Title
Revisiting Proto-Indo-European Schwebeablaut

Author
Ozolins, Kaspars

Publication Date
2015

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Revisiting Proto-Indo-European Schwebeablaut

A dissertation submitted in partial satisfaction

of the requirements for the degree

Doctor of Philosophy in Indo-European Studies

by

Kaspars Ozoliņš

2015

ABSTRACT OF THE DISSERTATION

Revisiting Proto-Indo-European Schwebeablaut

by

Kaspars Ozoliņš

Doctor of Philosophy in Indo-European Studies

University of California, Los Angeles, 2015

Professor H. Craig Melchert, Chair

This dissertation examines the phenomenon of Proto-Indo-European schwebeablaut (German *Schwebeablaut* "floating vowel gradation"), whereby a number of reconstructed forms are observed to alternate in their root shape between C*e*RC (termed State I) and CR*e*C (termed State II). This mechanism of Proto-Indo-European (PIE) root ablaut has long been tacitly accepted (in one form or another) by scholars; however, the only comprehensive treatment has been Anttila (1969), and the matter therefore merits a thorough review. This dissertation reviews material from the daughter languages considered to be evidence for schwebeablaut by using some of the same techniques employed in the work of Anttila, only in an updated fashion. A large majority of the remaining cases are explained without requiring recourse to schwebeablaut, while several more difficult forms are discussed in individual chapters. The second part of the dissertation examines a unique subtype of roots extended by an *s*-formant that exhibit the following alternation: C*e*RC : CR*e*C-*s*. It is argued that the descriptive schwebeablaut inherent in these formations may legitimately be traced to PIE. An Optimality Theoretic account for this phonologically motivated metathesis is offered, which likewise eliminates the need to invoke schwebeablaut (as classically defined).

The dissertation of Kaspars Ozoliņš is approved.

Stephanie W. Jamison

Christopher M. Stevens

Brent Vine

H. Craig Melchert, Committee Chair

University of California, Los Angeles

2015

To my dear wife and son.

mīlu jūs

TABLE OF CONTENTS

SYMBOLS

C	consonant	$ or σ	syllable
Ç	syllabified consonant	*	reconstructed as; OT violation
E	ending	†	internally reconstructed as
h_x	laryngeal	>	develops into
H	laryngeal of unknown value	~	alternates with
$\underset{\cdot}{i}$, $\underset{\cdot}{u}$	vowel glides	→	derivational change; analogy
K	$\hat{k}$ or k	#	word boundary
R	sonorant or root	$]_\sigma$	syllable boundary
S	suffix	ø	null phoneme or morpheme
U	high vowel	< … >	transliterated text
$\underset{\cdot}{U}$	glide	/ … /	underlying representation
V	vowel	[…]	surface representation
$\bar{V}$	long vowel	!	fatal OT violation
$\breve{V}$	short vowel	≫	higher ranking than
ъ, ь	yers ($\breve{\imath}$, $\breve{u}$)	☞	winning OT candidate

ABBREVIATIONS

acc.	accusative
Alb.	Albanian
aor.	aorist
Arm.	Armenian
Av.	Avestan
Bret.	Breton
Corn.	Cornish
dat.	dative
EWAia	Mayrhofer 1985-2001
fem.	feminine
gen.	genitive
Germ.	German
Gmc.	Germanic
Goth.	Gothic
Hitt.	Hittite
IE	Indo-European
IEW	Pokorny 1959
IIr.	Indo-Iranian
imper.	imperative
Lat.	Latin
Latv.	Latvian
Lith.	Lithuanian
LIV^2	Rix et al. 2001
LSJ	Liddell-Scott-Jones 1961
loc.	locative
masc.	masculine
MIr.	Middle Irish
NIL	Wodko et al. 2008
nom.	nominative
neut.	neuter
OAv.	Old Avestan
OCS	Old Church Slavonic
OE	Old English
OHG	Old High German
OIr.	Old Irish
OLat.	Old Latin
OLD	Glare 1983
OLith.	Old Lithuanian
OPruss.	Old Prussian
OS	Old Saxon
OT	Optimality Theory
perf.	perfect
PG	Proto-Germanic
PIE	Proto-Indo-European
pl.	plural
pres.	present
Russ.	Russian
RV	Rig-Veda
Toch.	Tocharian
sg.	singular
Slav.	Slavic
Skt.	Sanskrit
Ved.	Vedic
YAv.	Young Avestan

ACKNOWLEDGEMENTS

I am indebted to numerous colleagues, friends, and family, without whom this dissertation would never have been possible.

My sincere thanks are due to my advisor, Craig Melchert, who has diligently and enthusiastically helped me throughout this entire process. I am greatly indebted to him for his meticulous work in combing through my endless drafts: from spotting areas of improvement or weak argumentation, to pointing out small, but critical errors. I will always remember our stimulating brainstorming sessions in his office. I would also like to sincerely thank my committee members for their extraordinary participation, reading, and recommendations regarding my dissertation.

I am appreciative of the many wonderful teachers I have had the privilege of sitting under during the course of my academic career at UCLA. I remember especially with fondness the enthusiasm with which Stephanie Jamison taught Sanskrit and the depth of scholarship with which Brent Vine lectured on many topics (reflected especially in his papers, which I have read with great satisfaction). And who could forget struggling in Craig's classes through Hittite texts, especially the one with *Telipinu* and that amazing bee?

I wish to also thank many others who have been invaluable throughout my academic career; in particular the Diebold family, without whose generous support I would not have been able to complete my studies. I am also deeply thankful to the Linguistics department for giving me, an Indo-Europeanist, such a wonderful opportunity to teach and TA. I will always remember the staff at both the Linguistics and Indo-European studies programs as being kind and ever helpful. My fellow colleagues have always been engaging and open to conversations; I wish to thank Andrew Byrd in particular for getting me interested in Optimality Theory and for being available for me to sound out my ideas. I have also frequently benefited from discussions with Tony Yates, where a single suggestion of his would often send me off pondering.

Last, but not least, I am ever indebted to the love and support of my dear parents, my wonderful brothers, and my sweet wife, Ieva, and precious boy, Ēriks. May all this be to the praise of my Lord and Savior, Jesus Christ, whose mercy over me is truly indescribable.

VITA

April 24, 1985	Born, Rīga, Latvia
2003	History & English Newbold College United Kingdom
2004-2007	B.A., Baltic Philology University of Latvia Rīga, Latvia
2012	Leiden Summer School in Linguistics Leiden University Leiden, Netherlands
2013	Candidate of Philosophy Program in Indo-European Studies University of California, Los Angeles
2013-2015	Teaching Assistant Linguistics Department University of California, Los Angeles
Summer, 2015	Lecturer in Linguistics Linguistics Department University of California, Los Angeles

CHAPTER 1

Introduction

1.1 Overview

Over the course of many decades of scholarship, much understanding has been gleaned about the rich vowel gradation patterns (Germ. *Ablaut* 'vowel gradation') so characteristic of the reconstructed forms of Proto-Indo-European (PIE). These involve fairly complex vocalic alternations whose vowel position within the root, suffix and ending is nevertheless always observed to be fixed.

This, however, is not the case with what is termed 'schwebeablaut' (Germ. *Schwebeablaut* 'floating ablaut'). In a small number of reconstructed forms, the root shared among two or more cognates appears to fluctuate between two variants, termed State I and State II.[1] This has been generally observed to occur with PIE roots containing a medial sonorant, which alternately appears as part of the coda (C*e*RC = State I) or onset (CR*e*C = State II) of the syllable.[2] An equivalent description of the phenomenon states that the root vowel alternately precedes the medial sonorant in certain forms, while following it in others.

The issue of schwebeablaut has attracted rather moderate attention over the entire span of Indo-European scholarship, and the most extensive work on it to date by far is the published dissertation of Raimo Anttila titled 'Proto-Indo-European Schwebeablaut,' supervised by Warren Cowgill in 1967 and published in 1969. Anttila's work contributed to greatly reducing the

[1] Schwebeablaut is not observed to occur in either the suffix or the ending.

[2] R = sonorant.

number of legitimate (or genuine) examples of schwebeablaut for reconstructed Proto-Indo-European. It is the aim of this chapter to give a more extensive definition of the phenomenon, review past scholarship, and summarize current views.

1.2 Definition

Canonical ablaut in Proto-Indo-European involves changes in vowel quality and vowel quantity.

The quality of the vowel primarily alternates between a mid front vowel **e* and a back rounded vowel **o*. Some scholars (e.g. Rix et al. for LIV[2])[3] additionally include the vowel **a*, citing forms that are difficult to reconstruct as **h₂e* sequences (such sequences are invoked in order to explain short vowels of a different timbre than **e*). For example, Lat. *lacus* 'lake' is sometimes compared to Scottish Gaelic *loch* 'lake' in order to set up **laku-* : **loku-* ablaut.[4]

Vowel quantity, in turn, may alternate between full-grade (V = **e*, **o*), the lengthened grade ($\bar{V}$ = **ē*, **ō*), and zero-grade (*ø*). The actual position of the vowel in a root, suffix or ending, however, does not change in regular ablaut, regardless of the actual morphological form. An illustration of ablaut in the root **sed-* 'sit' is shown below (adapted from Fortson (2010:79)):

(1) PIE ABLAUT (**sed-* 'sit')

e-grade **sed-*:	Lat. ***sed**-ēre* 'to sit'
	Gk. **ἕδ**-ρα 'seat'
o-grade **sod-*:	English ***sat*** (< **o*)
ø-grade **sd-*:	English *ne**st*** (< **ni-sd-o-*)
ē-grade **sēd-*:	Lat. ***sēd**ēs*
	English ***seat***
ō-grade **sōd-*:	OE ***sōt*** 'soot'

[3] A small number of roots in LIV[2] are set up with **a* as the fundamental vowel: "Doch sind hier einige Wurzeln mit Ablautvokal /a/ angesetzt, dann nämlich, wenn für einzelsprachliches /a/ zumindest in der gebotenen Kürze nicht zu begründen waren." (LIV[2] 6).

