII, makes it only harder to understand that it disappeared in Iranian. — Note that she needs another explanation for duhitár-.

There is no instance of  $f < pH$ .

It was always assumed that the laryngeal aspirated a preceding stop in PII, and that these aspirates developed into spirants in Iranian. However, a serious objection is that the voiced aspirates, e. g.  $dh$ , did not become spirants. Therefore, the spirants probably developed from voiceless stop before consonant, as always in Iranian:  $tH > \vartheta H > \vartheta$  like  $tr- > \vartheta r$ .

The laryngeal explains apparent exceptions to Brugmann's law:  
*mraoī /mravi/* pass. aor. 'speak'  $< *mrauH-i$ .

**3.1c CHR** No evidence.

**3.2a VHC**  $> \bar{V}C$

The effect of Lubotsky's rule (see Skt. 3.2a) is seen in Iranian as well.

*/yasna-/* 'prayer'  $< *ieh_2\acute{g}-$ ;

*/mada-/* 'intoxicating drink'  $< *meh_2d-$  (originally athematic?).

**3.2b VHV**  $> V^?V$  almost without exception

gen. pl. ending */-a?am/*;

*/da?ah/* 'gift'  $< *deh_3-os$ ;

*/mazda?-am, -ah, -ai/acc., gen., dat.* 'wise'  $< *mns-dheh_1-$ ;

subj. 2 sg. */da?-a-hi/* etc.  $< *deh_3-e-si$ ;

Exceptions must be explained (see my grammar). Cf. under 3.2c and 3.3b. Note that, as ? was a phoneme, it may have been analogically introduced or removed.

**3.2c VHR**

*VHiC*  $> V^?iC$  (?)

*VHrC*  $> V^?rC$  [*V^?rC*]; cf. under 1c;

*VHnC*  $> V^?aC$

*/ādā?-i/* loc. sg. 'gift';

*/\varthetavai, hvai/* nom. sg. f. 'yours, her own'  $< *tueh_2-i, *sueh_2-i$  seem to have lost ? (they are monosyllabic);

*/va?ata-/* 'wind'  $< *h_2ueh_1nto-$ ;

*mā /ma?ah/* 'month'  $< *meh_1ns$ .

*/dya?am/* 1 sg. opt. aor.  $< *dH-ieh_1-m$ .

**3.3a RHC:**  $iH > \bar{i}$ ;  $rH > ar$ ;  $nH > \bar{a}$

*/darga-/* 'long'  $< *dlHgho-$ ;

*/varta/* 'he chose'  $< *ulHto$ ;

*/garbiš/* instr. pl. 'song'  $< *g^wrH-bhi$ ; Skt. *gīrbhīś*;

/ustāna-/ 'stretched out' < \*-tnH-no-;  
L. zāta- 'born' < \*ǵnh<sub>1</sub>-to-.

### 3.3b RHV: i<sup>?</sup>V, ar/nV

/fri<sup>?</sup>a-/ 'friendly' < \*priHo-, Skt. priyá-;  
/zu<sup>?</sup>aya-/ 'call' < \*ǵhuH-eie-, Skt. h(u)váya-;  
/tanu<sup>?</sup>-ah, -ai/ gen., dat. 'body' < \*-uH-os, - ei;  
/tarah/ 'through' < \*trHos, Skt. tirás;  
/paru-/ 'much' < \*plh<sub>1</sub>u-, Skt. purú-;  
/garah/ gen. 'song' < \*g<sup>w</sup>rH-os, Skt. girás;  
/hana-/ them. aor. 'win' < \*snH-o-, Skt. sana-.

### 3.3c RHR

CiHiC > Ci<sup>?</sup>iC  
CiHrC > Ci<sup>?</sup>rC (see 1c)  
CiHnC > Ci<sup>?</sup>aC  
CrHiC > CariC  
CrHrC > ?  
CrHnC > CaraC?  
CnHiC > CaniC?  
CnHrC > CanrC?  
CnHnC > CanaC?

### 4. HRH-C > aRC

HRH-V > aRV?  
L. arəmə 'arm' < \*HrHmo-.

### 5. HH No evidence.

## GREEK

### 1a HC- > e/a/oC- (except before i-?)

eruthrós 'red', \*h<sub>1</sub>rudhros, Lat. ruber;  
elakhús 'small', \*h<sub>1</sub>lnghu-, Skt. raghú-;  
amélgō 'to milk', \*h<sub>2</sub>melg-;  
áesa aor. 'to dwell', \*h<sub>2</sub>ues-, Skt. vásati;  
akoúō 'hear', \*h<sub>2</sub>kous-, Goth. hausjan;  
eu- 'well', \*h<sub>1</sub>su-, Skt. su-;

ēítheos 'widower' will have ē- metri causa for \*e(w)itheos.

(In Dev. 68f add: (di-)anekés, ?ameúsasthai, (ónoma), ?olophúromai, áetmon, ēítheos, Myc. ewepesomena, años (\*h<sub>2</sub>sus-; Lubotsky, KZ 98, 1985, 1-10);

delete: ? with *ethélō*, *eu-*; strike *eeíkosi*, *ophrūs*?)

Whether *H<sub>i</sub>-* resulted in *z-* is still uncertain:

*zeiaí* ‘grain’, \**Hieu-*?; cf. Skt. *sūyávasas-*;

*zugón* ‘yoke’, \**Hiugom?*; cf. Skt. *āyunak*.

It seems that a laryngeal was vocalized also before *ul-* (and *ul̥-*):

*eúlēra* ‘reins’ if \**h<sub>1</sub>ulēr*, Lat. *lōrum*;

*aulak-* ‘furrow’ if \**h<sub>2</sub>ulk-*, cf. \**awolk-* (in *ōlk-*) from \**h<sub>2</sub>uolk-* or \**h<sub>2</sub>ulk-* with Myc. vocalization.

The idea that Greek *Vr-* might have a real prothesis, is an unnecessary assumption; and an impossible one if PIE did not have *r-*, as I think.

Non-vocalization is rare; Dev. 254. In *lēnos* < \**h<sub>2</sub>/<sub>3</sub>ulh<sub>1</sub>/<sub>2</sub>n-* the first laryngeal disappeared perhaps through dissimilation. Dor. *wíkati* did not contain a laryngeal (but \**dui-* = \*’*dui-* with glottalization became \*’*ui* = \**h<sub>1</sub>ui-*). *loigós* ‘disease’ must be separated from *olígos*. *hugiēs* < \**h<sub>1</sub>su-* is unexplained. For loss of the laryngeal in a compound there is little evidence ((*a*)*steropé* is non-IE; see MSS 40, 1987, 15ff.).

It may be that after *s* movable the laryngeal disappeared: *améldein*: *méldomai* = OE *meltan* : OIc. *smelta*.

**1b.** *HV* > *V-* No special developments.

**1c.** *HR-*: *i/uC-*; *e/a/or/nC-*

*itharós* ‘clear, bright’ < \**h<sub>2</sub>idh-*.

The idea that *HuC-* became *VuC-* (Peters, Unters.) has not been proven. In the opposite direction point *hupó*, *hupsēlós*, and *huphaínō* (Kratylos 26, 81–2, 106ff). Normier also posits *Hi-* > *ai-* (KZ 94, 1980, 259 n. 30; 261 n. 41; 269 n. 74) without serious argumentation.

*amphí* ‘around’ < \**h<sub>2</sub>mbhi*; Skt. *abhi*;

*érkhomai* ‘to go’ < \**h<sub>1</sub>r-ske-*, Skt. *gchāti*, Hitt. *arskizzi*.

This development (Dev. 132) is called the “Lex Rix”.

**2a.** *-CH* > *-Ce/a/o*

*-metha* 1 pl. midd. < \**-medhh<sub>2</sub>*, Skt. *-mahi*;

*-a* nom. pl. ntr. < \**-h<sub>2</sub>(ménea)*;

*-e* nom. du. m. < \**-h<sub>1</sub>(paĩde)*.

**2b.** *-VH* > *-V̄*

*-ō* 1 sg. pres. < \**-oH*; Lith. *-ù*;

*-ō* nom. du. *o-*stems < \**-oh<sub>1</sub>*.

2c. -RH: CiH > Cye/a/o; CrH > Crē/ā/ō

-ya (trápeza) nom. sg. f. < \*ih<sub>2</sub>; Skt. devī;

ósse nom. du. n. < \*ok<sup>w</sup>ie < \*h<sub>3</sub>ek<sup>w</sup>-ih<sub>1</sub>; Lith. akì;

doūra nom. pl. n. < \*dorwa > \*doruh<sub>2</sub>;

-mēn < -mān 1 sg. middle for \*-mā < \*-mh<sub>2</sub>. The form must be the post-consonantal form, as -Vm<sub>h</sub><sub>2</sub> gave -Vma. The long a cannot be explained otherwise. (kārēna < \*krh<sub>2</sub>esnh<sub>2</sub> probably has short -a analogically.)<sup>3</sup>

3.1a CHC > Ce/a/oC

thetós 'put' < \*dhh<sub>1</sub>tos;

hierós 'holy' < \*(H)ish<sub>1</sub>ros, Skt. iṣirá-;

theós < \*thes-, thés-phatos 'god-said' < \*dhh<sub>1</sub>s-, Lat. fānum < \*fas-nom;

phatós 'said' < \*bhh<sub>2</sub>tos, cf. phāmí;

dotós 'given' < \*dh<sub>3</sub>tos, Lat. datus;

dokhmós 'aslant' < \*dh<sub>3</sub>ghmo-.

It has been assumed that a laryngeal was not vocalized if the preceding syllable had o.

tolmáō 'dare' < \*tolh<sub>2</sub>-m-;

pórñē 'prostitute' from \*perh<sub>2</sub>- 'to sell';

oūthar 'udder' < \*h<sub>1</sub>ouHdh-r (or \*h<sub>1</sub>oHudh-r), Skt. údhar, SCr. vīme.

koūros 'boy', apparently from \*korh<sub>1</sub>uo-, can be explained from an earlier u-stem: \*korh<sub>1</sub>-u- (cf. kóruks?); Lubotsky diss. Counterexamples are few (hómados, kónabos, pólemos?, dolikhós if \*dolh<sub>1</sub>gho-). My problem is that I can see no phonetic basis for the development.

3.1b CHV > CV

génos < \*génh<sub>1</sub>os;

platús < \*plth<sub>2</sub>u-;

pátos 'path' < \*pntH-, cf. \*póntos;

\*-te 2 pl. pres. < \*-th<sub>1</sub>e.

Evidence for aspiration (only by h<sub>2</sub>?) or voicing (h<sub>3</sub>) is unreliable and refuted by counterevidence (see the examples).

<sup>3</sup>I cannot accept Hamp's assumption (Glossologia 2-3, 1983-4, 163-8) that -ḂH gave -ōR, and -eRH > -ēR (with R = r, l). húdōr contains -ōr. The twelve examples he gives are very uncertain, the best being pōlos (< \*plH, Gm. \*fulan). Here I would expect not final -ḂH, but \*pḂH-s, an objection which holds for several cases.

**3.1c CHR: CHiC > CīC; CHRc > CVrC**

*pūr* 'fire' < \**ph*<sub>2/3</sub>*ur*;

*didont-* 'giving' < \**di-dh*<sub>3</sub>*-nt-*. [But see Kortlandt in MSS on 3 pl.]

As in 1c the laryngeal was vocalized, not the resonant. Cf. 3.2c.

**3.2a VHC > V̄C**

*phōnē* 'voice' < \**bhoh*<sub>2</sub>*neh*<sub>2</sub>-;

*pōu* 'herd' < \**poh*<sub>2</sub>*iu*;

*akēkoa* 'I heard' < \**h*<sub>2</sub>*ké-h*<sub>2</sub>*kou-*.

The above forms show that *h*<sub>2</sub> did not change *o*. (Cf. on Toch. 3.2a and Skt. 1b.) Kortlandt assumes (*Lingua Posnaniensis* 23, 1980, 127f) that a restored *h*<sub>2</sub> did change *o*; anyhow, the *a*-vocalism would be analogical.

**3.2b VHV > V̄ No special developments (circumflex intonation)****3.2c VHR: VHiC > ViC; VHRC > V̄RC > VRC**

*poimén* 'shepherd' < \**poh*<sub>2</sub>*i-*;

*pleīstos* 'most' < \**pleh*<sub>1</sub>*-istHos*;

*mēn-ós* gen. 'month' < \**meh*<sub>1</sub>*ns-os*;

*tén* acc. < \**teh*<sub>2</sub>*m*. See on PIE developments 2.

*enegk-* aor. 'to bear' < \**enēnk-* < \**h*<sub>1</sub>*ne-h*<sub>1</sub>*nk-* (differently Rix, *Gr. Gramm.* 215);

*ōrto* 'he rose' < \**h*<sub>1</sub>*e-h*<sub>3</sub>*rto*.

Essential is that the resonant was not vocalized. (We should therefore not write \**h*<sub>1</sub>*e-h*<sub>3</sub>*rto* etc.)

**3.3a RHC: CiHC > CīC; CrHC > Crē/ā/ōC;**

*thūmós* < \**djuh*<sub>2/3</sub>*mos*, Hitt. *tuhhae-* 'cough';

\**opīpē* in *opīpeúō* 'gaze after' < \**h*<sub>1</sub>*opi-h*<sub>3</sub>*k<sup>w</sup>-*;

*príato* 'he bought' is correctly explained by Bammesberger, *Stud. z. Lar.* 48: 3 pl. \**prih*<sub>2</sub>*-nto* > \**priato*, replaced by \**prianto*, etc.<sup>4</sup>

(*kasí-*)*gnētos* 'brother' < \**ǵnh*<sub>1</sub>*tos*;

*négretos* 'without awakening' < \**n-h*<sub>1</sub>*gretos* (*egeírō* < \**h*<sub>1</sub>*ger-*);

*tlētós* < \**tlh*<sub>2</sub>*tos*, Lat. *lātus*;

*strōtós* 'strewn' < \**strh*<sub>3</sub>*tos*, Lat. *strātus*.

<sup>4</sup>Ununderstandable is Normier (KZ 91, 1977, 182 n. 26) who assumes *ih*<sub>1</sub> > *ī*, *ih*<sub>2</sub> > *yā*, *ih*<sub>3</sub> > *yō*. The long vowel is quite impossible. This is automatically equating reconstructions with the forms actually attested without any respect to what is phonetically probable in the language concerned. He also accepts *lh*<sub>1</sub> > *oli* but *lh*<sub>2</sub> > *lā*; why not then posit *ih*<sub>1</sub> > *oij*?

It is often held that *RH*, when stressed, resulted in *ara* etc. But many forms have unstressed *ara* (*malakós*, *tanaós*, *talaós*; my impression is that adjectives are oxytone and nouns barytone; art. forthc.) and in origin these groups were unstressed too. And there is an explanation for the sequence which is certain: *ara* < *rh<sub>2</sub>e* (see 3.3b), so there is no need for another rule. (And in some cases *ara* may have been assimilated from *era*.) I know only one word where *rh<sub>2</sub>e* seems impossible, *spharagéomai* 'be full to bursting', Skt. *spḥúrjati*. However, here the accent rule does not work here either. I suppose that two preceding consonants may have caused the vocalization. But there are many difficulties with this word family (Lith. *spragėti*, Gr. *spargáō*; see Frisk).

Note that Rix's system (Gr. Gramm. 72, 74), which has:

$$\begin{array}{l} \text{ǰ}h_1\text{-}C > \text{ere} \quad \text{and} \quad \text{ǰ}h_1e > \text{are} \\ \text{ǰ}h_3\text{-}C > \text{oro} \quad \quad \quad \text{ǰ}h_3e > \text{aro} \end{array}$$

is improbable, as it assumes 'umlaut' in one form but not in the other. And as the second development is probably correct (see 3.3b), the first is probably not. (For *ara*, with *h<sub>2</sub>*, the problem does not exist.)

Improbable is *lh<sub>1</sub>* > *oli*. The dissyllabic representation, the *o* and the *i* are ununderstandable in Greek. Nor is the relation to *lē* explained.

*RHC-* > *Re/a/oC-*

In anlaut the laryngeal itself was vocalized.

*makrós* 'long' < \**mh<sub>2</sub>kros*, cf. *mēkos* < \**meh<sub>2</sub>kos*;

*ástu* 'town' < \**uh<sub>2</sub>stu*, cf. Skt. *vástu*, Toch. A *wašt*, B *ost* < \**uōstu* < \**uoh<sub>2</sub>stu*.

See Beekes, to appear in IF. The negative compounds with *nē* etc. have *ǰ*- before the morpheme boundary.

**3.3b** *RHV*: *CiHV* > *CiV*; *CrHV* > *Care/a/o*

*ophrúos* gen. 'cheek' < \*(*h<sub>3</sub>*)*bhruH-os*;

*iaúō* 'pass the night' < \**h<sub>2</sub>i-h<sub>2</sub>eus-*;

*ékamon* 3 pl. aor. 'be tired', < \**kmh<sub>2</sub>-ent*;

*kámatos* 'fatigue' < \**kmh<sub>2</sub>-etos*;

*tálanda* 'scales' from *talant-* 'bearing' < \**tlh<sub>2</sub>-ent*;

*páros* 'before' < \**prh<sub>2</sub>os*, Skt. *purás*;

*ébalon* 3 pl. aor. 'throw' < \**g<sup>w</sup>lh<sub>1</sub>-ent*;

*arén* 'ram' < \**urh<sub>1</sub>ēn*; Skt. *urāṇa-* < \**urh<sub>1</sub>-en-*;

*kaléō* 'call' < \**klh<sub>1</sub>-*, cf. *-klētōs* < \**klh<sub>1</sub>tos*;

*hal-ískomai* 'be captured' < \**ulh<sub>3</sub>-* (Rix, Gr. Gramm. 74; *halō-* aor. stem contamination of \**ulh<sub>3</sub>-C-* > \**wlō-* and \**ulh<sub>3</sub>-ent-* > \**wal-* (Lubotsky; less

probable Peters, Unters. 31 n.: Sievers form).<sup>5</sup>  
 Further *pálin* < \**k<sup>w</sup>lh<sub>1</sub>-im?*, *áneu* < \*(*s*)*nh<sub>1</sub>-eu?*

For the alleged laryngeal umlaut (*rh<sub>1</sub>e* > *ere* etc.) the evidence is not sufficient. It was based on the type *étemon époron* (< \**prh<sub>3</sub>-ent*), *pólis* and *polús*. The latter word has *h<sub>1</sub>*; *pólis* can be \**polHi-*. *étemon* may have full grade.

The type *époron* has not yet been convincingly explained. A possibility is that in the athematic aorist \**perh<sub>3</sub>-t*, *prh<sub>3</sub>-me*, *prh<sub>3</sub>-ent* > \**perot*, *prōme*, *paront*, in the singular metathesis to \**pore-* occurred as in Myc. *lewo-*, class. *loe-* (which resulted in a 'normal' 3 sg. in -e).

The possibility that only *h<sub>3</sub>* (and *h<sub>2</sub>*) caused umlaut and not *h<sub>1</sub>* (which is the non-colouring laryngeal) seems refuted by *halō-*.

I don't exclude the possibility that -*oR-* comes from a dialect where *g* became *or* regularly (pace Strunk, MSS 28, 1970, 110f). The words would then be dialect loans. This would also be possible for *pólis* < \*(*t*)*plH-*, which could be a loan from Mycenaean.

As to *étemon*, *ézelon*, it remains highly suspect that exactly these roots with *h<sub>1</sub>* would have their thematic aorist derived from a full grade. But I see no other solution.

### 3.3c RHR

*CHiC* > *CīC*

*CHrC* > ?

*CHnC* > *CinC?* or *CiaC?*

*CrHiC* > *CariC*

*CrHrC* >

*CrHnC* > *CaRaC?* or *CrǎnC??*

*CnHiC* > *CaniC*

*CnHrC* > *Can(d)raC?*

*CnHnC* > *CanaC?*

*saós*; a supposed \**tuh<sub>2</sub>u-* is improbable; it could be \**tueh<sub>2</sub>u-* > \**saus* with later thematization (Lubotsky).

### 4. HRH

*ónoma* 'name' < \**h<sub>3</sub>nh<sub>3</sub>mn*.

*ónēto* must be analogical (for \**ónato* < \**h<sub>3</sub>nh<sub>2</sub>to*).

Perhaps *eretmón* < \**h<sub>1</sub>rh<sub>1</sub>-*, cf. Lith. *irklas*; *árotrom* < \**h<sub>2</sub>rh<sub>3</sub>trom*, cf. Arm.

<sup>5</sup>Because of the (retained) athematic aorist, and because of the difference with *por-* (not \*\**par-*), the singular must have had \**uleh<sub>3</sub>-m* etc.

arawr; but *ánemos* < \**h<sub>2</sub>enh<sub>1</sub>mos* because of Lat. *animus*.

5. *HH*. No evidence.

## ARMENIAN

1a. *HC-* > *e/a/oC-* (but *o* often changed into *a*, probably in open syllable)  
*erek* 'evening' < \**h<sub>1</sub>reg<sup>w</sup>os*; Gr. *érebos*;  
*inn* 'nine' < \**h<sub>1</sub>neun*; Gr. *ennéa*;  
*im* 'me' < \**h<sub>1</sub>me*; Gr. *emé*;  
*anicanem* 'curse' < \**h<sub>3</sub>nid-*; Gr. *óneidos*;  
*awelum* 'sweep' < \**h<sub>3</sub>bhel-*; Gr. *ophéllō*;  
*atamn* 'tooth' < \**h<sub>3</sub>d-*; Gr. *odón*;  
*ayr* 'man' < \**h<sub>2</sub>ner-*; Gr. *anér-*;  
*astł* 'star' < \**h<sub>2</sub>ster-*; Gr. *astér*;  
*anun* 'name' < \**h<sub>3</sub>neh<sub>3</sub>mn*; Gr. *ónoma*.

Armenian has no 'prothetic vowel' before *u*: *gom*, Gr. *áesa*; *gelmn* 'wool' if \**Huel(H)mn*.

See Kortlandt (Notes on Arm. hist. phon. V), to appear in *Studia Caucasica* 7; Beekes on 'name', to appear in *Die Sprache*.

1b. *HV-*: *h<sub>2</sub>* and *h<sub>3</sub>* before *e* resulted in *h-*, otherwise the laryngeal disappeared:

*h<sub>1</sub>e-* > *e-*    *h<sub>1</sub>o-* > *o-*

*h<sub>2</sub>e-* > *ha-*    *h<sub>2</sub>o-* > *o-*

*h<sub>3</sub>e-* > *ho-*    *h<sub>3</sub>o-* > *o-*

*es* 'I' < \**h<sub>1</sub>eg(-)*;

*ew* 'and' < \**h<sub>1</sub>ep-*, Gr. *epí*, cf. OIr. *iar*;

*e-* augment < \**h<sub>1</sub>e-*;

*haw* 'grandfather' < \**h<sub>2</sub>eu-*, Lat. *avus*, Hitt. *huhhas*;

*haw* 'bird' < \**h<sub>2</sub>eu-*, Lat. *avis*;

*hayc<sup>e</sup>em* 'beg' < \**h<sub>2</sub>eis-*, Lat. *aeruscare* from \**aisos*;

*hoviw* 'shepherd' < \**h<sub>3</sub>eui-*, Lat. *ovis*;

*hot* 'odour' < \**h<sub>3</sub>ed-*, Lat. *odor*;

*hac<sup>e</sup>i* 'ash tree' < \**h<sub>3</sub>esk-*, cf. OIc. *askr*;

*oṛ* 'rump' < \**h<sub>1</sub>orso-*, cf. Gr. *órros*, Hitt. *arras(?)* (cf. OIr. *err*);

*orb* 'orphan' < \**h<sub>3</sub>orbho-*, Lat. *orbis* (cf. Hitt. *harpi* < \**h<sub>3</sub>erbh-*);

*ayc<sup>e</sup>* 'inspection' < \**h<sub>2</sub>ois-*, cf. OHG *eisca*;

Note *ayc<sup>e</sup>* beside *hayc<sup>e</sup>em*. Thus *arawr* < \**h<sub>2</sub>rh<sub>3</sub>trom* beside *harawunk<sup>e</sup>* 'field' < \**h<sub>2</sub>erh<sub>3</sub>ur* (Gr. *ároura*).

Thus according to Kortlandt (*Studia Caucasica* 5, 1982 and *Ann. Arm. Lingu.* 5, 1984, 41-3), who points out that, as PIE had no initial vowels (and as the laryngeals fell together before *o*), *h<sub>1</sub>e-* and *Ho-* can phonemically be considered as /e-/ , /o-/ , i. e. the laryngeal in this position was phonemically redundant. See on Hittite.

**1c. HR- > e/a/oRC-**

*arj* 'bear' < \**h<sub>2</sub>rtko-*;

*arcat<sup>c</sup>* 'silver' < \**h<sub>2</sub>rgnt-*;

*arcsi* 'eagle' < \**h<sub>2</sub>rg-*, Skt. *ṛjī-pyá-*;

*arnu-* 'to take' < \**h<sub>2</sub>rnu-*, Gr. *árnumai*.

*orjik<sup>c</sup>* 'testicles' < \**h<sub>3</sub>rg<sup>h-</sup>* (Alb. *herdhe* points to \**h<sub>3</sub>ergh-*).

See also under 4.