[4] This is explained differently by Schrijver (1991:475), and following him, de Vaan (2008:322-323), with an appeal to a type of unrounding in Latin after a velarized [ɬ] (**ɬoku-* > Lat. *lacus*). Such an explanation, however, is difficult to maintain if Gk. λάκκος 'pond' is also a cognate.

In a reconstructed root with a complex onset and coda, such as **spend-* 'libate'[5] (type CC*e*CC), the vowel had three slots in which it could have theoretically appeared: C*e*CCC, CC*e*CC, and CCC*e*C. However, all reconstructed forms with this root shows one position for the vowel, namely, CC*e*CC, regardless of grade or quantity (e.g., Gk. σπένδω 'libate' (full-grade); Lat. *spondeō* 'pledge' (*o*-grade)). This restriction cannot be explained through phonotactic constraints (of which hypothetical †*sepnd-* (C*e*CCC) and †*spned-* (CCC*e*C) are examples), since virtually all roots (regardless of shape) maintain a fixed position for the vowel. Rather, the particular location of the vowel (whether C*e*CC or CC*e*C, etc.) is actually characteristic of each individual lexical root. CC*e*C roots like **sreu̯-* 'flow'[6] and **steh₂-* 'stand'[7] preserve their underlying root structure regardless of ablaut grade, as do C*e*CC roots like **ters-* 'be dry'[8] and **u̯emh₁-*[9] 'vomit.'[10] This is the pattern we see with the majority of reconstructed roots in PIE.

The above is in contrast to schwebeablaut, which is a formal description of roots that appear to behave quite differently. Roots that are said to exhibit schwebeablaut do not invariably maintain the position of the vowel; rather, one or more forms reflect an alternative shape (whether C*e*RC or CR*e*C). An example is seen in Gk. φλέγω 'burn,' appearing to reflect **bʰleg-*.[11] Another form, OHG *blecchen* 'shine,' is also in agreement (with State II). This is in apparent contradiction, however, to the testimony of the Ved. neuter *s*-stem *bhárgas-* 'radiance' and the Toch B present *palkäṃ* 'shine,' which both reflect **bʰelg-* (State I). If both types of forms have a claim to being equally ancient and can confidently be taken back to the parent language, then it follows that a synchronic alternation between **bʰelg-* (C*e*RC) and **bʰleg-* (CR*e*C) must have existed in PIE.

---

[5] LIV² 577; IEW 989.

[6] LIV² 588; IEW 1003.

[7] LIV² 590-592; IEW 1004-1008.

[8] LIV² 637-638; IEW 1078-1079.

[9] LIV² 680; IEW 1146.

[10] Since virtuallly all PIE roots (with a few exceptions, e.g. particles and pronouns) are characterized by at least one consonantal onset and one consonantal coda (CVC), only roots of three or more consonants are relevant to discussions of schwebeablaut.

[11] LIV² 86; IEW 124-125; LIV² is uncertain whether to reconstruct **g* or **ĝ* for this root.

Such contrasts, whatever their explanation, are nevertheless the exception, rather than the rule: the vast majority of roots operated with standard ablaut, i.e. a fixed vocalic segment in any given root (i.e. **leu̯k-* 'shine'; C*e*RC). Such a vowel could have altered its quantity (Ved. *rucāná-* 'flashed' < zero-grade **luk-*; CR̥C) and quality (Lat. *lūceō* 'cause to shine' < **lou̯k-*; C*o*RC), but not its position relative to the consonants comprising that root; hence, there are no forms reconstructible to **lu̯ek-* (~~CR*e*C~~).

1.3 Schwebeablaut until Anttila (1967)

Though term *Schwebeablaut* was coined by Johansson in 1888, the phenomenon itself had been observed since the earliest days of the discipline (e.g. Bopp 1833, Schleicher 1852, et al.). Johansson (1888:115-116), expanding on previous work, proposed a term for this particular type of ablaut, suggesting that its behavior should be described as *gleichgewichts-* ('balance (ablaut)') or *Schwebe-ablaut* ('floating ablaut'). This was because the roots were observed to preserve moraic weight, regardless of their shape: *gḗn — ge͡ne — gnḗ.* Because of this, Johansson, along with many other scholars of his day, postulated so-called disyllabic bases (or roots), which are polysyllabic root morphemes (C*e*C*e*C(*e*C)).

The history of scholarship on schwebeablaut was closely tied to two crucial areas: (1) the development of ideas about the shape of the canonical Proto-Indo-European root and its segmentation, and (2) the laryngeal theory. With a poor theory of the root, normal ablaut alternations between the root and suffix of a form appeared to look like schwebeablaut. The same error was liable to be made in the interpretation of the vocalization of particular sequences of segments that included laryngeals. These, and other early views, contributed to the perception that schwebeablaut was a much more significant reality in the proto-language:

(2) EARLY SCHOLARLY PITFALLS

a. Misanalysis of morpheme boundaries: R(*e*)-S(*z*) ~ R(*z*)-S(*e*)
   Hirt's "dreisilbigen Basen"[12] — *derewo* 'tree'

[12] Hirt 1900:150.

b. ‘Prothetic’ Greek vowels: #HC*e*C ~ #HCC > #VC*e*C, #C*e*C ~ #VCC, #CC

Brugmann’s “doppelter Vollstufe”[13] — *enek̂* > *énk̂-*, *nék̂-*[14] ‘reach’

c. Zero-grade RH sequences: CR̥H > CVR, CRV̄, CVRV

Noreen’s “zweisilbigen Wurzeln”[15] — Gk. γενετή, OHG *kind*, Lat. (*g*)*nātus*

As can be seen, the number of admissible examples of schwebeablaut was much higher earlier in the discipline. Some scholars (e.g. Hirt, Noreen) reconstructed disyllabic (or trisyllabic) bases to account for this data; still others (Osthoff, Schmitt-Brandt, etc.) saw one of the two states, C*e*RC or CR*e*C, as the more original (the other being secondary).

It was the work of Émile Benveniste in 1935, however, that advanced a new and radically different theory of the Indo-European root that was to enjoy significant influence for some time. In a chapter titled “Esquisse d’un théorie de la racine,”[16] he advanced the highly abstract hypothesis that all PIE roots, no matter what their complexity, were ultimately derived from a universal C*e*C template. A maximum of two root extensions (= “élargissements”) could be added to this primitive root in sequential stages, cf. **dei̯-* ‘shine’ → **dei̯-u̯-* with a single root extension **-u̯-*. The second root extension, however, could only be added to a root with the full-grade located in the root extension (i.e. **dei̯-u̯-* / **di̯-eu̯-* → **di̯-eu̯-t-*, not **dei̯-u-t-*, cf. Ved. *dyót-ate* ‘shine’).[17] Finally, any additional suffixes to this extended base were treated by Benveniste as non-enlargements. Benveniste’s theory is the source for the common schwebeablaut terminology State I (= “thème I”) and State II (= “thème II”), which in his schema represent the first enlargement (C*e*C-C = State I), and the base for the second enlargement (CC-*e*C = State II), respectively. It is interesting to note that Benveniste’s terms ‘State I’ and ‘State II’ live on, despite the fact that much of the evidence for his original hypothesis has since been discarded.

---

[13] Brugmann 1904:147.

[14] Hence, Brugmann views a form like Gk. ποδ-ηνεκής ‘reaching down to the foot’ (< **h₁nek̂-*) as a “Neubildung.”

[15] Noreen 1894:101.

[16] Benveniste 1935:147-173.

[17] Benveniste 1935:154.

In order to make his theory fit the facts, Benveniste, and those who followed him, were forced to get creative in linking seemingly unrelated roots under one umbrella. For example, Benveniste connects *$\underset{\frown}{u}$el-h_1- 'wish'[18] with Lat. *volup* 'with pleasure' and Gk. (ϝ)ἔλπομαι 'to expect' < *$\underset{\frown}{u}$el-*p*-, thus identifying a common root *$\underset{\frown}{u}$el-, with two root extensions, -h_1- and -*p*-. While the semantics seem to work in this particular case, the addition of other forms, such as Lat. *lepōs*, *-ōris* 'charm, grace' < *$\underset{\frown}{u}$l-*ép*-, strain the hypothesis.

The various early views on schwebeablaut (disyllabic bases, original C*e*RC, original CR*e*C, Benvenistean root theory) are summarized by Anttila (1969:20) in a table classifying scholars by their positions. The main dividing line in the table is between those scholars that accept schwebeablaut for PIE ("Unity"), and those that attempt to explain away the forms in various ways ("Secondary forms"). Those who hold to "Unity" are further subdivided according to whether they view C*e*RC ~ CR*e*C as merely being a surface alternation for PIE, as opposed to the schwebeablaut representing an underlying C*e*C*e*C(*e*C).

Much of Anttila's 1967 study served to screen or eliminate the majority of examples claimed for original schwebeablaut. Only about a quarter of the material survives his etymological screening, and is summarized in a final table. The first column lists roots in the shape believed by Anttila to be original; these are almost invariably State II. The second and third main columns, titled "F/ø:ø/F Root/Suffix"[19] and "Extensions," include forms whose explanations are morphological in nature.[20] The fourth column, importantly, includes forms which are viewed by Anttila as "State I derivatives," indicating that they are to be understood as secondary formations from the original CR*e*C root. These are reproduced below:[21]

---

[18] LIV^2 677; IEW 1137.

[19] F = full-grade.

[20] For example, Ved. *āyú-* 'life-force' vs. Av. *yaoš* 'vitality' (gen.sg.) are explained via a morpheme boundary between root and suffix: *$h_2$ói̯-*u-* and oblique *h_2i̯-éu̯-*.* As for "Extensions," Anttila, for example, lists Ved. *aś-mán-* 'stone,' Lith. *ak-muõ* 'stone' vs. Ved. *śā-* 'sharp' (*śiśāti*), OCS *kamy* 'stone.' This is according to the older view that held that the base root *$h_2$ek̂-* was 'extended' to *h_2k̂-V̄-* (from a zero-grade *h_2k̂-*). Nowadays, however, these forms are generally reconstructed to the unrelated roots *$h_2$ek̂-* 'to be sharp' (LIV^2 261) and *k̂eh_2(i̯)-* 'to sharpen' (LIV^2 319-320).

[21] This table only lists the items taken from Chapter 9, "Basis of Schwebeablaut."

(3) TABLE OF STATE I DERIVATIVES (ANTTILA 1969:175-176)[22]

Root	State I Der.	LIV² Reference	§	Root	State I Der.	LIV² Reference	§
*$h_2l(e)k$-	*h_2elk-	264, 278; IEW 32	9.3	*$\hat{k}r(e)h_2$-	Gk. κερα-	328; IEW 582	9.39
*$h_2r(e)\hat{g}$-	*$h_2er\hat{g}$-	IEW 64	9.4	*$k\underset{\cup}{u}(e)h_2$-	Ved. *śavi-*	339; IEW 592	9.41
*$h_2\underset{\cup}{u}(e)g$-	*$h_2e\underset{\cup}{u}g$-	274, 288; IEW 84	9.6	*$k^{u}\underset{\cdot}{i}(e)h_1$-	Slav. *$k^{u}o\underset{\cdot}{i}$-	393; IEW 638	9.42
*$(h_2)\underset{\cup}{u}es$-	*$h_2e\underset{\cup}{u}s$-	292; IEW 86	9.8	*$m\underset{\cdot}{i}(e)\hat{k}$-	*$me\underset{\cdot}{i}\hat{k}$-	428, 445; IEW 714	9.43
*$d\underset{\cdot}{i}(e)\underset{\cup}{u}$-	*$de\underset{\cdot}{i}\underset{\cup}{u}$-	IEW 184	9.10	*$p(e)l$-k-	*$pel(h_2)k$-	IEW 807	9.47
*$dl(e)h_1g^{h}$-	Gk. δελε-	IEW 196, 197	9.12	*$pl(e)h_1$-	*$pel(h_1)$-	IEW 798	9.48
*$d(e)r$-(H)-	*$der(H)$-	119; IEW 206	9.13	*$pl(e)h_1$-	*$pel(h_1)$-	IEW 804	9.50
*$d\underset{\cup}{u}(e)h_2$-	*$de\underset{\cup}{u}(h_2)$-	IEW 219	9.15	*pl-$(e)h_2$-	*$pel(h_2)$-	IEW 831	9.49
*$d^{h}\underset{\cup}{u}(e)s$-	*$d^{h}e\underset{\cup}{u}s$-	IEW 218	9.18	*pl-$(e)t$-	Gmc. *felþ-*	IEW 833	9.49
*$\hat{g}n(e)h_3$-	*$\hat{g}en(h_3)$-	168; IEW 376	9.27	*$pr(e)k$-	*$perk$- ?	IEW 820	9.52
*$\hat{g}^{h}\underset{\cdot}{i}(e)m$-	*$\hat{g}^{h}e\underset{\cdot}{i}m$-	IEW 425	9.29	*$pr(e)\hat{k}$-	*$per\hat{k}$-	490; IEW 821	9.53
*$\hat{g}^{h}res$-	*$\hat{g}^{h}ers$-	-	9.30	*$sk\underset{\cup}{u}(e)t$-	Lith. *skeut-*	IEW 954	9.56
*$g^{u}\underset{\cdot}{i}(e)h_3$-	*$g^{u}e\underset{\cdot}{i}h_3$-	215	9.32	*$s\underset{\cup}{u}(e)k^{u}$-	*$se\underset{\cup}{u}k^{u}$-	IEW 1044	9.60
*$g^{u}r(e)H$-	*$g^{u}er(H)$-	IEW 476	9.36	*$t(e)r$-	Gk. τερε-	632, 647; IEW 1071	9.61
*$Hr(e)H$-	*$HerH$-	251; IEW 338	9.24	*$\underset{\cup}{u}(e)g^{uh}$-	IIr. *augh-*	IEW 348	9.26
*$\hat{k}n(e)t$-	*$\hat{k}ent$- ?	326; IEW 567	9.38	*$\underset{\cup}{u}r(e)\hat{g}$-	*$\underset{\cup}{u}er\hat{g}$-	686; IEW 1168	9.67

As mentioned, a central claim of Antilla is that the original root is generally to be reconstructed in a State II shape (CR*e*C). This because of his conviction that, "often when we have apparent schwebeablaut, it is the state two that is more convincingly original."[23] The view partly originates from his identification of many State I formations as secondary denominatives with full-grade in the root, e.g. *$de\underset{\cup}{i}\underset{\cup}{u}ó$-, *$perko$-, $h_2énkā$-?, *$h_2elk\acute{a}$, *$\hat{g}^{h}eim\acute{a}$, *$per\hat{k}\acute{a}$, $deinā$.[24] Anttila subscribes here to Kuryłowicz's (1956:147-159) treatment of PIE *vr̥ddhi*, which distinguished secondary denominatives with full-grade of the type *$le\underset{\cup}{u}k$-$ó$- (Gk. λευκός 'light') ← *luk-s

[22] Columns with § cross-reference Anttila's discussion of the material. His notation has been updated as follows: E, A, $O = h_1, h_2, h_3$; $\acute{k}, \acute{g} = \hat{k}, \hat{g}$; $k^{w}, g^{w} = k^{u}, g^{u}$; $w, y = \underset{\cup}{u}, \underset{\cdot}{i}$.

[23] Anttila 1969:163.

[24] Anttila 1969:168.

(thus, from old root nouns), from anther type featuring *o*-grade (**lou̯k-ó-*) which he saw as primary deverbatives (verbal nouns).[25]

An additional source, according to Anttila (1969:169-70), for neo-State I forms within Germanic and Balto-Slavic, was zero-grade VR sequences arising from syllabic sonorants. Across much of Indo-European, epenthetic vowels tended to precede their sonorants, as is shown below, and this rightly might be taken as a contributing factor to at least some secondary State I formations:[26]

(4) FATE OF SYLLABIC SONORANTS IN IE

a. **Germanic** Ṛ > *u*R: **mr̥-tro-* > Eng. *murder*

b. **Balto-Slavic** Ṛ > *i*R: **k̂r̥d-* > Lith. *širdìs* 'heart'[27]

d. **Anatolian** Ṛ > VR: **u̯ódr̥-* > Hitt. *wātar* 'water'[28]

e. **Indo-Iranian** ṚH > V̄R, VR: **dl̥h₁gʰo-* > Ved. *dīrghá-* 'long'

f. **Italic** Ṛ > VR: **k̂r̥d-* > Lat. *cord-* 'heart'

g. **Armenian** Ṛ > *a*R: **sr̥bʰ-* > Arm. *arbi* 'I drank'

h. **Tocharian** Ṛ > VR: **k̂m̥tom* > Toch. A *känt* 'hundred'

Both Germanic and Balto-Slavic, however, have greatly altered original *samprasāraṇa.* Thus, RV : *u*R (< Ṛ) tended to be remodeled into RV : R*u* in Germanic, cf. past participle **brukanaz* (> Goth. neut. *ga-brukano* 'broken') ← **burkanaz* (< **bʰr̥g-*). Similarily, in Baltic, RV : *i*R was reshaped into RV : R*i*, cf. Lith. 1sg. preterite *bridaũ* 'wade' ← **bird-* < **bʰr̥dʰ-*. As can be deduced, however, the outcome of Germanic and Balto-Slavic *u*R and *i*R sequences remodeled to match their full-grade counterparts leads to a preponderance of neo-State II forms, not State I.

For this reason, Anttila's argument seems to hinge on particular zero-grade forms that became semantically isolated from their full-grade counterparts. These became neo-State I forms,

---

[25] Kuryłowicz 1956:147-8.

[26] Examples from Fortson 2010, unless otherwise noted.

[27] Occasionally, the outcome of syllabic sonorants in Baltic was also *u*R.

[28] AHP 55.

i.e. back-formed full-grades, whose new vowel was fixed in the same position as that of the epenthetic vowel (from syllabic sonorant), cf. Lith. inf. *piršti* (< **pr̥k̂-skʰé/ó-*) 'ask for in marriage' → back-formed full-grade present *peršù* (not †*preš-*, as if following regular *prašaũ* 'ask' < **prek̂-*).