**2a. -CH.** No evidence.

**2b. -VH > -V̄.** No special developments.

**2c. -RH.** No evidence.

**3.1a CHC > CC, CaCC, CaC-?**

*hayr* 'father' < \**ph<sub>2</sub>tēr-*;

*bay* 'word' < \**bhh<sub>2</sub>ti-*;

*cnawl* 'parent' < \**g<sup>en</sup>h<sub>1</sub>tlo-*;

*erastank<sup>c</sup>* 'buttocks' < \**perh<sub>3</sub>kt-*;

*dustr* 'daughter' < \**dhugh<sub>2</sub>tēr-*;

*gelmn* 'wool' if < \**Huel(H)men-* (cf. n. 8);

(*an-as*)-*un* < \**omh<sub>1</sub>no-*, Gr. *-omenos*;

*armukn* 'elbow' < \**h<sub>2</sub>rHm-* (cf. *alawri* 'mill' < \**h<sub>2</sub>lh<sub>1</sub>-tr-*).

Probably the laryngeal was vocalized (in initial syllable and?) in inlaut before a cluster. (*harawunk<sup>c</sup>* 'field' < \**h<sub>2</sub>erh<sub>3</sub>ur-*, *-uen-* must then have its a analogically.)

**3.1b. CHV > CV** No special developments.

**3.1c. CHR.** No evidence.

**3.2a. VHC > V̄C.** No special developments.

**3.2b. VHV > V̄.** No special developments.

**3.2c. VHR**

It has been proposed (Kortlandt, *Studia Cauc.* 6, 1984) that *-uHm* developed into *-ukn*:

*jukn* 'fish' < \**dǵhuHm*;

*mukn* 'mouse'; from \**muHsm* > \**muHm*.

### 3.3a RHC > CaRaC

*canac<sup>c</sup>em* 'to know' < \**ǵnh<sub>3</sub>-sk-*;

*alač<sup>c</sup>em* 'to ask' < \**slh<sub>2</sub>-sk-*, cf. Gr. *hiláskomai*.

Not clear is whether *CaRawC* is another development:

*canawt<sup>c</sup>* 'known' < \**ǵnh<sub>3</sub>ti-?*

*alawt<sup>c</sup>k<sup>c</sup>* 'prayer' < \**slh<sub>2</sub>ti-?*

RHC- > RawC-?

*nawt<sup>c</sup>i* 'sober, jejeune' < \**nh<sub>1</sub>dti-?*, cf. Gr. *nēstis*

(Note that *n-* was not vocalic here; *an-* is analogical.)

### 3.3b. RHV > CaRV

*am* 'year' < \**smH-*, OHG *sumar*;

*kalin* 'acorn' < \**g<sup>w</sup>lH-eno-*, cf. Gr. *bálanos*;

*gaṛn*, *garin-* 'lamb' < \**urh<sub>1</sub>en-*, Skt. *uráṇa-*.

### 3.3c RHR

*CiHiC* > *CiC*

*CiHrC*

*CiHnC* see 3.2c for *-uHm*.

*CrHiC* > *CariC*

*CrHrC*

*CrHnC* > *CaranC*

*CnHiC* > *CaniC*

*CnHrC* > *CanarC*

*CnHnC* > *CananC*

### 4. HRH

*armukn* 'elbow' < \**h<sub>2</sub>rHmo-muHsm*;

*alawri* 'mill' < \**h<sub>2</sub>lh<sub>1</sub>tr-*, cf. Gr. *aletrís*;

*arawr* 'plough' < \**h<sub>2</sub>rh<sub>2</sub>trom*, cf. Gr. *árotrom*.

### 5. HH. No evidence.

**HITTITE**

Developments are still very uncertain. Many etymologies are no more than possibilities. The following is based on Oettinger, *Stammbildung* 546ff (cited O.) and Melchert, *Studies* (M.).

		$h_1$	$h_2$	$h_3$	remarks
1a	HT-	aT-			
	Hs-	as-	hs-		
	HR-	R-?		R-?	R = r, l, n
	Hm	am-	h(a)m-?		
	Hi-	y-	y-?		
	Hu-	w-	hw-		
1b	He-	e-	ha-	ha-	
	Ho-	a-	a-??	a-??	
	Hi	i-	hi-	hi-?	i = i, u
1c	HR-	aR-	haR-	haR-?	
2a	-CH	-Ca?	-Ca	-Ca?	
2b	-VH	- $\bar{V}$ ?	- $\bar{V}$ ?	- $\bar{V}$ ?	
2c	-RH				
3.1a	CHC	CaC, CC?	CaC, CC?	CaC, CC?	between stops?
		-	ChC?	ChC?	after resonants?
3.1b	CHV	CCV	CCV	CCV	C = R, s
	RHV	RRV	RRV, RhV?		
	sHV	ssV	shV		
3.1c	CHR				
3.2a	VHC	$\bar{V}C$	$\bar{V}C$	$\bar{V}C$	except:
	VHs	ss	Vhs	ss?	
	VHR		VhR	Vm?	
	VHi	$\bar{V}y$ ?	$\bar{V}y$	$\bar{V}y$ ?	
	VHu		Vhw		
	VHg		Vgg		
3.2b	VHV	VV	Vh(h)V		
3.2c	VHR				
3.3a	RHC		CaRC?		
3.3b	RHV	aRR	aRR/aRh		
3.3c	RHC				
4.	RHR				
5.	HH	a			

In general it may be pointed out that, as *h* is a living phoneme, it may

have been analogically restored or removed.

I have not included forms from other Anatolian languages, as our knowledge of them is still very incomplete, and as the developments seem to have been partly different.

As the developments are rather complicated, I give a schematic survey on the preceding page.

### 1a. HC- > hC-, aC-, C-

For the developments see the survey.

*h*<sub>1</sub>:

*adanzi* 'they eat' < \**h*<sub>1</sub>*denti*;

*asanzi*; 'they are' < \**h*<sub>1</sub>*senti*;

Hier. *nu* 'nine' < \**h*<sub>1</sub>*neun*;

*lenk-* 'swear' if \**h*<sub>1</sub>*lengh-*; Gr. *elégkhō*;

*ammuk* 'me' < \**h*<sub>1</sub>*me* (Die Sprache, forthc.);

*yanzi* 'they go' < \**h*<sub>1</sub>*ienti*;

*warsa-* 'rain' if \**h*<sub>1</sub>*uers-*; Gr. *eérsē*;

*h*<sub>2</sub>:

*hasterza* /*hster-*/ 'star' < \**h*<sub>2</sub>*ster-*;

*huiszi* 'live' < \**h*<sub>2</sub>*ues-* (the etymology has been doubted).

*h*<sub>3</sub>:

*lāman* 'name' < \**h*<sub>3</sub>*neh*<sub>3</sub>*mn* (perhaps with dissimilatory loss of *h*<sub>3</sub>-; or dissimilation of *h*<sub>3</sub>- to *h*<sub>1</sub> > Ø).

*H*

*ewa-* 'barley' if \**Hieuo-*; Gr. *zeiaí* (with regular loss of *y-* before *e*);

*iugan* 'yoke' if \**Hiugom*.

It seems that there was a different development before *m* and before *r*, *l*, *n*, which is phonetically understandable.

### 1b. HV-

Kortlandt suggests the same development as in Armenian (see there):

*h*<sub>1</sub>*e-* > *e-*    *h*<sub>1</sub>*o-* > *a-*

*h*<sub>2</sub>*e-* > *ha-*    *h*<sub>2</sub>*o-* > *a-*

*h*<sub>3</sub>*e-* > *ha-*    *h*<sub>3</sub>*o-* > *a-*

It is generally agreed that *h*<sub>1</sub>- was lost.

*h*<sub>1</sub>-

*eszi*, *edmi*;

*arras* 'rump' < \**h*<sub>1</sub>*orsos?*; Gr. *órros*, OIr. *err*;

*appan* 'behind, after' < \**h*<sub>1</sub>*op-*; Gr. *opi-*, *epi*.

*h*<sub>2</sub>-

*huhhas* ‘grandfather’ < \**h*<sub>2</sub>*euHos*, Lat. *avus*;

*harki-* ‘white’ < \**h*<sub>2</sub>*erǵ-* (\**h*<sub>2</sub>*rǵ-* also possible);

*h*<sub>3</sub>-

*hastai* ‘bone’ if < \**h*<sub>3</sub>*estH* (but \**HostH* is also possible, and perhaps \**h*<sub>3</sub>*st-*);

*hasduer* ‘branches’ < \**h*<sub>3</sub>*esd-* (or \**Hosd-*);

*harpzi* ‘separate’ < \**h*<sub>3</sub>*erbh-ti*;

*hark-* ‘perish’ < \**h*<sub>3</sub>*erǵ-*, OIr. *orgaid*, Arm. *harkanem*;

*haran-* ‘eagle’ < \**h*<sub>3</sub>*er-*, Gr. *órnis*;

*ha-* ‘towards’ if \**h*<sub>3</sub>*e-* (M. 61 n. 111, 90 n. 26, 93 n. 24, 168);

Luw. *hawī-* ‘sheep’ < \**h*<sub>3</sub>*eui-*, Arm. *hoviw* ‘shepherd’;

*H*

*arki(ya)-* ‘penis’ < \**Horǵhi-*, Gr. *órkhis*, Arm. *orjik*<sup>c</sup>; or rather \**h*<sub>3</sub>*rǵhi-*.

I have not seen a convincing example of *h*<sub>2</sub>*o-* > *a-*. *alpa-* ‘cloud’ might be \**h*<sub>2</sub>*olbho-*, but the connection with Gr. *alphós* is doubtful (Puhvel, *Etym. dict.*).

Some forms with *a-* and *h-* provide problems, e.g.:

*u* ‘away’ < \**au* = \**h*<sub>2</sub>*eu*. However, it may have been *h*<sub>2</sub>*ou*, which Kortlandt (Arm. a. Alb. §7: 13) assumes for Alb. a ‘whether, or’ (as ‘neither, nor’), Arm. *oĉ*<sup>c</sup> ‘not’, Gr. *oukí* beside *h*<sub>2</sub>*eu* in Gr. *aũ(te)*, Lat. *aut*.

*a-* from *h*<sub>3</sub>- may be supposed in *ais*, *iss-* ‘mouth’.

Hitt. *he-* provides a problem as *h*<sub>2</sub>- and *h*<sub>3</sub>- changed *e* into *a* and *o* > *a*.

*henk-* is explained as \**h*<sub>3</sub>*e-h*<sub>1</sub>*ink-* by M. 93;

*hēu-* ‘rain’ may be \**h*<sub>2/3</sub>*eih*<sub>1</sub>*-u-*.

New suggestions are given by Catsanicos, *Ann. Ec. H. Et.* 1977–8, 9 p. 1231–5. With most of them I do not agree, but I hope that his study will be published in full.

1c. *HR-* *h*<sub>1</sub>*iC-* > *iC*; *h*<sub>2/3</sub>*iC* > *hiC*-?

*h*<sub>1</sub>

\**arman* in *armaniya-* ‘be sick’ < \**h*<sub>1</sub>*rmen-*, cf. *erman-* ‘illness’;

*arnu-* ‘bring away’ < \**h*<sub>1</sub>*rnu-* (M. 50 n. 95; *h*<sub>3</sub>*r-* O. 297 n. 77).

*h*<sub>2</sub>

*harki-* ‘white’ if \**h*<sub>2</sub>*rǵi-* (\**h*<sub>2</sub>*erǵi-* also possible);

*hartagga-* ‘wolf’? < \**h*<sub>2</sub>*rtko-*;

*halzye-* ‘to call’ < \**h*<sub>2</sub>*ltie-*.

*h*<sub>3</sub>

*harnikzi* ‘destroy’ < \**h*<sub>3</sub>*rneǵti* (to *hark-*, see 1b);

*harganau-* ‘sole of the foot’ if \**h*<sub>3</sub>*rǵ-*, Gr. *orégō*.

*arta* 'stand' <  $*h_3rto?$  (Rather  $h_1-$ ; cf. *arnu-* above).

A vocalization (of  $*h_2rie-$  as)  $\partial_2rie-$  > *arye-mi* is unacceptable.

### 2a. $-CH > -Ca$

*-uasta* 2 pl. middle <  $*.uesdhh_2$ , cf. *-mestha*, *-mahi*;

nom. pl. ntr. *-a* <  $*-h_2$ ;

nom. sg.  $\bar{a}$ -stems *-a* <  $*h_2$  (Beekes, *Origins* 26f.);

*-e* ntr. pl. ending of pronouns, may be  $-h_2 > -a + i$  (cf. Gr. *tá* etc.; or  $-o-h_2-i$ , with  $h_2$  disappearing after *o*; other explanations (M. 70) are improbable).

### 2b. $-VH > -\bar{V}?$

*hassā-* (if correctly posited) is rather doubtful as it would be the only form with  $\bar{a}$ ; cf. 2a.

### 2c. $-RH$

*assū* ntr. pl. <  $-uh_2$ .

### 3.1a $CHC > ChC, CaC, CC?$

$CaC$  is rare. Perhaps it occurred only between non-resonants, and in first syllable. (Cf. also 3.3a on  $RHC-$ .)

*sakye-mi* 'reveal', *sagai* 'omen' <  $*sh_2g-\bar{o}i$ ; O. 345, 413 n. 34.

*istaman-* 'ear' if  $*sth_3men-$ ; O. 196.

*tamass-/ess-* 'oppress' <  $*d(e)mHs-$  is hardly correct (cf. M. 129 n.98);

*hulana-* 'wool' <  $h_2/3ulh_{1/2}n-$  is therefore rather dubious (note also Gr. *lēnos* without prothetic vowel, but OIr. *olann*).

$ChC$ . Hittite presents several forms with interconsonantal  $-h-$  (mostly after resonant), mostly in verbal forms, where analogy is possible (but after what other configuration?).

*walhzi*, *parhzi*, etc.

*warhui-* 'shaggy, rough' if  $*uerh_2u-ih_2$  (M. 13 n. 21);

*sanhuwant-* 'roasted'.

$CC$ . If *isnas* gen. 'blood' is regular from *ishnas*, the  $h$  disappeared; but the form is perhaps unreliable.

$nh_2T > nT$ : *danduki* 'mortal' if <  $*dhonh_2tu-$ .

$nh_2s > (n)s$ : *taswant-* 'blind' if  $*temh_2s-uent-$  (0.550).

I do not understand why  $h$  would have disappeared precisely in these sequences.

*zikke-* 'put' <  $*dhh_1-sk-$ ;

*dumeni* <  $*dh_3-ueni$ ;

*titye-* 'to suck' if  $*dhi-dhh_1ie-$ .

In these forms the laryngeal followed a stop.

**3.1b CHV > CCV** but  $sh_2V > shV$

*meggi* if < *megh<sub>2</sub>-i-*;

*-tti* 2 sg. < *\*-th<sub>2</sub>e-i-*;

*tarratta* ‘be able’ if *\*terh<sub>2</sub>-o-*;

*iskallari* ‘split open’ if *\*skelh<sub>2</sub>-o-*;

*eshar* ‘blood’ < *\*h<sub>1</sub>esh<sub>2/3</sub>r-*;

*ishiya-* ‘bind’ < *\*h<sub>2</sub>i-sh<sub>2</sub>i-*.

Oettinger (549) holds that we get *Rh* when the stress did not directly precede. Melchert (44 n. 91) denies this; he explained (following Schindler) *Rh* from  $\text{Ṛ}h > aRh$ :  
*hullanzi* < *\*h<sub>2</sub>ulh<sub>2</sub>enti* (I wonder whether this form refutes his explanation of *Rh*).

I would not expect a difference between *VRHV* and *CRHV*; rather between *h<sub>1</sub>* and *h<sub>2</sub>*. (The determination of the laryngeal is often very difficult in Hittite.)

For *-rh-* note e. g. *arha-/irha* ‘frontier’.

If *Rh<sub>2</sub>* resulted in *RR*, *h<sub>1</sub>* and *h<sub>3</sub>* did certainly so; if *Rh<sub>2</sub>* gave *Rh* (in some cases), *Rh<sub>3</sub>* might have done the same, but *Rh<sub>1</sub>* will always have given *RR*.

That *nh<sub>2</sub>* gave *nh* (O. 549) is denied by M. 29 n. 60.

The development may also have depended on the character of the following vowel (e : o), as in anlaut.

*titha-* ‘thunder’ < *\*ti-th<sub>2</sub>-* would have analogical *h* (M. 100; if I understand him correctly).

**3.1c CHR.** No evidence.

**3.2a VHC >  $\bar{V}C$**  but

$h_2s > hs$ ;  $h_1s, h_3s > ss$  (M. 100)

$h_2R > hR?$

$h_2u > hu$

$h_2i > yy$

$h_2g > gg$

*lāpi* ‘glow’ < *\*le/oh<sub>2</sub>p-*; Gr. *lámpō*;

*ep-* ‘take, hold’ < *\*h<sub>1</sub>eh<sub>1</sub>p-*;

*nahsaratt-* ‘fear’ < *\*neh<sub>2</sub>sr-*

*pahsmi* ‘guard’ < *\*peh<sub>2</sub>s-*;

<sup>GIS</sup> *hahra-* ‘Harke’;

*wahnu-* ‘turn’;  
 iterat. *ess-* < *-eh<sub>1</sub>s-*;  
*iss-* ‘mouth’ if *\*h<sub>3</sub>eh<sub>1</sub>s-*  
*pass-* ‘swallow’ < *\*peh<sub>3</sub>s-*;  
*hassā* if < *\*h<sub>2</sub>eh<sub>1</sub>s-* (*-h<sub>3</sub>-* would have given *o*-vocalism in Lat. *āra*); Lubotsky suggests *\*h<sub>2</sub>ēs-*;  
*lāman* ‘name’ < *\*h<sub>3</sub>neh<sub>3</sub>mn*;  
*\*miyahwant-* ‘old man’ < *\*-eh<sub>2</sub>-uent-*;  
*pahhwenas* gen. ‘fire’ < *\*p(e)h<sub>2/3</sub>u-en-*;  
*lahwan* ‘poured’ < *\*leh<sub>3</sub>u-ent*;  
*tayezzi* ‘steal’ < *\*(s)teh<sub>2</sub>ie-*, Skt. *tāyú-*, OCS *tajǫ*, Gr. *\*tēúsios*;  
*huyanzi* < *\*h<sub>2</sub>uh<sub>1</sub>io-* (unclear M. 28);  
*sakki* if *\*seh<sub>2</sub>ǵ-*, Lat. *sāgīre*.

The development *h<sub>3</sub>s* > *ss* is surprising, if *h<sub>3</sub>* develops parallel to *h<sub>2</sub>*.

### 3.2b VHV: *h<sub>1</sub>* > Ø; *h<sub>2</sub>* > *h(h)*; *h<sub>3</sub>* > *h(h)*?

*neuahhant-* ‘renew’ < *\*-eh<sub>2</sub>-ent-*;  
*-hhe* 1 sg. pt. < *\*-h<sub>2</sub>e-i*;  
*huwant-* ‘wind’ < *\*h<sub>2</sub>uh<sub>1</sub>ent-*;  
*tehhe* 1 sg. ‘put’ < *\*dheh<sub>1</sub>i-h<sub>2</sub>ei*;  
*henk-* ‘offer’ if *\*h<sub>3</sub>e-h<sub>1</sub>ink-* (M. 93).

*mehur*, *sehur* etc. provide a problem with *h* (< *h<sub>2/3</sub>*) beside *e*. I am not convinced that they derive from *ēh<sub>2/3</sub>*. For neuters with lengthened grade Gr. *hēpar* is the only evidence, and it is hardly credible that Indo-Iranian would have given up the long vowel of the nominative (of a neuter): Skt. *yákr̥t*; Ir. evidence here also points to a short *a*. Other evidence (Mayrhofer, Idg. Gr. 132f.) is rather doubtful too. (E. g. ‘water/drink’ cannot be *\*h<sub>2</sub>ēk<sup>w</sup>-* because of Hitt. *ekuzzi*; see 5.)

### 3.2c VHR No evidence.

#### 3.3a RHC > aRC?

*taswant-* ‘blind’ if *\*tmHsuent-*;  
*danduki-* ‘mortal’ if *\*dhnh<sub>2</sub>-tu-*;  
*hulana-* ‘wool’ if *\*h<sub>2/3</sub>ulh<sub>1/2</sub>n-*.

#### RHC-

*mat-* ‘hold out’ if *\*mh<sub>3</sub>d-*. O. 209.

#### 3.3b RHV: *Rh<sub>1</sub>V* > *aRR*; *Rh<sub>2</sub>V* > *aRR* or *aRh*

*isparrezzi* ‘lay flat’ < *\*sprh<sub>1</sub>-e-*, Skt. *sphuráti*, cf. Lat. *sperno*, *sprēvī*.

*kalless-mi* ‘invite’ < \**klh*<sub>1</sub>-, O. 197; cf. Gr. *kaléō*;  
*hullezzi* ‘fight’ < \**h*<sub>2</sub>*ulh*<sub>2</sub>-e-; the analysis is doubtful (*h*<sub>2</sub>- or *h*<sub>3</sub>-; *h*<sub>1</sub>, *h*<sub>2</sub>, *h*<sub>3</sub> or no laryngeal in inlaut) as the connection with *walhzi* cannot be regarded as certain. (If [*h*<sub>2</sub>*ulh*<sub>2</sub>e-] it is not relevant here.)  
*palhi-* ‘broad’ if \**plh*<sub>2</sub>- (and not \**pe/olh*<sub>2</sub>-);  
*ganness-* ‘recognize’ if \**ǵnh*<sub>3</sub>- (with analogical e-vocalism); or \**ǵonh*<sub>3</sub>es-, O. 199;  
(*arha-* ‘frontier’ could be something like \**h*<sub>1</sub>*rh*<sub>3</sub>o-.)  
Note single *n* in *ganness-*. These forms, and *damass-/dam(m)ess-* are not yet well explained.

**RHV-**

*luzzi-* ‘corvee’ if \**lh*<sub>1</sub>*uti-*, M. 166. (Note that the *l* would not be vocalized.)

**3.3c RHR**

*CiHiC*

*CiHrC* etc. No evidence.

4. *HRH* No evidence.

**5. HH**

*appanzi* < \**h*<sub>1</sub>*h*<sub>1</sub>*p-*, *epzi* < \**h*<sub>1</sub>*eh*<sub>1</sub>*p-*;

*akuwanzi* < \**h*<sub>1</sub>*h*<sub>1</sub>*k*<sup>w</sup>-, *ekuzi* < \**h*<sub>1</sub>*eh*<sub>1</sub>*k*<sup>w</sup>-; cf. on Latin.

**TOCHARIAN**

It may be useful to repeat Kortlandt’s interpretation of the development of the vocalism, which I adopt (cf. *Origins* 208):

PIE		PT	B	A	
<i>e, i, u</i>		ä	a/ä	a/∅	stressed/unstressed
<i>h</i> <sub>2</sub> <i>e, H,</i>	<i>āCC, ēC</i>	<i>a</i>	<i>ā/a</i>	<i>ā/a</i>	
<i>o,</i>	<i>ēCC</i>	<i>e</i>	<i>e</i>	} <i>a</i>	
	<i>ōCC, āC</i>	<i>o</i>	<i>o</i>		
	<i>ōC</i>	<i>u</i>	<i>u</i>	<i>u</i>	

The long vowels alone may be better grouped thus:

$\bar{e}$	eCC	e	a
	aC	$\bar{a}/a$	$\bar{a}/a$
$\bar{a}$	aCC	"	"
	oC	o	a
$\bar{o}$	oCC	"	"
	uC	u	u

PT = Proto-Tocharian. In the following -/- is always A/B.

**1a. HC- > C-**

*rtär/ratre* 'red', AB *rak-*: Gr. *orégō*; B *laiktse*: Gr. *elakhús*; A *mālk-*: Gr. *amélgō*; AB *ñu* 'nine'; *ñom/ñem* <  $*h_3neh_1m-$  <  $*h_3neh_3m-$ ; A *yiñc* 'they go' <  $*h_1ienti$ ; *want/yente* 'wind' <  $*h_2ueh_1nto-$ ; *šreñ* (pl.)/*šciryē*: Gr. *astér*.

**1b. HV- > V-**

*ānt/ānte* 'plain, forehead' <  $*h_2ent-$ ;  
*ālak/ālyek* 'other' <  $*h_2elio-$ .

**1c. HR- > PT \*eRC- > aRC-/eRC- (with normal  $\bar{R}$ - > \*eR)**

*arkant/erkent* 'black' <  $*h_1rg^w-ont-$ , Gr. *érebos*; *ārki/ārkwī* 'white' therefore must have  $*h_2erg-$ .

**2a. -CH > PT -Ca > -C/-Ca**

nom. sg.  $\bar{a}$ -stems  $*-h_2$  (*sām/sāna* 'wife' < PT  $*šāna$  <  $*g^w enh_2$ );  
 nom. pl. n.  $*-h_2$  (B *ñemna* 'names'; *waštu/ostwa* 'houses');  
 1 sg. middle *-mār/-mar*, *-e/-mai* have PT *-a* <  $*-h_2$  (Kortlandt, IF 86, 1981, 133).

**2b. -VH > - $\bar{V}$ . No special developments**

**2c. -RH > -R/-Ra**

B *rtarya* f. 'red' <  $*-ih_2$ ;  
 B *klyomña* f. 'noble' <  $*-n-ih_2$ .