1.4 Current views on schwebeablaut

While one or two others still have held on to earlier ideas on schwebeablaut, Anttila's own final conclusions appear to have been influential in the stated views of many current handbooks. According to him, while much of what has traditionally been called schwebeablaut was eliminated by the etymological screening process, schwebeablaut itself was nevertheless a reality in some fashion in the parent language:

> "Most of the preceding pages have been screening of some kind, resulting often in elimination of material, or making the use of this material at least doubtful. It turns out that there is no need to link schwebeablaut with a new theory. There is no doubt that descriptively there was schwebeablaut in many roots, i.e., it was clearly a morphophonemic submechanism in Proto-Indo-European. But making historical inferences from that is not automatically correct."[29]

Turning now to summarize the views of recent handbooks, we find that some nevertheless go so far as to still posit "disyllabic roots," based on a perceived alternation between root shapes in the daughter languages. For example, Szemerényi (1996:133) appears to invoke modified Benvenistean-style roots as part of a deeper stage in the language. However, he also allows for the possibility of metathesis, as well as misplaced full-grades in *vr̥ddhi*-derivatives:

> "Alternations of the type **ters-*/*tres-* (e.g. Lat. *terreō*: Gk. *ἔ-τρεσ-σαν*), usually referred to as *schwebeablaut*, go back in general to disyllabic basic forms of the type **ter-es-*, which gave **tér-s-* or **tr-és-* according to the position of the accent. In some cases (e.g. with internal *R*) it is possible that metathesis occurred, i.e. **terp-* could have changed directly to **trep-*. In other cases new full-grade forms may have arisen from regularly formed zero

[29] Anttila 1969:173.

grades; in this way **deiwo-* 'the (dweller) in the sky=god' was formed to **diw-*, zero grade of **dyeu-* 'sky', and **gheimo-* (Slav. *zima* 'winter') to **ghim-* from **ghyem-* (Lat. *hiem-s*). Similarly to **dn̥t-* 'tooth' a thematic **dent-ó-* was formed (OE *tind* 'prong, tooth'), and to **widhu-* 'forest' (English *wood*) a form **weidh(w)-o-* 'belonging to the forest, wild', seen (with dissimilatory loss of the second *w*) in Celt. **weido-* (Olr. *fíad*, W. *gŵydd*). The numerals **dwi-* 'two', **tri-* 'three' have secondary full-grade forms **dwei- *trei* in compounds in Celtic and Germanic (also in Latin?). On the other hand, Gmc. **hemana-* 'heaven' (Goth. *himins*, etc.) cannot be explained as a *vr̥ddhi* derivative of **akmon-/ *kmen-*; it is from IE **kem-* 'to cover'."

Even more recently, Meier-Brügger (2003:150) seems to consider the attestation of forms in alternate states to be enough justification for reconstructing roots with two vowels (at least for pre-Proto-Indo-European). Inexplicably, though, he limits this to *seṭ*-roots:

> "An unusual form of ablaut concerns roots that feature a closing postconsonantal laryngeal such as PIE **pelh*$_1$- 'to fill' (cf. Ved. *párī-ṇas-* n. 'fullness'). They are those that the Indian grammarians had already designated as '*seṭ*' - roots (cf. L 315). This group includes not only the zero grade **pl̥h*$_1$- (cf. Ved. *pūr-ṇá-* = Lith. *pìl-nas*), designated as "minus *-e-*," but also the second *full grade* PIE **pleh*$_1$- (cf. Gk. πίμ-πλη-μι). - This swaying **-e-* in PIE **p-e-lh*$_1$- vs. **pl-e-h*$_1$- is called a fluctuating ablaut (Schwebeablaut). The most probable explanation of the phenomenon is the postulation of a Pre-PIE form with two vowels capable of exhibiting full grade, thus **peleh*$_1$- in this case."

More sensibly, Weiss (2015:77[38]) does not cite disyllabic roots, which cannot be reconciled with current knowledge of PIE root structure. He instead views schwebeablaut as the product of speakers accidentally creating incorrect full-grades from zero-grades:

> "Both a root of the shape CERC and a root of the shape CREC have zero-grades of the shape CR̥C. If on the basis of an ambiguous zero-grade a new full-grade is created with the ablauting vowel in the "wrong" place, this is known as *schwebeablaut*, 'floating ablaut.'"

Such a view is perhaps the most widespread among scholars. The use of of this particular root (**h*$_2$*u̯eks-*), given as an alleged example for this interpretation of schwebeablaut will be shown in Chapter 5 to be incorrect.

Beekes (1995:162) is typical of not a few scholars, in that descriptive schwebeablaut is acknowledged, but its source or function is not particularly well-defined: "Roots with three consonants sometimes had two forms, for example **perk̂-/prek̂-*; this is called 'Schwebeablaut.' Compare Lith. *peršù*, OHG *fergōn*, with Lat. *precēs* 'supplication,' Goth. *fraihnan*, OE *frignan* 'to question.'" The reader is left wondering whether Beekes' reconstruction (**perk̂-/prek̂-*) is merely a *Transponat* or whether he views these as legitimate forms dating back to Proto-Indo-European.[30]

Clackson (2007:74) is more clear: he rejects disyllabic roots,[31] attributing the appearance of schwebeablaut to different reconstructed chronological stages of PIE. Apparent schwebeablaut is due to a later generation of speakers inserting incorrect full-grades in inherited zero-grades:

> "We have already seen in table 3.1 that some roots show alternative full-grade forms, as the root which is used to denote 'sky', 'heaven' and 'god' shows both a full-grade **deiw-* and **dyew-*. This apparent fluctuation of the full-grade vowel position is termed schwebeablaut, and does not affect all roots; some, such as the root **leik^{w}-* 'leave', never show this alternation. It has sometimes been assumed that the alternation between **deiw-* and **dyew-* can be explained if an earlier form of the root **deyew-* is reconstructed, with later syncope of one of the vowels. However, it seems more likely that schwebeablaut is in fact an illusion caused by the comparative method's inability to separate out different chronological stages of the parent language. For the root **dyew-* / **deiw-*, it is anachronistic to reconstruct both ablaut forms for the same synchronic stage of the parent language. Rather the original form of the root was **dyew-* with zero-grade **diw-*. At a later stage in PIE the zero-grade **diw-* became the basis for a new full-grade **deiw-* on the model of other roots which showed ablaut **CiC-* / **CeiC-*, such as **leik^{w}-*. If this is the correct explanation, schwebeablaut then gives no support to reconstructing an earlier root **deyew-*. Indeed, there is no reconstructed PIE formation which shows two full-grades in one root, and it is axiomatic that where there are two apparent full-grades in a reconstructed PIE word, there must be a morphological boundary between them."

---

[30] Interestingly, the second edition of Beekes' handbook (updated by Michiel de Vaan) leaves out any mention of the above (Beekes 2011:171) and apparently fails to even note or define schwebeablaut in the entire text.

[31] The LIV^{2} also does not operate with either disyllabic roots or schwebeablaut: "Hier ist angenommen, daß es im Urindogermanischen in jeder Wurzel nur einen Ablautvokal gab und daß dieser seinen feste Platz hatte. Zweisilbige Wurzeln (etwa †*teres-*) und der sogenannte Schwebeablaut (Wechsel der Position des Ablautvokals in Wurzeln mit mittlerem Resonanten, etwa †*ters/tres-*) sind also ausgeschlossen; als Schwebeablaut interpretierbare Phänomene gelten als erst einzelsprachlich entstanden (etwa umbr. **persk-* 'bitten' für **porsk-* < **p̥rsk̂-* < **p̥rk̂-ske-* zur Wurzel **prek̂-*)." (LIV^{2} 6).

As can be seen, there is quite a diversity of views in the literature, and therefore a fresh look at Anttila's remaining material and his conclusions is in order. There is often an understandable tendency in scholarship to maintain older, unexamined views that may not have been recently scrutinized. Clearly, then, there is value in taking a fresh look at a topic that has lately not been examined in much depth, even as it continues to be assumed in one form or another, and is occasionally employed as an explanatory mechanism for proposed etymologies.

1.5 Plan of study

The outline of this dissertation is as follows: The focus of Chapter 2 will be to examine key portions of Anttila's material that survived his screening and are summarized in the table above. These forms constitute the majority of his "State I Derivatives" column, and are taken from Chapter 9, "Basis of schwebeablaut." Each collection of forms will be reassessed and categorized in terms of its likelihood of inheritance. It will be argued that much of this material is unlikely to date back to the parent language, either because the particular etymological connection(s) are too tenuous, or because clearly secondary phenomena are at work in the daughter languages that feature the alternations. Chapters 3 and 4 will be devoted to two more difficult cases, with specific proposals outlined in order to account for their origins. Along with this, the recent views of certain scholars — such as Widmer (2004), who sees schwebeablaut as a facultative mechanism of derivation in the proto-language, and Nikolaev (2008, 2009), who sees it instead as a function of delocatival derivation — will also be evaluated.

The second half of this dissertation (in Chapter 5) will investigate the phenomenon of *s*-extended roots, which were not addressed in Anttila (1969). We will follow Schindler's suggestion in his (1970) review of Anttila's dissertation, which called for a systematic approach to analyzing the data in order to see whether any tendencies (morphological, phonological, etc.) in the parent language may be detected. A brief summary of findings will be given in Chapter 6, with directions for further study.

CHAPTER 2

Reevaluation of Previous Scholarship

2.1 Overview

The aim of this chapter is to critically evaluate the material that survives Anttila's (1969) etymological screening, so as to gain a clearer overall picture of the status of schwebeablaut (both in terms of its formal aspects as well as its origins).[32] More recent scholarly opinions of the etymologies involved will be incorporated, which will lead to a narrowing of the admissible evidence for schwebeablaut-like alternations in Proto-Indo-European. The material in this chapter is divided into several categories which specify the nature of the forms under investigation. It will be argued that all of the material in this chapter, whatever its explanation, does not reflect alternations inherited from Proto-Indo-European, and as such cannot be used as evidence for schwebeablaut. The more credible word equations will next be taken up in subsequent chapters.

2.2 Questionable forms

The forms in this section are considered to not offer any evidence for schwebeablaut in Proto-Indo-European. In the majority of cases, the forms are unlikely to be cognate with their supposed comparanda, eliminating any need for schwebeablaut. Still others owe their explanation to a

[32] Each collection of forms may be cross-referenced with Anttila's work summarized by the table in Chapter 1.

misinterpretation of underlying morpheme boundaries, or are otherwise not directly comparable, due to their divergent morphology.

2.2.1 **d(e)lh₁ + -(en)g^h-* ‘long’

The Greek primary adjective δολιχός ‘long’ is well-attested from the earliest sources, being present both in the Iliad and the Odyssey. Additionally, the Mycenaean anthroponym *ḍọ-ri-ka-o* (KN V 958), matching Δολιχάων, and the personal name *do-ri-ka-no* (KN U 4478), phonetically reflecting /Dolik^{h}ānōr/,[33] appear to be derived from the adjective as well, assuring a **dolik^h-* for attested historical Greek. Gk. δολιχός appears to exhibit a type of schwebeablaut with its presumed cognates, such as Lat. *longus* ‘long,’ if from **dlong-*. Other details surrounding this form, however, are also at odds with most of the evidence found in the other daughter languages.

The Indo-Iranian languages and Balto-Slavic feature formations that reflect a zero-grade *seṭ* root **dl̥Hg^h-*, cf. Vedic *dīrghá-* and Av. *darəga-* ‘long.’ OCS has *dlъgъ-*, matching Lith. *ìlgas*, while the other Slavic languages appear to have reflexes of the other epenthetic vowel **u* (occasionally found in Balto-Slavic), cf. Russ. *dólgiy*, Czech *dlouhý*, Polish *długi* ‘long.’ The variation in Slavic between **dlъgъ-* and **dlъgъ-* may be due to dialectal differences. Baltic, represented by Lith. *ìlgas*, Latv. *ilg̃s*, and the OPruss. adverb *ilga/ilgi*, shows unexpected loss of the inital **d-*. Additionally, a Germanic pre-form **tulg-*, represented by Goth. *tulgus* ‘firm,’ OE *tylg* ‘rather,’ OS *tulgo* ‘very’ may well belong with Indo-Iranian and Balto-Slavic **dl̥Hg^h-*.

Apparent schwebeablaut may be also observed in formations such as the Ved. comparative and superlative *drā́ghīyas-* / *drā́ghiṣṭha*, parallel to Avestan *drājiiō* / *drājištəm*, in addition to the nominal forms (Skt.) *dhrāghmán-*, (Av.) *drājah-* ‘length.’ The latter are reconstructed by Steer (2015:49) as inner-Indo-Iranian substantizations of the zero-grade adjective (a derivational process inherited from PIE; see section 6.4). The former, in turn, have neo-full grades (State II) supplied to the zero-grade root (cf. *urú-* ‘wide’ : *váriṣṭha-* ‘widest’).

The common Italic and Germanic word for ‘long’ is an altogether different formation. Gothic *laggs*, ON *langr*, OHG *lang* ‘long,’ point to PG **(d)langaz*. As in Baltic, Lat. *longus* < **dlong-o-* is assumed with Germanic to have lost the **d-*. Furthermore, a word-internal nasal

[33] Aura Jorro 1985:190-191.

consonant is featured, and no laryngeal seems to be detectable. Kloekhorst (2008:819-820) argues that a **dlh₁ongʰo-* reconstruction is only possible "if we assume that initial **d-* was dropped before the vocalization of **-l-* in Germanic, otherwise we would expect PGerm. †*tulanga-*." The similar loss of **d-* in Baltic perhaps warrants the hypothesis that some kind of dissimilation was at work in these languages. The alternative view — that **dl-* onsets were simply avoided in PIE — is likely refuted by Middle Persian *drang* 'duration, time period.'

That the medial nasal not only occurs in the western branches (Germanic and Italic) — but also in Middle Persian *drang* 'duration, time period' — is perhaps sufficient cause for reconstructing **n* (despite the relatively late attestation of the Parthian form[34]). It would appear, then, that we are dealing with a type of root with an *n*-infix (**dlongʰ-* < **dlh₁ongʰ-*?), which complements a parallel root shape in Balto-Slavic and Indo-Iranian that is unambiguously *seṭ* (**dl̥h₁gʰ-*), and whose laryngeal appears to have been **h₁*, on the testimony of Gk. ἐνδελεχής 'continuous.'

The position of Gk. δολιχός and Hitt. *daluki-* among these two variants is unclear. On face value, δολιχός would appear to reflect an *o*-grade vowel, though since Seiler (1950:101), several attempts have been made to simply derive the adjective in some fashion from **dl̥h₁gʰ-o-*. The regular outcome of vocalized sonorant + laryngeal sequences most widely accepted by scholars for Greek is *e*R*e* ~ R*ē*, *a*R*a* ~ R*ā*, *o*R*o* ~ R*ō*. Alternatively, a putative sound law formulated by Strunk (1969:1-8) states that **l̥h₁* > ολι (preconsonantal) or ολ (prevocalic). Key word pairs are cited by Strunk (beside δολιχός): Gk. πολις and Ved. *pū́r* 'city' < **pl̥h₁-s*; πολύς and Ved. *purú-* 'much, many' < **pl̥h₁-u-*. This is a rather tempting proposal, whose phonetic plausibility is nevertheless in question (and appears to be directly contradicted by Gk. ἐνδελεχής).[35]

A similarily puzzling, though different, vowel is found in Hitt. *daluki-* 'long.' The crucial question for schwebeablaut is whether the initial <a> is to be taken as a real vowel or not.

---

[34] A line from a Parthian ostracon (B2983) reads <W drng AGRTA BATR AGRA> (likely with the Aramaic conjunction *wa*) and is translated "[and] for a long time,' one letter after another" by Shared (1994:208-212). The alternative reading, a proper name *Widrang*, is rejected by him.

[35] Vine (1993:55) has proposed that Greek verbs in -ίσκω may perhaps be reconciled with PIE **-sḱé/ó-*formations, if Strunk's rule is accepted as valid.

Kloekhorst (2008:820) maintains that the phonologically regular outcome of intial *_dl_- is <z(a)l> /t͡sl/, meaning that the verb *zaluknu-* 'to lengthen' is related to *daluki-*. This would entail that *daluki-* must be read as /daluki-/, and not /dluki-/. A **doluk-* would appear to be closest to Gk. δολιχός (assuming, again, that the Greek root vocalism is inherited from a PIE *o*-grade). While *h_1 would be expected to disappear if following the liquid in both Hittite and Greek, the absence of a nasal in both languages is as striking as it is in Balto-Slavic.

Adding to all this is the question of OCS (*pro-*)*dъlti* 'to prolong,' which seems to be somehow related to these forms, even as it lacks the final *g^h. If so, this suggests the possibility that we may be dealing here with a morpheme boundary in the full form, i.e. two roots fused into one: schematically, *$d(e)lh_1$- + -$(en)g^h$-. That would render any schwebeablaut a moot point. Another possible segmentation suggested by Kroonen (2013:237) is an unattested verb which would have formed a nasal-infix present *$dlenh_1g^h$-*e*-. However, the nasal infix is generally inserted before the last segment of a root's coda (cf. *$i̯u̯g$- : *$i̯u$-*né*-*g*- > Ved. *yunákti* 'join'), which would suggest *dlh_1-*né*-g^h-. This theory also fails to address OCS (*pro-*)*dъlti*, should it belong to the other forms.

Whatever the case, the forms that are perceived to show schwebeablaut are not direct comparanda, i.e. Gk. δολιχός is not directly comparable with Lat. *longus*. This indicates that something other than schwebeablaut must have been at work in the parent language. The distribution of the forms is given below:

(5) IE *$d(e)lh_1$- + -$(en)g^h$-[36]

language	+velar	+dental	+laryngeal	+nasal
Hitt.	*daluki-* *zaluknu-*?	*daluki-* *zaluknu-*?	-	-
Gk.	δολιχός ἐνδελεχής	δολιχός ἐνδελεχής	δολιχός? ἐνδελεχής	-
Vedic	*dīrghá-*	*dīrghá-*	*dīrghá-*	-
Iranian	*darəga-* *drang*	*darəga-* *drang*	*darəga-*	*drang*
OCS	*dlьgъ*	*dlьgъ*	*dlьgъ* *pro-dьl-*	-
Lith.	*ìlgas*	-	*ìlgas*	-
Latin	*longus*	-	-	*longus*
Goth.	*laggs*	-	-	*laggs*

2.2.2 **der-* 'flay'

Anttila (1969:121) compares certain Germanic and Balto-Slavic words for prepared timber in his discussion. An alleged *set* root is represented by Lith. *diriù* (zero-grade) 'flay,' as well as *derù* 'id.' (full-grade). The nominal forms cited by him for State I are Latv. *nuõ-dara* 'a rod with branches cut off' and Lith. *dernà* 'plank.'

These contrast with State II ON *tróð*(*a*) 'staff, rod, plank' and Middle High German *truoder* 'fringe.' However, as mentioned in Chapter 1, true schwebeablaut would require a root with at least three consonants, since root onsets and codas are mandated according to PIE morphology (excluding shapes such as CR*e* or *e*RC). Thus, should the forms cited by Anttila turn out to represent the *aniṭ* root **der*- 'break, split' (LIV^2 119), any apparent schwebeablaut would be secondary by default.

In line with his theory of secondary State I derivatives, Anttila concludes that State II **droH*- (**dreh*$_3$-?) is the original root shape, and that the Baltic full-grade forms (in State I) are

[36] Forms are grouped according to unambiguous reflexes of phonological segments.

back-formed from zero-grade **dr̥H-*. The Balto-Slavic acute would be the only evidence for a laryngeal here, as the other daughter languages reflect **der-*: cf. Gk. δέρω 'flay,' Goth. *ga-tairan* 'tear,' OCS *derǫ* 'flay' < **dér-e/o-*. The extremely well-attested full-grade simple thematic present, however, is ample reason to take Lith. *derù* as representing the original state of affairs (as opposed to being a back-formed State I formation). Thus, ON *tróð*(*a*) 'staff, rod, plank' and Middle High German *truoder* 'fringe,' are clearly secondary, if they belong with PIE **der-*.

2.2.3 ***ĝʰres-* 'short, small'**

Anttila (1969:134) lists the following forms in State II: Skt. *hrasvá-* 'short, small' (comparative *hrásīyas-*), YAv. *zarahehī-* 'inferior.' The Avestan hapax is read by Anttila as /zrahyahīš/, which is endorsed by Hoffmann & Forsmann (2004:85) and EWAia III 615, thus, formally parallel to Skt. *hrásīyasī-* 'smaller'. These are said to be in alternation with State I MIr. *gerr* 'short' (< **ĝʰerso-*).