**3.1a CHC > CaC**

*pācar/pācer* 'father'; *ckācar/tkācer* <  $*dhugh_2tēr$ ;  
*sāle/salyiye* 'salt' <  $*sh_2l-$ ;  
 A *špāl* 'head' <  $*ghebh_2l-$ , Gr. *kephalé*, Goth. *gibla*;  
*ysār/yasar* 'blood' < PT  $*yāsar$  <  $*h_1esh_2/3r$  (note that not the *-r* was

vocalized, which would have given PT  $\ddot{a}R$ );  
 nasal presents in  $-n\bar{a}-sk-$  <  $*-n-h_2-$ ;  
 $-m\bar{a}m/-mane$  <  $*-mane$  ptc. middle <  $*-mh_1no-$ , Gr.  $-menos$ ;  
 B  $an\bar{a}-sk-$  ‘breathe’ <  $*h_2enh_1-$ ;  
 $sne/snai$  ‘without’ <  $*snHi$ , OIr. *sain*, Lat. *sine*;  
 $se/soy$  ‘son’ < PT  $*sway$  <  $*suHiu-$ ;  
 AB  $l\bar{a}nt-$  obl. ‘king’ <  $*ulHnt-$ ;  
 AB  $sw\bar{a}s$  ‘rain’ <  $*suH-$ , Gr. *húei*;  
 $p\bar{a}rw\bar{a}m/p\bar{a}rw\bar{a}ne$  ‘eyebrow’ <  $*bhruH-$ .

**3.1b CHV > CV.** No special developments.

**3.1c CHR > PT \*CaR**

$ys\bar{a}r/yasar$  ‘blood’, PT  $*y\bar{a}sar$  <  $*h_1esh_2/3r$ . Note that not the  $-r$  was vocalized.

**3.2a VHC >  $\bar{V}C$ .** No special developments.

$wa\bar{s}t/ost$  ‘house’, PT  $*wostu$  <  $*w\bar{o}stu$  <  $*uoh_2stu$  (Gr. *wástu* <  $*uh_2stu$ ) shows that  $o$  was not affected by  $h_2$ .

**3.2b VHV >  $\bar{V}$ .** No special developments.

**3.2c VHR > VR**

$want/yente$  ‘wind’ < PT  $*w’ente$  <  $(H)u\bar{e}nto-$  <  $*h_2ueh_1nto-$ ;  
 (Note that it would make things more difficult if we noted  $\eta$  for PIE.)

**3.3a RHC > RaC** (incl.  $yaC$ ,  $waC$ )

$\bar{a}knats/akn\bar{a}tsa$  <  $*-g\bar{n}h_3t-$ ;

AB  $pl\bar{a}nt-$  ‘be glad’ if  $*plh_1nd-$ , Lat. *splendeo*.

The idea that  $h_1$  would have given  $e$  is generally rejected. The proposal (K. T. Schmidt, FS Neumann 1982) that  $h_1$  in this position disappeared is improbable, as  $h_1$  became  $a$  after  $VR$ , and the evidence is unreliable: the opt. suffix  $-i-$  could represent  $i\bar{i}$  <  $iH-V$  (Kortlandt, priv. comm.);  $p\bar{a}lt/pilta$  ‘leaf’ <  $*bhlh_1d-$  is uncertain as the only evidence, OHG *blat* etc., cannot continue this form (the connection with ‘to bloom’ is improbable, as a ‘leaf’ is not a ‘flower’), and the palatal  $p-$  (*pilta*) is not explained in this way (it requires *PelT-*);  $p\bar{a}llent$  ‘the (day of the) full moon’ would have  $p\bar{a}ll-$  <  $*plh_1no-$ , but the nasal present (Skt. *pṛṇāti*) may have given  $ani\bar{t}$  forms (Av. *pārəna-*; cf. Skt. *pīparti*), if there is no other explanation for the Tocharian form. Note that for B *pārweṣṣe* ‘first’ loss of  $h_2$  or  $h_3$  has been proposed.

The reconstruction of a PT stage  $\bar{a}R\bar{a}$  <  $RH$  seems to me unnecessary

(AB have  $R\bar{a}$ ) and improbable: the laryngeal is vocalized in almost every position (even after  $i$ ,  $u$  — where a stage  $\bar{a}y\bar{a}$  is of course inconceivable), so it would be surprising if the preceding resonant would have been vocalized.

$RHC-$  >  $*RaC-$  > AB  $R\bar{a}C-$   
 $m\bar{a}k/m\bar{a}ka$  ‘many’ if  $*mh_2k-$ , Gr. *makrós*

### 3.3b $RHV$ > PT $*aRV$

$w\bar{a}l/walo$  ‘king’ <  $*ulH-\bar{o}nt$

$krant/krent$  obl. ‘good’ if < PT  $*k\bar{a}rent-$  <  $*krh_2-ont-$ ; OIr. *carae* ‘friend’ <  $*krh_2-ent-s$ .

### 3.3c $RHR$ > PT $*RaR$ > AB $R\bar{a}R$

## 4. $RH$

## 5. $HH$

## BALTO-SLAVIC

Unlabelled forms are (first) Lithuanian and (then) OCS.

### 1a. $HC-$ > $C-$

$raũdas$ , RCS  $řidřũ$ ;  $li\bar{a}udis$ ,  $ljudije$ ;  $migl\bar{a}$ ,  $m\bar{y}gla$ ;  $žel\bar{e}ti$ : Gr. *ethélō*.

The former presence of the laryngeal can be seen in Slavic  $pa-$ ,  $pra-$  from  $*h_2po-$ ,  $*pro-$  +  $H-$ .

1b.  $HV-$  >  $V-$ . No special developments.

1c.  $HR-$ . No evidence. See 4.

### 2a. $-CH$

The vocative of the  $\bar{a}$ -stems, type *glavo*, does not continue  $-h_2$  but  $*-h_2e$ ; see Origins 102.

### 2b. $-VH$ > $-\bar{V}$

nom. sg. f.  $*-eh_2$  > Lith.  $-\bar{a}$ , OCS  $-a$ ;

instr. sg.  $o$ -stems Lith.  $-\bar{u}$  <  $*-oh_1$ ;

1 sg. pres. Lith.  $-\bar{u}$  <  $-oH$ .

### 2c. $-RH$ : $-CiH$ > $-C\bar{i}$ ; $-CrH$ > ?; $-CnH$ > ?

nom. sg. f.  $nešant\bar{i}$ ,  $neš\bar{o}šti$  <  $*-ih_2$ ;

$ak\bar{i}$ ,  $o\bar{c}i$  nom. du. n. <  $*-ih_1$ ;

**3.1a CHC > CC**

duktĕ, dŭšti < \*dhuġh<sub>2</sub>tĕr;

árti, árklas < \*h<sub>2</sub>erh<sub>3</sub>-, PSl. \*ar'dla > radlo, SCr. rālo;

Latv. saĩms, Ru. solóma (< \*solma) < \*kólh<sub>2</sub>m-;

žéntas < \*ġenh<sub>1</sub>-;

vémti 'vomit' < \*uemh<sub>1</sub>-;

The only form which would have a < *H* is *stojati*, which can be explained from BS \*stoh<sub>2</sub>-eh<sub>1</sub>- (Lith. *stovėti*, Sl. \**stojěti*). *sporŭ* 'lavish' is from \*sŭ-porŭ (not related to Skt. *sphirá*- 'fat') as appears from the accent of SCr. *spŏr* (which is due to progressive accent shift — from a prefix — according to Dybo's law).

**3.1b CHV > CV.** No special developments.

**3.1c CHR: CHiC > CiHc > CiC; CHrC > CrHC?; CHnC > CnHC?**

**3.2a VHC > V̄C** with acute intonation

**3.2b VHV > V̄** with circumflex intonation. No special developments.

**3.2c VHR**

VHiC > ViC with acute intonation

VHrC >

VHnC >

piemeni acc. 'shepherd' < \*poh<sub>2</sub>i-men-;

-i, -ie-, OCS -ši 2 sg. pres. < \*-eh<sub>1</sub>i; Gr. -ei-s;

**3.3a RHC**

CiHC > CiC with acute intonation

CrHC > BS \*CirC (after labio-velar CurC) with acute intonation

bŭti, byti 'to be' < \*bh<sub>u</sub>H-;

vŭtas 'wound, turned', po-vitŭ < \*uiH-; Skt. vītá-;

ġirtas 'drunk' < \*ġrH-; Skt. ġīrṇá-;

vilna, Latv. viĩna 'wool', SCr. vŭna < \*(H)ulHn-;

pa-žinti 'to know' < \*ġnh<sub>3</sub>-; Lat. gnārus;

riṃti 'to become calm', Latv. riṃt.

**3.3b RHV**

CiHV > CiV

CrHV > CirV (CurV after labio-velars)

CnHV > CinV (CunV)

*gijà* 'thread in a tissue' < \**g<sup>w</sup>iH-*; Lith. *gýsla*, OCS *žila*;  
*brùvĭ* acc., OCS *brŭvĭ* 'eyebrow' < \**bhruH-m*;  
 OCS *žĭr-etŭ* 'devours' < \**g<sup>w</sup>rH-*, Skt. *girāti*.

### 3.3c RHR

*CiHiC* > BS *CiC* with circumflex tone

*CiHrC*

*CiHnC*

*CrHiC* > *CiriC* (*Cur-*)

*CrHrC* > *CirirC* (,,)

*CrHnC* > *CirinC* (,,)

*CnHiC* > *CiniC* (,,)

*CnHrC* > *CinirC* (,,)

*CnHnC* > *CininC* (,,)

### 4. HRH

*irti*, *irklas*, Latv. *iřklis* < \**h<sub>1</sub>rh<sub>1</sub>-*; Skt. *arĭtram*;

OPr. *irmo* 'arm', Lith. *řrmédė* 'gout' < \**h<sub>2</sub>rHmo-*; Skt. *řrmá-*, Lat. *armus*;

OPr. gen. *emmens*, acc. *emnen*, OCS *imeř*, SCr. *řime* < \**řimeř* < BS \**inHmen-*  
 < \**h<sub>3</sub>nh<sub>3</sub>men-*.

### 5. HH. No evidence.

## LATIN<sup>6</sup>

### 1a. HC- > C-

*ruber*, *liber*(?), *Nero*, *novem*, *ventus*, *dens*, *stella*.

### 1b. HV- > V-. No special developments.

### 1c. HR-

For *HRC-* there seem to be three possibilities: *ř* developed as normal (*or*, *ol*, *em*, *en*); or *HRC-* > *aRC-*; or *HRC* > *e/a/oRC*; or a variant of the latter: only *HNC-* was coloured by the laryngeal, i. e. the *e-* of *eN* < *ř*, as *ř* > *eN* normally, as opposed to *ř* > *or*.

To the first seems to point *ursus* 'bear' < \**h<sub>2</sub>rtkó-* (Kortlandt suggests (SL 5, 1983, 12) that it might have its *o-* from *urcāre* 'cry').

To *aRC-* might point:

*argentum* if from \**h<sub>2</sub>rg-ent-*<sup>7</sup>.

<sup>6</sup>P. H. Schrijver prepares a dissertation on the laryngeals in Latin, in Leiden.

<sup>7</sup>Skt. *rajatá-*, Av. *řřazata-* point to nom. \**h<sub>2</sub>řég-nt*, acc. \**h<sub>2</sub>řég-ent-m*, gen. \**h<sub>2</sub>řég-nt-os*.

*arduus* 'steep' if  $*h_3rdhuo-$ ;

*amb-* 'around' <  $*h_2mbhi$ .

As the forms with *a-* cannot be explained otherwise, this will be the regular development. The same development is found in Celtic.

### 2a. $-CH > -Ca$

nom. pl. n.  $-a < *h_2$  (*cord-a*);

nom. sg.  $\bar{a}$ -stems  $-a < -*h_2$  (Beekes, Origins 21ff).

### 2b. $-VH > -\bar{V}$

1 sg. pres.  $-\bar{o} < -oH$ .

### 2c. $-RH$ : $-CiH > -C\bar{i}$ ; $-CrH > ?$ ; $-CnH > ?$

*quī* 'how' <  $*k^wi-h_1$  if this is an old instr.

The adverb *quia* originally a ntr. pl., must have  $-a$  analogically.

### 3.1a $CHC > CaC$

*pater, datus*

*animus* <  $*anam-$  <  $*h_2enh_1m-$ ;

*genitor* <  $*gēnh_1ter$ .

### 3.1b $CHV > C\bar{V}$ . No special developments.

### 3.1c $CHR$

The development will have been the same as in 1c.

### 3.2a $VHC > \bar{V}C$

Dybo assumes that a long vowel was shortened in Italo-Celtic (and in Germanic before *R*) by a following stress (Vopr. slavj. jaz. 5, 1961, 9–34) *ulna* <  $*olen-$ , cf. Gr. *ōlén*.