A semantically related word, OIr. *gair* 'short' (< *seṭ* **ĝʰr̥H-i-*), nevertheless lacks the corresponding root shape of MIr. *gerr*, putting into question its comparison with the Indo-Iranian forms. Anttila proposes a Benvenistean-style set of root extensions for **ĝʰer-*: **ĝʰr-es-* (> Skt. *hrasvá-*, MIr. *gerr*) and **ĝʰr-eH-* (> OIr *gair* (zero-grade)). The lack of any word-equations outside of Indo-Iranian, however, does not inspire confidence.

A connection between Skt. *hrasvá-* and the Greek comparative χείρων 'worse' is mentioned by Chantraine (1968:1252) and EWAia III 615. The forms, however, are very difficult to reconcile semantically (Chantraine reads "[i]ncertaine"). As mentioned above, MIr. *gerr* and OIr. *gair* 'short' are a better semantic match for Skt. *hrasvá-*, but it is difficult to make definitive judgements beyond this. Complicating this picture is the formally similar OIr. *gairr* 'calf of the leg,' which Matasovic (2009:152) reconstructs from Proto-Celtic **garro-* < **ĝʰr̥s-* (?). Altogether these forms appear to be too contradictory to reconcile, let alone support schwebeablaut.

2.2.4 ***h₁u̯egʷʰ-* 'praise'**

As pointed out by Anttila (1969:128), this root had long been considered to show schwebeablaut (cf. Chantraine 1968:389). Skt. *vāghát-* 'sacrificer' and Arm. *gog* 'say!' (subjunctive *gog-ć̔-*),

Lat. *voveō* 'vow,' Umbrian *vufetes* 'vōtīs' contrast with Av. *aojaite* 'they proclaim' (*aogədā* 3sg. inj.), Ved. *óhate* 'commend,' Gk. εὔχομαι 'praise' (εὖχος 'fame'). Anttila thought that Av. *aog-* reflected augment + zero-grade *ug-*, but this root may instead be reconstructed as *$h_1\underline{u}eg^{\underline{u}h}$- (LIV^2 253), which made a reduplicated present *h_1e-$h_1ug^{\underline{u}h}$- with zero-grade of the root. Presumably, the zero-grade has been generalized from the oblique, in contrast to *d^he-d^heh_1- > Av. *daδāiti* 'set down.' To this present belong Ved. *óhate* (3sg./pl.), Av. *aojaite* (3pl.), Gk. εὔχομαι, while Lat. *voveō* is from the causative *$h_1\underline{u}og^{\underline{u}h}$-*é̯e/o*-. There is no need to invoke schwebeablaut with these forms.

2.2.5 **kseu̯-* 'shave'

Anttila (1969:151) cites an alternation between Lith. *skiautẽ* 'a shaving' (State I) and Lat. *quisquiliae* 'rubbish, droppings of trees' (State II). It is a bit unclear, however, which root Lith. *skiautẽ*, *skvẽtas*, *skùtos* 'shreds, shavings' and Latv. *skùt* 'shave' belongs to. On the view that initial **ks* > Baltic *sk*,[37] these forms could be connected to **kseu̯-* 'shave' (LIV^2 372), in which case they would be unrelated to the rest of Anttila's (1969:151) cited material: Lat. *quisquiliae* 'rubbish, droppings of trees' (< **skuel-*), Gk. σκύλλω 'skin,' σκῦρος 'stone chippings,' and MHG *schiel* 'splitter' (< **skeu̯lo-*). Within this group, MHG *schiel* and Lith. *skiautẽ* would be the only State I forms. However, a comparison with Latv. *šķàute* 'sharp edge' makes clear that it is *skvẽtas* (State II) which is the innovation (assuming it belongs here).

The other listed forms are formally and semantically problematic in their own ways. Lat. *quisquiliae* is rather enigmatic. Walde (1954:411) suggests it is a loanword from Gk. κοσκυλμάτια 'cuttings of leather,' a view which is also entertained by Chantraine (1968:570), who, however, notes that this would presume that the word was more widely circulated in the ancient world than its single hapax would suggest. Gk. σκύλλω 'skin' is argued by Vine (1999:566) to be an example of Cowgill's law (according to which **o* became Gk. υ when between a sonorant and a labial consonants), thus from **skolH-i̯e/o-* (to which belong Lith. *skèlti* 'split' and likely Hitt. *iškalla-* 'tear'[38]). Gk. σκῦρος 'stone chippings' is of uncertain etymology.

---

[37] Lith. *skìnti* 'pluck' may perhaps be compared to Gk. ξαίνω 'card (wool)' < **ksen-*.

[38] Jasanoff 2003:78.

It has been compared variously to Gk. σκῖρος ‘stucco’ and Σκῦρος ‘Skyros’ (an island), and further afield, to Lith. *skiaurẽ* ‘full of holes’ and *kiáuras* ‘box with holes’ (note the assumption of *s*-mobile).[39] While σκῦρος comes closer to the meaning of Lith. *skiautẽ*, *skvẽtas* ‘shavings,’ it seems more economical to connect these with ξῡ́ω ‘shave’ < **kseu̯-*. Alternatively, LIV² (561) sets up **skeu̯t-* ‘shave’ and notes “Nur Balt.” Neither scenario, however necessitates schwebeablaut.

2.2.6 **ḱent-* ‘pierce’

Gk. κεντέω ‘prick; goad’ (aor. κένσαι), κέντρον ‘a sharp point,’ OHG *hantag* ‘pointed, sharp’ and Latv. *sīts* ‘hunting spear’ (< **sinta-* < **ḱn̥-to-*), all State I, are connected by Anttila (1969:140) to Ved. *śnath-* ‘strike; pierce; destroy; kill,’ and Av. *snaθ-* ‘to hit’ (State II). The non-Indo-Iranian forms are listed under **ḱent-* ‘prick’ in LIV² 362, while a separate “Nur iir.” root **ḱneth₂-* is tentatively set up in LIV² 337. Naturally, the aspirated *th* in *śnath-* and *snaθ-* remains to be accounted for (< **ḱneth₂-*?). EWAia III 381, following Kuiper (1937:55), suggests a root-extended **ḱn-eth-*, with a *ḱen-* seen in *śiśná-* ‘penis.’ The etymological connections are too tenuous to support schwebeablaut.

2.2.7 **ḱerh₂-* ‘mix’

Anttila (1969:140) compares Skt. *śrā́yati* ‘cook’ (*śrātá-* ‘cooked’) and *śrayana-* (< **ḱreHeno-*?), with Gk. κεράω ‘will mix,’ (aor. ἐκέρασα). He excludes ON *hræra*, OE *hrēran* ‘move’ as being too semantically remote. IEW 582 includes OE *hrēr* ‘rare’ here as well, which, as Anttila noted, means the opposite of *śrātá-* ‘cooked,’ though it is in the same semantic field. The connection between *śrā́yati*, *śrīṇā́ti* and Gk. κεράννῡμι is also endorsed by EWAia III 391. However, Narten (1987:270-296.) has now demonstrated that neither Sanskrit verb belongs to Gk. κεράννῡμι (itself from **kerh₂-*). The verb *śrī-* is reconstructible to a different root altogether, **ḱreu̯H-* (LIV² 337 ‘to distinguish oneself’), and may be directly compared to Gk. κρείων ‘rule, prince.’ Gonda (1956) compares εὐρὺ κρείων with Skt. *pr̥thu-śrī-* ‘with broad *śrī-*.’ The other verb *śrā-* was shown by her to have been an enlargement of the *aniṭ* root *śr̥-*, seen in the Ved. participle *śr̥tá-*

[39] Frisk 1960:743-744.

'cooked.' A close parallel cited by Narten is OCS *grějǫ* 'I warm' < *$g^{\mu h}$r-eh$_1$-i̯e/o- ← *$g^{\mu h}$er- 'warm' (cf. Gk. θερμός 'hot' < *$g^{\mu h}$er-mo-).

2.2.8 *pel(k)- 'pour' (?)

Anttila (1969:144), following IEW (798), lists a bewildering variety of forms here with different stems, suffixes and semantics. The Baltic forms with an expanded root (Lith. *pélkė* 'marsh,' Latv. *peļ̃ķe* 'puddle,' *plācis* (< *plākis*) 'clay') contrast with a simpler root elsewhere in IE, with the exception of a Greek gloss in Hesychius, πάλκος · πηλός ('clay'). Thus, Lat. *palūs*, *-ūdis* 'marsh,' Arm. *heɫum* 'pour' (traditionally taken to reflect *pel(H)-nu-mi, but see Klingenschmitt 1982:244-246), Gk. πλήμῡρα 'flood,' but also Latv. *pali* 'flooding,' Lith. *am̃palas* 'high water.' As noted by Anttila, schwebeablaut solely rests on a comparison of Latv. *plācis* with the other material. However, the form itself appears to be misglossed and rather means 'the peg above the wagon axle' (Karulis 2001:131). Such a meaning immediately places the word far from the semantic domain of the rest of the material.

2.2.9 *sek$^{\mu}$-o- 'sap'

Gk. ὀπός 'plant juice,' ὀπόεις 'juicy,' is tied here with Latv. *sveķis* 'sap' and taken from *su̯ok$^{\mu}$- (Anttila 1969:153), thus State II. However, Lith. *sakaì* and OPruss. *sackis* show that the Baltic form did not originally feature a glide, meaning we should reconstruct *sok$^{\mu}$-o-. For schwebeablaut, Anttila cites Lat. *sūcus* 'juice' < *so̯uk$^{\mu}$- and attempts to account for the loss of labialization in the velar either by appeal to paradigm leveling (*souc-os ~ *souqu-ī < *so̯uk$^{\mu}$-os, so̯uk$^{\mu}$-ī) or dissimilation following the glide (*so̯uk- < *so̯uk$^{\mu}$-). However, the Latin form is better connected to a different root *seu̯k̂- 'suck'[40] (LIV^2 488), cf. ON *súga*, OCS *sъsǫ*, Latv. *sùkt* 'suck.'[41]

---

[40] Both Latin and Germanic show variants reconstructible to *seu̯ĝ-. This is variously interpreted: perhaps both roots are from a substratum language.