The problem is whether the instances are reliable.<sup>8</sup>

Kortlandt (Ériu 32, 1981, 1ff) showed that this development was anterior to  $R\bar{H} > R\bar{a}$  (and  $iH > \bar{i}$ ), which are not shortened though they had the stress on the following syllable. He further assumes that  $Hi$  was not metathesized to  $iH$  in unstressed syllable. (Still there remain problems, like the conflicting evidence of Lat. *vir* and Umbr. *ueiro*; or OIr. *beo* <  $*biwaz$  against Lat.

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However, there existed words with full grade *I* of this root, as in Skt. *árjuna-*

<sup>8</sup>An evaluation is in preparation. — Joseph (Ériu 33, 1982, 34) rejects the idea too easily. He objects to "the circularity of Dybo's approach. Since he assigns stress without reference to function...". This is true, but Joseph seems not to have noticed that Dybo bases himself on the evidence of Balto-Slavic (and Greek and Germanic) accentuation.

vīvus.)

**3.2b VHV >  $\bar{V}$**  No special developments.

**3.2c VHR**

VHiC > ViC

VHrC >

VHnC >  $\bar{V}$ nC > VnC

ventus < \*uēntos if from \*h<sub>2</sub>ueh<sub>1</sub>ntos (and not from \*h<sub>2</sub>uh<sub>1</sub>-ent-, which would have given \*uventus).

**3.3a RHC > RāC**

(g)nātus ‘born’ < \*ǵnh<sub>1</sub>to-;

strātus ‘paved’ < \*strh<sub>3</sub>to-;

gnārus ‘aware’ < \*ǵnh<sub>3</sub>ro-.

RHC- > RaC-. See under 4.

**3.3b RHV > orV, enV**; i. e. ǵ, ǵ, ǵ, ǵ developed into or, ol, em, en as in other positions

tenuis ‘thin’ < \*tnh<sub>2</sub>u-; Gr. tanaós < \*tnh<sub>2</sub>eu-;

sine ‘without’ < \*seni < \*snH-i;

similis ‘equal’ < \*semili- < \*semali- < \*smh<sub>2</sub>eli-; OIr. samail.

RHV- > RV-. No evidence.

**3.3c RHR**

CiHiC > CīC

CiHrC >

CiHnC > Cīnc? > CinC?

CrHiC > CoriC

CrHrC > CororC?

CrHnC > CorenC??

CnHiC > CeniC see under 3.3b

CnHrC > CenorC?

CnHnC > Cenenc??

**4. HRH**

ratus ‘meaning’ < Hrh<sub>1</sub>to-; cf. rēri;

rapio ‘snatch’ if < \*Hrh<sub>1</sub>p-, Lith. ap-rėpiu < \*Hreh<sub>1</sub>p-; Gr. eréptomai can be \*h<sub>1</sub>rh<sub>1</sub>p- or \*h<sub>1</sub>rep-. To be separated from Alb. rjep, OIc. refsfa < \*Hrep-.

5. *HH*

*aqua* < \**h<sub>1</sub>h<sub>1</sub>k<sup>w</sup>-*; Hitt. *ekuzi* < \**h<sub>1</sub>eh<sub>1</sub>k<sup>w</sup>-*;  
*apiscor* < \**h<sub>1</sub>h<sub>1</sub>p-*, *co-ēpi* < \**h<sub>1</sub>eh<sub>1</sub>p-*.

## CELTIC

Old Irish unlabelled.

1a. *HC-* > *C-*

*rúad* ‘red’, *bligim* < \**ml-* ‘to milk’, *nert* ‘strength’, *nói* ‘nine’, *fóaid* ‘stays (during the night)’, *dét* ‘tooth’, Br. *sterenn* ‘star’, *su-* ‘well’.

1b. *HV-* > *V-*. No special developments.

1c. *HR-*: *HiC-* > *iC-*; *HrC-* > *arC-*; *HnC-* > *anC-* (> OIr. *enC-* > *inC-*)

*art* ‘bear’ < \**h<sub>2</sub>rtk<sup>o</sup>-*;

*imb* ‘butter’, Br. *amann* < \**h<sub>3</sub>ng<sup>w</sup>-*; cf. Lat. *unguen*;

*imbliu* ‘navel’ < \**h<sub>3</sub>mbh-*; cf. Gr. *omphalós*;

*imb*, G. *ambi-* < \**h<sub>2</sub>mbhi*; Skt. *abhi*.

2a. *-CH* > *-Ca*

nom. pl. ntr. -Ø < -a (*dét* ‘teeth’).

2b. *-VH* > *V̄* No special developments.

2c. *-RH*. No evidence.

3.1a *CHC* > *CaC*

*athir* ‘father’

*salann* ‘salt’ < \**sh<sub>2</sub>l-*;

W. *had* ‘seed’ < \**sh<sub>1</sub>-*;

*anál*, W. *anadl* ‘wind’ < \**h<sub>2</sub>enh<sub>1</sub>-*;

*lethan*, G. *Litano-* ‘flat, broad’ < \**plth<sub>2</sub>no-*;

W. *aradr* ‘plough’ < \**h<sub>2</sub>erh<sub>3</sub>trom*; Gr. *árotrom*;

W. *araf* ‘quiet’ < \**h<sub>2</sub>erHmo-*. (\**HrHmo-* would probably have given \**arm-*, see 4.; or \**ram-*.)

MIr. *olann* ‘wool’ < \**ulan-* < \**HulHn-* (Hitt. *hulana-*) would be quite regular if the *u* was vocalic. For W. *gwlan* we must assume that *u-* became consonantal.<sup>9</sup>

<sup>9</sup>As Latin had *lāna*, this would mean that the development to *Rā* was independent of Celtic. It is improbable to assume \**HulH-en-* for Celtic, as there is no trace of this form elsewhere, and as it would not solve the problem: a vocalization [*HulHen-*] is here just as

**3.1b CHV > CV.** No special developments.

**3.1c CHR**

*CHiC* > *CiHC* > *CīC* (but see on Latin 3.2a)

*CHrC* > *CarC*?

*CHnC* > *CanC*

óac, W. *ieuanc*, Br. *yaouank* < \**iouank-* < \**HieuHnko-*.

**3.2a VHC >  $\bar{V}C$**

For the shortening by a following stress, as assumed by Dybo, see on Latin. Celtic examples would be:

*om* 'raw' cf. Gr. *ōmós* (\**HoHmo-*, perhaps \**h<sub>3</sub>eHmo-*);

*srath* 'valley' cf. OHG *struot*, OE *strod* < \**strātú-*. (But shortening of \**strō-* < \**streh<sub>3</sub>-* would have given *-o-*.)

W. *ffraeth* 'ready, swift' < \**spragtos*, cf. Latv. *sprāgt*.

As in Latin, *Rā* < *RH* was of later date and not shortened.

**3.2b VHV >  $\bar{V}$**  No special developments.

**3.2c VHR**

*VHiC* > *ViC*

*VHrC* >

*VHnC* >

**3.3a RHC:** *CiHC* > *CīC*; *CrHC* > *CrāC*; *CnHC* > *CnāC*

*lán* 'full' < \**plh<sub>1</sub>no-*;

*grán* 'corn' < \**grHno-*;

*slán* 'safe' < \**slHno-*;

*lám* 'hand' < \**plh<sub>2</sub>m-*;

*tláith* 'weak' < \**tlh<sub>2</sub>ti-*;

*cnáim* 'bone' < \**knh<sub>2</sub>m-*;

G. *Cintu-gnatus* < \**gnh<sub>1</sub>to-*;

W. *blawd* 'flour' < \**mlHto-*;

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possible as in [*H<sub>u</sub>Hn*]. — Note that the first laryngeal, for which Hitt. *h-* is the only evidence, can be *h<sub>2</sub>-* and *h<sub>3</sub>-*. Gr. *lēnos* points to *h<sub>1</sub>* or *h<sub>2</sub>* in inlaut. It is not certain that Hittite points to *h<sub>1</sub>*. If Arm. *gelmn* 'fleece' contained a laryngeal (it must not; it is mostly equated with Lat. *vellus*, which cannot have had a laryngeal, \**velanos* giving \**velnus*), it seems that the *n*-stem of *gelmn* is the same as that on which *lāna* etc. *lēnos* (*s*-stem) were based. This may point to a paradigm \**Huel-Hn*, *Hul-Hen-m*, *Hul-Hn-os*, the nominative being both neuter and non-neuter (Origins 196). Armenian then replaced the suffix *-en-* by *-men-*.

*gnáth* ‘customary’ < \**ǵnh<sub>3</sub>to-* (see 3.2a).

A few cases seem to have *CaRC* (W. *darn*, Skt. *dīrṇá-*; *bard* if < *g<sup>w</sup>rH-*). Joseph, *Ériu* 33 (1982) 45–54 thinks that they in fact derive from *CRC*.

Several forms with *CRaC* are explained by Joseph *ibid.* 54, as analogical (double) zero grades, i. e. *Rā* reduced to *Ra*. This is only acceptable if there was a model on which this *Ra* could have been built. The model may have been *ā/a* < *eh<sub>2</sub>/h<sub>2</sub>*. Examples:

*flaith*, W. *gwlad* ‘realm’ if \**ulH-ti-*;

W. *yngnad* ‘judge’ if from \**ǵnh<sub>3</sub>-*;

*srath*, W. *ystrad* ‘valley’ if from \**strh<sub>3</sub>-*;

*rann* ‘part’ if from \**prh<sub>3</sub>-*.

But see under 3.2a. (For *maith* see below.)

*RHC-* > *RaC-*

*maith* ‘good’ < \**mh<sub>2</sub>-ti-*.

### 3.3b *RHV*: *CiHV* > *CiV*; *CrHV* > *CarV*; *CnHV* > *CanV*

*tar* ‘through, across’ < \**trh<sub>2</sub>os* (Origins 183);

*sam* ‘summer’ < \**smH-o-*; OHG *sumar*;

*tanae* ‘thin’ < \**tanawios* < \**tnh<sub>2</sub>-eu-*, cf. Myc. *tanawa*.<sup>10</sup>

*samail* ‘like’ < \**samali-* < \**smh<sub>2</sub>el-*;

*dam* ‘ox’ < *dmh<sub>2</sub>-o-?*;

*air* ‘before’ < \**prh<sub>2</sub>i*.

### 3.3c *RHR*

*CiHiC* > *CiC*

*CiHrC*

*CiHnC*

*CrHiC* > *CariC*

*CrHrC* >

*CrHnC* > *CaranC?*

*CnHiC* > *CaniC*

*CnHrC* >

*CnHnC* > *CananC?*

<sup>10</sup>Joseph (*Ériu* 33, 1982, 39f) doubts colouring (of -e-) over the morpheme boundary. I see no difficulty. Phonetically there is no problem. It could only mean that the -e- was analogically restored, which is often improbable. He believes, to explain the *aRa*-forms, that a tendency towards assimilation in *TeRa-C-* was helped along by \**h<sub>2</sub>erH-* forms. The latter seems most improbable to me, the first is possible, but hardly the general solution.

## 4. HRH

ainm 'name' < \*h<sub>3</sub>nh<sub>3</sub>mn, probably via \*h<sub>3</sub>nmn. (Phonetically I would expect HnHm- > nHm- > nam-, as in Germanic.)

ard 'high', if from \*HrHdhuo-, also lost its second laryngeal (if there was one).

(W. araf 'quiet' might perhaps continue \*Hrh<sub>2</sub>emo-, but \*h<sub>2</sub>erHmo- seems easier; see 3.1a)

## 5. HH No evidence.

## GERMANIC

(Gothic not labelled.)

## 1a. HC- &gt; C-

raups, OHG liut 'people', niun, OE melcan, wisan, waian, hausjan, tunþus, stairno.

## 1b. HV- &gt; H- No special developments.

## 1c. HR- &gt; \*uRC-

undar 'below' < \*Hndhero-? Skt. ádharas, Toch. A āñc, B ette;

OHG umbi 'around' < \*h<sub>2</sub>mbhi, Skt. abhi;

OHG ab-unst 'envy' < \*Hnst-, cf. Goth. ansts < \*Honsti-.

## 2a. -CH &gt; -Ca

OIc. heite 1 sg. middle < \*-ai, which is -a < \*-h<sub>2</sub> with an added -i (Kortlandt, IF 86, 1981, 131f).

## 2b. -VH &gt; -V̄ No special developments.

## 2c. -RH No evidence.

3.1a CHC > CaC in the first syllable, and probably in the last syllable (cf. 2a), > CC in internal syllable

fadar

staps < \*sth<sub>2</sub>to-;

saps 'satiated' < \*sh<sub>2</sub>t-; Lat. satis, OIr. sáith;

dauhtar < \*dhugh<sub>2</sub>tēr;

OHG kind < \*génh<sub>1</sub>to-;

OHG hamma 'hollow of the knee' < kónh<sub>2</sub>mā.

**3.1b CHV > CV**, probably with gemination of preceding *i, u* (Verschärfung) *filu*, OE *feala* 'many' < \**pelh*<sub>1</sub>-, \**polh*<sub>1</sub>- resp.

Verschärfung. I discuss here the cases with *i/uH*. A much discussed question is whether this group caused Verschärfung (*jj, ww*, Goth. *ddj, ggw*, ON *ggj, ggv*), as in:

waddjus, ON *veggr* 'wall' < \**wajju-* < \**uoiH-*; Lat. *viēre*;  
OHG *scouwon* 'gaze' < \**skawwōn*; Skt. *ākūta-*.

One point is that there is at present no serious alternative. A development *uH > ww* is phonetically not problematic. (Jasanoff, MSS 37, 1978, 77–90, suggests that rather *H* was lost, after which a glide developed: *aiHa > ai'a > aija*. This development seems to me rather improbable.) The problem is that the positive evidence is very meagre, on the other hand it seems to constitute the majority of the cases that have a good etymology. (Metathesis, e. g. \**skh*<sub>2</sub>*i-* > \**skih*<sub>2</sub>-, with secondary full grade \**skeih*<sub>2</sub>-, helps to explain a few more cases.) Evidence to the contrary is rare. OHG (*h*)*rao* < \**hrawa-* < \**krouh*<sub>2</sub>*o-*. (It has been suggested that it is analogical after Dutch *rauw* < \**krēuh*<sub>2</sub>*o-*, which has no Verschärfung after long vowel.)

The explanation of gen. *twaddje*, OIc. *tveggja*, OHG *zweiio* from \**duoi-Hou*, with the ending \*-*Hou* established in Gatha-Avestan, seems to confirm that the explanation is in principle correct.

Cf. on 3.2a.

*rH > rr*. For *CHV* with *r, l, m, n* as consonant a development *VCCV*, i. e. *rr* etc., has been assumed, recently by Rosemarie Lühr (MSS 35, 1976, 73–92). E. g.:

OHG *skerran* 'scrape' < \**skerH-*; Lith. *skirti*;

OHG *hellan* 'sound' < *kelh*<sub>1</sub>-, Gr. *kaléō*;

*fairra* 'far' < *perh*<sub>2</sub>-*eh*<sub>1</sub>, cf. Lith. *pėrnai* 'last year'.

Some exceptions are explained by influence of a zero grade with *CRHV > CuRV*, which had single *R*. (Cf. *stamms* < \**stomHo-* against OHG *stum* < \**stmHo-*.) Several exceptions (\**ana-*, \**mala-*, \**kala-*) are explained by assuming a form with a vocalic laryngeal, e. g. OHG *demar* < \**temāsó-*, the *ə* indicating a vocalic laryngeal. However, this would imply a consonantal and a vocalic laryngeal phoneme for PIE (which is unacceptable) and that this vocalic sound was lost (which is improbable) or became a vowel (for which there is no certain evidence in Germanic). However, the fact that in such forms the group *RH* stood before consonant may be sufficient to explain why no *RR* developed. — Counterevidence gives also Goth. *filu* (above). It is not convincing to adduce a zero grade *plh*<sub>1</sub>- > \**pul-*, as precisely this form

is not found in Germanic. — There still are, then, serious objections.<sup>11</sup>

**3.1c CHR:** *CHiC* > *CiHC*?; *CHrC* > *CurC*; *CHnC* > *CunC*

OHG *sulza* ‘salt water’ < \**sh<sub>2</sub>l-d-*; on ‘salt’ see Origins 57;

OHG *stunta* ‘hour’ if \**sth<sub>2</sub>-nt-*.

**3.2a VHC** > *V̄C*

The sequence *VHi/u* has been considered as a source of *Verschärfung* (3.1b), but this is improbable. It has also been supposed that it resulted in *k*. First, it must be noted that there is good evidence for *VHi/ū* > *V̄i/ū*:

*saian*, OHG *sāen* < \**sējan* < \**seh<sub>1</sub>-io-*;

*stojan* < \**stōwijan* ‘to judge’, pt. *stauida*, *staua* ‘judgement’ < \**stoh<sub>2</sub>u-*;

*bauan* < \**bōwan* < \**bhoh<sub>2</sub>u-*.

Therefore a development to *k* is doubtful. Kortlandt (in FS Polomé, in fine) holds that it did not occur with *Hi*, but that does not solve the problem. For some forms a (*g-*)suffix seems possible (OE *spic* ‘fat’ if not from \**spiHw-* < \**spHiw-*; OE *cwic* ‘alive’ where Goth. *qius* has no *k*; perhaps the development was not Gothic), but this seems impossible for:

OE *tācor* ‘brother-in-law’ < \**daiHw-* < \**daHiw-* (with metathesis after vowel?);

OE *haccian* might continue \**kaHw-* (\**keh<sub>2</sub>u-*), whereas a new full grade \**kauH-*, built on the metathesized \**kuH-* < \**kHu-*, would explain *heawan* < \**hawwan* (with *Verschärfung*).

Shortening. Dybo (see on Latin) assumed shortening in pretonic position also for Germanic, but only before resonant. The number of instances is very small, however. E. g.:

*aleina* ‘arm’ if from \**ol-*, Gr. *ōlénē*;

*nawis* ‘dead’, cf. Latv. *nāve* < \**nōuī-*.

**3.2b VHV** > *V̄* No special developments.

**3.2c VHR:** *VHiC* > *ViC*; *VHrC* > *V̄rC* > *VrC*; *VHnC* > *V̄nC* > *VnC*

In the last two cases the long vowel (*V̄RC*) was shortened. Note that the resonant was not (never) vocalic.

*skaidan* < \**skeh<sub>2</sub>it-*;

*winds* < \**h<sub>2</sub>ueh<sub>1</sub>nto-*.

<sup>11</sup>Conolly’s suggestion (KZ 97, 1984, 267–80) that *i* became *e* in Germanic in the neighbourhood of a laryngeal is not convincing. (E. g. to explain OFr. *frethu* — beside OHG *fridu* ‘peace’ — from \**prHitu-* is improbable, and impossible as this form would have given Gm. \**furiþu-*.)

Conolly's theory (IF 85, 1980, 96–123) that strong verbs with *VHi* etc. have no 'Grammatischer Wechsel' because in e. g. *\*skéh<sub>2</sub>it-* the stress did not immediately precede the *t*, has not been proven. First, there is a good alternative ("Ausgleich"). Then, the patterns (of *-ei-* etc. with Grammatischer Wechsel against *-eHi-* etc. without) are not really convincing. Also it is hard to explain the voiceless fricatives in these forms, as they could not have arisen anywhere.

(The OHG *r*-preterits are also explained by Conolly (JIES 11, 1983, 325–38), following a suggestion by Lehmann. The idea is unacceptable.)

The idea that  $\bar{e}_2$  continues *eHi* (and not *ei* with a-Umlaut) must be rejected. If *H* was *h<sub>1</sub>*, it is not clear what difference the laryngeal would make, and if it was *h<sub>2</sub>* or *h<sub>3</sub>* it was impossible. Conolly (PBB(T) 101, 1979, 1–29) thinks that *eHi* with (Van Coetsem's) secondary *e* became  $\bar{e}_2$ . But *eo* < *eu* in class VII preterits requires a-Umlaut. And for several nouns with *h<sub>2</sub>* (where there was no secondary *e*) he has to escape to *<sub>e</sub>h<sub>2</sub>i* (a form which in my conception did not exist in PIE). The Goth. gen. pl. *-e* < *\*-eiom* (Kortlandt, *Lingua* 45, 1978, 291) is decisive evidence in favour of Van Coetsem's explanation.

### 3.3a RHC > RC > uRC

*fulls* < *\*plh<sub>1</sub>nos*;

*kunþs* < *\*ǵnh<sub>1</sub>tos*;

*wulla* < *HulHn-* [(H)u]Hn-].

RHC- > RaC-

*lats* 'slow' < *\*lh<sub>1</sub>d-*, cf. *letan*; Lat. *lassus*, OCS *lěnŭ*.

Cf. under 4.

### 3.3b RHV > uRV

OHG *furisto* 'prince' < *\*prh<sub>2</sub>-*;

*þulan* 'to bear' < *\*tlh<sub>2</sub>-eh<sub>1</sub>-*;

*skulan* 'to owe' < *\*sklH-eh<sub>1</sub>-*; Lith. *skilti*;

*sums* 'somebody' < *\*smh<sub>2</sub>o-*; Gr. *hamo-*;

*kaurus* 'heavy' < *\*g<sup>w</sup>rHu-*; Skt. *gurú-*;

OHG *sumar* < *\*smH-*; OIr. *sam*.

RHV- > RV-

### 3.3c RHR

A1 *CiHiC* > *CiC*

2 *CiHrC* > *CirC*?

3 *CiHnC* > *CinC*?

- B1 CrHiC > CuriC  
 2 CrHrC > CururC  
 3 CrHnC > CurunC  
 C1 CnHiC > CuniC  
 2 CnHrC > CunurC  
 3 CnHnC > CununC

B and C are completely parallel.

OHG *furisto* < \*prh<sub>2</sub>ist- (see 3.3b);  
*hulundi* 'cave' < \*klHnt-, but the etymology is uncertain (Lat. *cēlāre*, *clam*  
 < \*klām < \*klh<sub>2</sub>-m?, Gr. *kalúptō* < \*klh<sub>2</sub>-u-?);  
*juggs* < \*HiuHnko-. Because of OHG *jugund* perhaps via a phase \*iuuunxa-.

#### 4. HRH

*namo* < \*h<sub>3</sub>nh<sub>3</sub>men- (Beekes, *Die Sprache*, forthc.);  
*raþjo* < \*Hrh<sub>1</sub>-t-; Lat. *ratus* (see there); a loan from Latin is improbable.

#### 5. HH

*ahwa* 'river' < \*h<sub>1</sub>h<sub>1</sub>k<sup>w</sup>-; see on Latin.

### ALBANIAN

The following is based on Hamp, Evidence, and M. E. Huld, *Basic Albanian Etymologies* (Columbus, Ohio 1984). Huld operates with six laryngeals, but only the fourth could be relevant to Albanian (see 1b).

#### 1a. HC- > C-

Pretonic vowel is lost in Albanian. Therefore cases like *mjel* : Gr. *amélgō*, *gjë* 'thing' if < \*h<sub>1</sub>sont-, *vej* 'weave' (see below) prove nothing. (No instance is known where a vowel from laryngeal was — secondarily — stressed and retained.) After prefixes there is no trace of a vocalized laryngeal either (cf. the intensive reduplication of Sanskrit): *ngreh* 'raise' < \*h<sub>1</sub>en-h<sub>1</sub>gr-; *ngjesh* 'gird' < \*h<sub>1</sub>en-Hieh<sub>3</sub>s- (Gr. *zōs*-, Lith. *júostas*, if this had initial laryngeal).

As *Hl*- gives *l*-, it proves that the laryngeal was not vocalized, as *VI*- gave *ll*- (*llërë* 'elbow' < \*oleno-): *lis* 'oak' if \*h<sub>1</sub>lent-to-, Gr. *elátē*, OE *lind*<sup>12</sup> (*lende* 'acorn', *lëndë* 'lumber' < \*h<sub>1</sub>lent-? Huld 87, 150)

<sup>12</sup>Mac. *áliza* 'tree' might have a- < H-. — I think that Gr. *olígos* 'few' and *loigós* 'ruin, destruction' are not cognate. Then Alb. *lig* 'bad, ill' and Lith. *ligà* 'illness' belong with *loigós*, which had no laryngeal.

Hamp (137) suggests that  $h_1r$ - gave  $rr$ - but with no convincing evidence. If *rjep* 'peel, flay' is cognate with Gr. *eréptomai*, (but see Latin 3.3a), it must have  $h_1r$ -; in any case it was *\*Hrep*-. (Note that *Hl*- did not give *ll*-.)

There is no evidence for special developments of  $H\underline{i}$ - and  $H\underline{u}$ - ( $\underline{i}$  >  $g\underline{i}$ - is normal).

*vej* 'weave' < *\*h\_1uebh-ni*-, if Myc. *ewepesesomena* proves *\*h\_1*-;  
*gjesh* 'knead (bread)' if to Gr. *zēō* and if this had  $H\underline{i}$ -.

Cf. 1c.

### 1b. HV-

Hamp proposed that Alb. *h*- was the reflex of a laryngeal, for which he assumed a fourth laryngeal. Kortlandt (Arm. § Alb, Mem. Acad. Roy. Belg., Cl. Lettres 1986, §8) proposed the same development as in Armenian (and Hittite):

*h*- <  $h_2$ -,  $h_3$ - before PIE *e*;

Ø- <  $h_1$ - and *Ho*-.

The situation is difficult because the laryngeal often cannot be identified with certainty; and because of the ablaut: a form may have *e*, *o* or zero. (Note that zero grade *HR*- never gave *h*-.)