[41] Latv. *sùkt* < nasal-infix *su-n-k̂-. "Satemization" occasionally fails to occur in Baltic, cf. Latv. *akmens* vs. *asmens* < *h$_2$ek̂-men-.

2.3 Post-PIE formations

In this section, forms that are more broadly considered to be etymologically related will be discussed. The apparent schwebeablaut they feature, however, is limited to a single branch or language, and hence is not justification for reconstructing an original alternation in the parent language. Still others which appear to exhibit schwebeablaut may be explained by *r*-metathesis within an individual language (this will be particularly true of Greek). Liquid (especially rhotic) metathesis is a disproportionately widespread feature of world languages (Blevins & Garrett 2004:128). A typical example may be observed in the prehistory of Classical Armenian:

(6) CLASSICAL ARMENIAN *r*-METATHESIS (Blevins & Garrett 2004:129)[42]

PIE		Armenian	
**k̂ub^{h}ros*	>	*surb*	'holy'
**b^{h}idros*	>	*birt*	'rigid, rude'
**meĝ^{h}ri-*	>	*merj*	'near'
**d^{h}ab^{h}ros*	>	*darbin*	'smith'
**su̯idros*	>	*k̔irtn*	'sweat'
**b^{h}rātēr*	>	*ełbayr*	'brother'
**b^{h}rēu̯r*	>	*ałbewr*	'spring, well'
**drak̂u-*	>	*artasuk*	'tears'
**g$^{u̯}$rāu̯ōn*	>	*erkan*	'millstone'

Thus, it will be argued that the explanations of the forms in this section have to do with phenomena that are related neither to the original formulation of schwebeablaut (with disyllabic bases) in Proto-Indo-European, nor the more modern view (with misplaced full-grades).

[42] The famous metathesis of Classical Armenian *rk* < PIE **du̯* has recently been examined in depth by Delisi (2013:369-491) using an Optimality theoretic approach.

2.3.1 *$\hat{g}neh_3$- 'know'

Anttila (1969:129-132) correctly distinguishes *$\hat{g}neh_3$- 'know' from *$\hat{g}enh_1$- 'be born,' though he is slightly cautious about the determination of which root the various kinship terms belong to (cf. Skt. *jñātí-* 'kinsman,' Gk. γνωτός 'relative, brother,' Middle Welsh *gnawt* 'relative,' OHG *knuot*, Latv. *znuõts* 'id.'). The root, as noted by Anttila, is clearly State II, cf. Lat. (*g*)*nōscō*, Gk. ἐγνών, OCS *znati* 'know.' Five items showing apparent State I are dealt by him individually:

(8) STATE I VARIANTS (*$\hat{g}neh_3$-)

a. The Greek verb γέγωνα 'to cry out' has been connected with γιγνώσκω (< *$\hat{g}neh_3$-) in the past. It is a perfect functioning as a present, to which a secondary pluperfect γεγώνει has been formed. A proposal by Cowgill (1965:148[8]) — in which metathesis of pre-Greek *γεγνώε > γέγωνε occurred parallel to μέμηλε 'is a concern' < *μεμ(β)ληε — is endorsed by Anttila. The semantic disparity between the two verbs, however, is a serious problem. As pointed out by Vine (2007:343ff.), recent independent attempts by Tremblay (1997:116f.) and Sauge (2000:237ff.) to reconcile the radically different meanings of γέγωνα and γιγνώσκω 'know' are not credible. There is no sense of 'conveying information so as to be understood' in this verb. Instead, γέγωνα in Homer is almost always used to introduce direct speech, cf. the following formula attested 6x (in varioius guises): ἤυσεν δὲ διαπρύσιον Τρώεσσι γεγωνώς[43] ("He uttered a piercing shout, crying out to the Trojans"). Vine connects the verb to semantically related Lat. *gemere* 'to groan' and argues that the root behind both must be either *$gen(H)$- or *$\hat{g}en(H)$-, following Hackstein (2002:187ff), who adds Toch. A *ken-* 'call' to the group.

b. Anttila disputes Kluge's (1913:161) connection of OE *kēne*, OHG *kuoni* 'bold' with Gk. γέγωνα because of the semantics. Kroonen (2013:299) views PG *kōni-* as a Germanic-internal *vr̥ddhi* derivative of *kann-* (itself ultimately from PIE *$\hat{g}neh_3$- (see below)).

[43] Iliad M 439.

c. Goth *kunnan* / *kann*, ON *kunna* / *kann*, OE *cunnan* / *can*, etc., 'know' feature an anomalous geminate *nn*, as noted by Anttila. PG ***kunnanǫ*** is usually taken to have its origin in a *-neh₂*-present (cf. Skt. *jānā́ ti*, Lith. *žinóti* 'know'), whose starting point must have been something akin to ***ĝn̥h₃-néh₂-ti*** > PG ***kunnōþi***. The "quasi-full-grade" ***kann-*** is an analogical development of the strong form of the same reduced stem.

d. The YAv. verbal adjective *paiti-zaṇta-* 'recognized' occurs beside the State II original *-xšnāŋhəmna-* (pres. ptc.).[44] For the State I forms in *zan-*, Anttila appeals to some form of contamination with *zan-* 'give birth' (< ***ĝenh₁-***). Alternatively, Vine (2007:345) proposes that the expected †*zāta-* (< ***ĝn̥h₃-tó-***) was avoided due to homophony with *zāta-* 'born' (< ***ĝn̥h₁-tó-***). Under either scenario, the State I forms in Avestan are clearly secondary.[45]

e. Lith. *žénklas* 'sign' is matched by a full-grade in OPruss. *ebsentliuns* 'describe,' which itself is a denominal verb to ***žentla-*** (= Lith. *žénklas*, as if ***ĝenh₃-tlo-***). This form is unlikely to be old, cf. OHG *be-knuodilen* 'outstanding' < ***knōtlo-*** < PIE ***ĝneh₃-tlo-*** (?). What is more, as Anttila points out, Lith. *žénklas* is matched by expected *žìnklas.* The normal pattern, in fact, is for zero-grade infinitives to be paired with zero-grade instrument nouns, thus, *žénklas* remains anomalous.

2.3.2 ****gᵘreh₂-u̯en-*** 'millstone'

This form is widely attested in the daughter languages. Anttila (1969:139) lists Goth. (*asilu-*)*qaírnus* 'donkey-mill' (?), ON *kvern* 'millstone,' OE *cweorn* 'id.' (State I), in alternation with State II Ved. *grā́van-* 'pressing-stone,' OIr. *braú* 'quern,' Lith. *gìrnos* 'id.,' OPruss. *girnoywis* 'handmill,' OCS *žrъny* 'millstone,' Arm. *erkan* 'handmill.' This word is an archaic *n*-stem formed to a *u*-stem adjective ***gᵘreh₂-u-*** (> Ved. *gurú-*, Goth. *kaurus*, Gk. βαρύς, Lat. *gravis* 'heavy'). Celtic ***brau̯on-*** appears to be a hybrid of the old ***gᵘréh₂u̯-ōn*** / ***gᵘr̥h₂u̯-n-és*** paradigm

[44] There seems to have been a two-fold outcome for initial **ź-* (< PIE **ĝn-*): *žn-* vs. *xšn-*, cf. YAv. *žnu-* 'knee' (= Ved. *jñu-*) vs. Av. *xšnu-* 'knee.' This distinction is probably dialectal (Hoffmann & Forsmann 2004:102).

[45] Stephanie Jamison mentions to me the possibility that the nasal present (corresponding to Ved. *jānā́ti*), which is found as both *zanā-* and *zān-*, might have formed the basis for a neo root *zan-*.

(Matasović 2009:75). Beyond Celtic and Vedic, the other languages show what looks like a reshaped *n*-stem built to the oblique: **g^{u}r̥$h_2$un-* → **g^{u}r̥h_2-n-*. The zero-grade is continued in Balto-Slavic, where a feminine **gī́rn-ā* (as well as a *u*-stem **gī́rn-us*) is reconstructible (from a “long sonorant” R̥H). Arm. *erkan* ‘millstone’ possibly reflects a similar zero-grade (*g^{u}r̥h_2-n-*).

Germanic, with its *u*-stem **k^{w}ernu-* (> ON *kvern*, OE *cweorn*, etc.), is the only branch with apparent schwebeablaut. It is difficult to argue for the origin of the schwebeablauting full-grade based on the model of other *u*-stems, as Proto-Germanic featured both zero-grade and full-grade, cf. Goth. *kaurus* ‘heavy’ (< **k^{w}ur-u-*) vs. ON *kyrr* ‘calm’ (< **k^{w}err-u-*). Perhaps its base **k^{w}ern-* is a reflex of the same (strong) stem that is likely behind the Balto-Slavic (and Armenian?) words. In any event, the *u*-stem is not directly comparable with its more archaic cognates, and thus cannot be used as evidence for schwebeablaut.

2.3.3 **$h_2$erĝ-* ‘whitish’

Ved. *rajatá-* ‘white; silvery’ (State II) has long been connected to the rich amount of material reconstructible to **$h_2$erĝ-* ‘white; silver.’ As such it would be the sole example of schwebeablaut in the entire complex (Anttila 1969:118), as even within Indic, State I variants such as *árjuna-* ‘light; white; silver-colored’ are readily found.