$h_1$ -

*jam* 'I am' < *\*h\_1esmi*;

*jashtë* 'outside' < *\*h\_1eǵhsto*;

*ardhur* 'come' < *\*h\_1orǵh-un*- (ptc.), Gr. *érkhomai*;

$h_2e$ -

*halë* 'alder' < *\*h\_2elsno*-, Lat. *alnus*;

*ha* 'eat' < *\*h\_2eu*-?, Skt. *ava*-;

*hap* 'open' < *\*h\_2ep*-?, Gr. *apó*;

*hut* 'empty' < *\*h\_2euto*-?, Gr. *autéōs*, Goth. *auþeis* (but *au* became *a*; see 1c).

$h_3e$ -

*herdhe* 'testicle' < *\*h\_3erǵh*-? Gr. *órkhis* may have  $h_3e$ -, *Ho*-,  $h_3r$ -. As there is no evidence for *e*- or *a*-vocalism,  $h_3$ - is probable (Watkins assumed  $h_1$ -; Hamp must assume  $A_2$ ). Arm. *orjik*' must be  $h_3o$ - or  $h_3r$ -. Hitt. *ark*- would require  $h_3o$ - just like Mir. *uirgge*.

$h_2o$ -

*athët* 'sharp, sour' < *\*h\_2ok*-? Gr. *oksús*, *ókris* (Huld *\*h\_2eǵko*-); *a* 'whether, or' < *\*h\_2ou*, as 'neither, nor', Arm. *oĉ*<sup>c</sup>, Gr. *oukí* (Hitt. *u*?) beside *\*h\_2eu* in Gr. *aũ*(*te*), Lat. *aut* 'or'.

If these explanations are correct, note that  $h_2$  did not affect *o*.

*h*<sub>3</sub>*o*-

*ah* ‘beech’ < \**h*<sub>3</sub>*osko*-?; Arm. *hac’i* < \**h*<sub>3</sub>*esk*-;

*asht* ‘bone’ < *h*<sub>3</sub>*ost*-?; Arm. *oskr* (Huld \**h*<sub>3</sub>*est*-);

*amē* ‘stench’ < \**h*<sub>3</sub>*odmā*, Arm. *hot* < \**h*<sub>3</sub>*edos*, Lat. *odor*.

It must be assumed that the following words had zero grade (HRC-): *elb* ‘barley’ < \**h*<sub>2</sub>*lbhi*; *ēnde* ‘flower’ < \**h*<sub>2</sub>*ndh*-; *ēnderr* ‘dream’ < \**h*<sub>3</sub>*nr*-; *ēj* ‘blow’ < \**h*<sub>2</sub>*nh*<sub>1</sub>-; see on 1c.

A problem is provided by *edh* ‘kid’, Gr. *aíks*; note that Arm. *ayc* also lacks *h*-.

The conclusion from the material is not evident, but it seems possible to explain the facts, without assuming a fourth laryngeal, with this theory that also works in Armenian and Hittite.

1c. *HR*- > *ar*-; *em*-

*ari* ‘bear’ < \**h*<sub>2</sub>*rtkó*-;

*elb* ‘barley’ < \**albi* < \**h*<sub>2</sub>*lbhi*; Gr. *álphi*;

*ēnde* ‘flower’ < \**h*<sub>2</sub>*ndh*-; Gr. *ánthos*;

*emēr* ‘name’ < \**enmen*- < \**h*<sub>3</sub>*nh*<sub>3</sub>*men*-;

*im* ‘mine, of me’ from *i em*, with *em* < \**h*<sub>1</sub>*m* (Kortlandt, Arm. a. Alb. §2: 6).

*mbi*, *mbē* ‘on, at’ < \**embi* < \**h*<sub>2</sub>*mbhi*. As there is no certain evidence for full grade \**h*<sub>2</sub>*embhi*, the form probably had zero grade. The *e*- was lost in pretonic position (prepositions are end-stressed).

*n(d)ē* ‘in’ < \**h*<sub>1</sub>*ndh*-; Gr. *éntha*, Skt. *ádhi*.

Note that the development differed from *r* > *ri* and *ŷ* > *e*. It is not in conflict with the absence of a prothetic vowel, as we have the same situation in Latin.

A development *Hu*C- > *a(u)*C- > *ve*C- (Huld 155) is most improbable, as the laryngeal was not vocalized before consonant, and as it was not vocalized in this position even in Greek (*vesh* ‘ear’ < \**Husis*; I don’t see why it should not be \**h*<sub>2</sub>*eusis* giving > *au*- > *a*- > *ve*-). It is contradicted by *yll* ‘star’ if this is \**h*<sub>1</sub>*usli*- from \**h*<sub>1</sub>*eus*- ‘burn’; Huld 132. *ethe* ‘fever’ not from \**h*<sub>1</sub>*us*- (p. 62) but \**h*<sub>1</sub>*eus*- (p. 132). Doubtful is *lesh* ‘hair’ < \**h*<sub>1</sub>*uloH-s-o*-, OE *wlōh*, as I would expect *huloHso*- > *uloHso*- with initial [ul-].

On the other hand *h*<sub>2</sub>*i*-, *h*<sub>2</sub>*u*- might have given *hi*-, *hu*-:

*hut* ‘empty’ < \**h*<sub>2</sub>*uto*, beside \**h*<sub>2</sub>*eut*- in Gr. *autéōs*, Goth. *auþeis* (Hamp; accepted by Huld 151, though it refutes his own theory);

*hyp* ‘mount’ < \**h*<sub>2</sub>*up-io*-? Hitt. *upzi* does not point to *h*<sub>2</sub>-.

*hidhurē* ‘bitter’ < \**h*<sub>2</sub>*idh-un*-?; Gr. *aíthō*, Skt. *indháte* ‘burn’.

2a. -CH No evidence.

2b. -VH >  $\bar{V}$  No special developments.

2c -RH No evidence.

3.1a CHC > CaC in first syllable, CC elsewhere(?)

The evidence is very uncertain (Huld 162).

*běj* ‘do make’ if < \**baniō* < \**bhh<sub>2</sub>n-*; Gr. *phainō*;

*dashē* ‘I gave’ < \**dodh<sub>3</sub>-s-*;

*dhëndēr* ‘bridegroom, son-in-law’ if \**gomHter-*, Skt. *jāmātar-*. The word is very unclear. As *o*-vocalism is less probable, a different suggestion is given in 3.3a.

*thellē* ‘deep’ < \**kouHlo-*, Arm. *soyl* ‘cave’, Huld 118, 155, 162. I see no evidence for a laryngeal (Gr. *i* from laryngeal is impossible);

*zorrē* ‘intestines’ < \**g<sup>w</sup>ēr<sub>3</sub>no-*, Huld 136; uncertain;

*hirrē* ‘whey’ if \**ksirHno-*, Huld 75; Skt. *kṣīrā-*; uncertain;

*dele* ‘sheep’ < \**d(h)VilHkio-*; OIr. *dailech* ‘cow’ < \**dhalHkio-* (must be \**dhHli-*), Huld 143, 162, 168; most uncertain.

It is important that there is no evidence for a < *H* in internal syllable.

3.1b CHV No evidence.

3.1c CHR No evidence.

3.2a VHC >  $\bar{V}C$  No special developments.

3.2b VHV >  $\bar{V}$  No special developments.

3.2c VHR >  $\bar{V}R$

*muaj* ‘month’ < \**mon* < \**mēns* < \**meh<sub>1</sub>ns*;

*thua* ‘nail’ < \**ʔonC-* if from \**keh<sub>1</sub>n(t)-*.

3.3a RHC > aRC; RaC?

With aR:

*bardhē* ‘white’ if \**bhrHǵ-* in Skt. *bhūrjā-*, Lith. *bėržas* ‘birch’;

*parē* ‘first’ if < \**paruo-* > \**prHuo-*; Skt. *pūrvā-*;

*mal* ‘mountain’ if \**mlHdho-*, if to Skt. *mūrdhān-* ‘summit, forehead’, Gr. *blōthrós* ‘lofty’;

*valē* ‘wave’ if \**ulHnā*, cf. Lith. *vilnis* (Latv. *vīlnis*), OCS *vlŭna*, Skt. *ūrmī-*, Av. *varəmi-*.

With Ra:

*gjathë* < \*gl'atē 'long' if < \*dlakt- < \*dlh<sub>1</sub>gh-to-; Skt. *dīrghá-* etc.;

*rrēnjë* 'root' < PALb. \*rranjë if \*urh<sub>2</sub>d-ni-; Lat. *rādīx*;

*rrah* 'strike' < \*-urh<sub>1</sub>g-sk-; Gr. *régnūmi*;

*plak* 'old man' if \*plHko-; Lith. *pilkas* 'gray'; uncertain.

I have seen no instances with NH. Perhaps *dhëndër* 'bridegroom, son-in-law', PALb. \*dhandër continues \*ǵmh<sub>1</sub>-ter- (rather than \*ǵomHter-; see 3.1a) with mH > am parallel to rH > ar.<sup>13</sup> (In *emër* < \*HnHmen- the second laryngeal was apparently lost; see 1c.)

Improbable seems to me Klingenschmidt's idea (Altarm. Verb. 68 n. 6) that RH when stressed resulted in Rā: *plot* 'full' can be \*pleh<sub>1</sub>to- as well as \*plh<sub>1</sub>to- (Huld 105); *njoh* 'to know' if < \*jnāsćo < \*ǵnh<sub>3</sub>-skō. Huld 105 posits \*ǵneh<sub>3</sub>-ē-sk- > \*gnojoh- with epenthetic j, which is improbable. It could simply be \*ǵneh<sub>3</sub>-sk- (with secondary full grade, as in Lat. *nōsco*).

Two forms are supposed to have oRH > uR; Huld 151, 154. I suggest that they had zero grades which became uR instead of aR near labials (including labio-velars), like R̥ > uR:

*murg* 'dark' < \*mrHg<sup>w</sup>o-, rather than \*morHg<sup>w</sup>o-, if to Lith. *márgas* 'variegated';

*zgurdhë* 'entrails' < \*g<sup>w</sup>e-g<sup>w</sup>rh<sub>3</sub>-Do- rather than \*-g<sup>w</sup>orh-. The reconstruction is of course far from certain.

An u-reflex from rH not in labial surroundings was suggested by Hamp, but rejected by Huld 169, I think rightly so.

RHC- may have given RaC-

*lashë* 'I let' if < \*lh<sub>1</sub>d-som; Huld 155;

*laj* 'wash' if < \*lh<sub>3</sub>u(h<sub>1</sub>)-ni-; may be a loan from Latin; Huld 85;

*mas* 'cut' if < \*mHt-io; Huld 143.

### 3.3b RHV

Huld analyses *krye* 'head', PALb. \*kree, as \*krh<sub>2</sub>euno-, but h<sub>2</sub>eu would have given au. I do not know whether Huld assumes an intermediate \*kar-. His suggestion that *rëndë* was \*rh<sub>1</sub>ont- is quite uncertain.

### 3.3c RHR No evidence.

<sup>13</sup>The word is notoriously difficult. The forms without -t- were probably older. Gr. *gambrós* can be explained from \*ǵmh<sub>1</sub>-ēr-, -er-m, -r-os giving Gr. \*gamēr, \*-era, \*gmēros, the last of which was replaced by \*gam-ros. Skt. would have had \*jamār, \*jāras; this might have given \*jāmār and then *jāmātar-*.

4. *HRH*

*emër* 'name'; < \**h<sub>3</sub>nh<sub>3</sub>men-*. On the development see on 1c.

5. *HH* No evidence.

**PHRYGIAN**

There is little, but interesting evidence. Developments seems to have been the same as in Greek. I give only those categories for which there is evidence.

1a. *HC-* > *e/a/oC-*

*anar* 'man' < \**h<sub>2</sub>nēr*;

OPhr. *onoman* 'name' < \**h<sub>3</sub>nh<sub>3</sub>mn*.

1b. *HV-* > *V-* No special developments.

2a. *-CH* > *-Ca* ??

2b. *-VH* >  $\bar{V}$  No special developments.

nom. sg.  $\bar{a}$ -stems *-a* (*oukra* 'mother-in-law').

3.1a *CHC* > *Ce/a/oC*

OPhr. *onoman* 'name' < \**h<sub>3</sub>nh<sub>3</sub>mn*;

*-menos* (*tetik-*, *gegarit-* etc.) pf. ptc. middle < \**-mh<sub>1</sub>nos*;

OPhr. *keneman* 'grave' if < \**kenh<sub>1</sub>mn*, Skt. *khanitum*, *khātá-*. The relation with NPhr. *k(i)nouman* is unclear (Beekes, Dev. 20). \**knh<sub>1</sub>men-* might have given \**knēmen-* (> \**knāmen-*?).

3.2a *VHC* >  $\bar{V}C$  No special developments.

3.3a *RHC*

See on 3.1a *keneman*.

4. *HRH*

*onoman* < \**h<sub>3</sub>nh<sub>3</sub>mn*.