The only occurrence of *rajatá-* in the Rig Veda is in a verse (RV VIII.25.22) that exhibits parallelism with *r̥jrá-*, an undisputed ‘silver’ word, nevertheless, this cannot be taken as clear etymological evidence for a connection between the two forms, as there seems to be an element of folk-etymology at work here:[46]

(7) RIG VEDA (VIII.25.22)

r̥jrám ukṣaṇiyāyane	A silvery (horse) at Ukṣaṇyāyana’s (sacrifice)
rajatáṃ hárayāṇe	A silver one at Harayāyaṇa’s
ráthaṃ yuktáṃ	And a yoked chariot at Suṣāman’s
asanāma suṣāmaṇi	—these we have gained

Mallory & Huld (1984:4) dispute the connection of *rajatá-* to **$h_2$erĝ-*, pointing out, as Whitney (1889:442) noted, that comparable forms such as *darśatá-* ‘conspicuous,’ *yajatá-* ‘worthy of

[46] Jamison & Brereton 2014:1082.

worship,' and *paśyatá-* 'visible' appear to be secondary *-tá-* adjectives built on thematic verbal stems. On this view, then, *rajatá-* is to be connected to a separate root *(*s*)*reĝ-* 'be colored, dye' (seen in Ved. *rajyáte* 'is colored' and Gk. ῥέζω 'to color'). However, *rajatá-* 'white,' a straightforward adjective, does not really appear to be comparable to the types of formations mentioned above, which are transparently deverbal.

It is not immediately obvious, however, how *rajatá-* and Av. *ərəzata-* are to be connected formally with Lat. *argentum*, OIr. *argat* 'silver,' etc. Part of the difficulty is determining whether the widely attested formation should be reconstructed with a zero grade (i.e. *h_2r̥ĝ-n̥t-*) or a full-grade (*$h_2$erĝ-n̥t-*, à la *h_2u̯eh$_1$-nt-* 'windy').

Tremblay (1998:196[21]) suggests that *rajatá-* is a derivative of *r̥jatá-*, just as *árjuna-* is vis-à-vis Gk. ἄργυρος 'silver' (assuming *h_2r̥ĝ-u-* for Greek, as opposed to *$h_2$erĝ-u-*). Ved. *rajatá-* would thus derive from *r̥jatá- < *h_2r̥ĝ-n̥t-* (cf. Av. *ərəzata-*, Lat. *argentum*, OIr. *argat*). In any event, Ved. *rajatá-* cannot be a State I derivative (in Anttila's schema), when considered alongside *árjuna-*.

2.3.4 **pel-* 'ashes' (?)

The only cases of schwebeablaut cited by Anttila (1969:149) are found in Baltic. Here, the pairs Lith. *pelenaĩ* 'ashes' vs. *plénys* 'flake ashes,' Latv. *pèlni* 'ashes' vs. *plẽne* 'white ashes,' OPruss. *pelanne* 'ashes' vs. *plieynis* (/plēn-/) 'dust, ashes' all show peculiar vowel alternations. Only in Latvian does the suffix *-en-* appear to have undergone syncope, while elsewhere the root variants (even within the same language) are *pel-* vs. *plē-*, with what looks like an extra element *ē* to *plē-*. Similar patterns are found elsewhere in Balto-Slavic, cf. OCS *pelena* 'bandage' vs. Czech *plena* 'headscarf, bandage' and Russ. *plésen'* vs. Lith. *pelẽsis* 'mold.' Derksen (2008:411) connects these forms with OCS *plamy*, Russ. *plámja*, Czech *plamen*, which, however, all meaning 'flame.' The relationship between either the Baltic or Slavic forms to the rest of the Greek and Latin material is tenuous. Lat. *pollen*, *-inis* 'flour' may perhaps go back to **polni-* (cf. Umbrian *poni* 'sacrificial grain' ?), but any further connections are difficult to establish. de Vaan (2008:477) argues against a connection, since flour is prized as a commodity, while ashes are not, complicating an account of a semantic development in either direction. The LIV^2 sets up an *aniṭ*

root **pel-* ‘to kindle,’ for which it, however, only adduces Slavic forms. No secure word equation may be established for schwebeablaut among these forms.

2.3.5 **perk̂-* ‘speckled’

Here a great number of animal names are cited by Anttila (1969:149-150), mostly in State I. The animals (cf. Gk. πέρκος ‘hawk,’ MIr. *orc* ‘salmon,’ Lat. *porcus* ‘fish’ vs. Gk. πρεκνόν ‘dappled deer’) derive their names according to their speckled (and/or grey) exterior. The minor Greek goddess Procne (Πρόκνη) is associated with the nightingale, and hence is probably related to the rest of the words. OHG *faro* ‘colorful’ is from PG **farwa-* < **perk̂-u̯ó-* (Kroonen 2013:130). While Anttila acknowledges the possibily of metathesis as an explanation here, he prefers to set up an original root noun **prok̂-*/**pr̥k̂-* that underwent different remodelings and sometimes introduced new full-grades (cf. OIr. *cerc* ‘hen’ vs. Gk. κρέξ ‘a kind of bird’). However, given that the supposed schwebeablaut is limited to Greek, the preferrable explanation is *r*-metathesis (cf. στέρφος ~ στρέφος ‘hide, skin’; τέρχνος ~ τρέχνος ‘twig’). No evidence of an original root noun is to be found, and the forms all seem to be derived from a thematic adjective in PIE. These are listed in the table below according to their root shape:

(9) **perk̂-* (Anttila 1969:149-150)

State I (*perk̂-*)	State II (*prek̂-*)
Gk. πέρκος ‘hawk’	Gk. Πρόκνη ‘Procne’
Gk. περκνός ‘hawk’	Gk. πρεκνόν ‘dappled deer’
Gk. περκή ‘perch’	Gk. πρόξ ‘roe’
MIr. *erch* ‘salmon’	Gk. προκάς ‘roe’
MIr. *orc* ‘salmon’	
Welsh *erch* ‘dappled’	
Swed. *färna* ‘whitefish’	
OIc. *fjǫrsungr* ‘weever’	
OHG *faro* ‘colorful’	

2.3.6 *$pleh_2$- ‘flat’ and *$pleth_2$- ‘broad’

The alternation in question is between pairs such as Latv. *plâns* ‘flat’ and Hitt. *palḫi-* ‘broad.’ The majority of the words in this group, as noted by Anttila (1969:148) denote or relate to ‘flat ground, terrain.’ The words for ‘palm,’ on the other hand, are excluded by him, following Kurylowicz (1956:396), who argues that forms such as Gk. παλάμη are analogical recreations (neo-full-grades) from phonologically regular *$pl̥h_2$- (reflected in OIr. *lám* < *$plāmā$). However, as Beekes (1969:206) points out, these kinds of alternations are not widespread, and many of the formations (κάλαμος, ταραχή, etc.) in which they are present have the look of being ancient. Various phonological mechanisms have been advanced, chiefly related to stress. In other words, the difference between pairs like θνητός ‘mortal’ and θάνατος ‘death’ is currently generally thought to have have been determined by the accentuation of the syllabic sonorant + laryngeal. Rix (1976:73) views the outcome of unaccented *$R̥H$ as having been $RV̄$, while secondarily accented *$Ŕ̥H$ became VRV. This has also recently been endorsed by Rico (2000:161-200); however an alternative account provided by Vine (1998:66-69) states that θάνατος, κάλαμος, etc. are decompositional formations from original compounds in *-*eto*-. The indecisive nature of these matters perhaps warrants the exclusion of the ‘palm’ forms as probative for schwebeablaut.

The State I forms cited by Anttila include Arm. *hoł* ‘earth,’ OCS *polje* ‘field,’ Sorbian *płon* ‘flat,’ Swedish *fala* ‘id.,’ and Hitt. *palḫi-* ‘broad.’ Also added to this dossier is OHG/OE/OS *feld* ‘field,’ probably a derivative of ON *fold*, OE *folde*, OS *folda* < Germanic *$fuldō$ ‘earth,’ which is a close semantic cognate with Indo-Iranian *$pl̥th_2$-$u̯$-ih_2 ‘earth’ (Ved. *pṛthvī́*). However, the *$pleth_2$- root is entirely separate from *$pleh_2$-, and does not therefore have any bearing on schwebeablaut here. The Germanic word for ‘field’ likely shows Verner’s Law variants, cf. OE *feld* vs. early OE *-felth* in place names, and as such, it probably reflects an old *u*-stem *$felþu$- / *$feldaw$- ← *$felþu$- / *$fuldaw$- (Ringe & Taylor 2014:156). It is easy to see how such a *u*-stem could have been backformed to the stem *$fuld$- (from *$fuldō$).

Armenian *hoł* ‘earth’ has been variously analyzed. The connection with *$pleh_2$- has been suggested since Meillet (1894:154). However, the alternation *het* : *otn* < PIE *ped- ‘foot’ suggests that *h was lost before *o, which makes this collocation problematic. Pedersen (1982:148) suggests a connection with Lat. *solum* ‘ground; base’ (also seen in Latv. *sala*

'island'), which is tentatively adopted by Klingenschmitt (1982:165). Another possibility is zero-grade *$p\underline{l}h_2$-*nó*- (in contrast with full-grade in Latv. *plãns*, Lat. *plānus* 'flat'), suggested by Martirosyan (2010:416).

A reconstruction *$p\underline{l}h_2$-*i*- (thus, zero-grade, not State I) > Hitt. *palḫi*- 'broad' is argued for in AHP 55, on the view that a syllabic liquid is the best way of explaining the preserved -*lḫ*- in *palḫi*- and Cuneiform Luvian *šalḫi*(*an*)*ti* 'growth'.

More serious difficulties are encountered with Swedish *fala* 'plain' and OCS *polje* 'field.' These, however are the only words connected to *$pleh_2$- (not *$pleth_2$-) that mean 'field.' While it is not impossible to postulate a scenario for *'flat, broad' > 'field,' the fact nevertheless remains that these are secondary formations, which are unlikely to go back to the parent language.

2.3.7 *$prek\hat{}$- 'ask'

This verbal root formed a widely attested *sk$\hat{}$é/ó*-present *$p\underline{r}k\hat{}$-sk$\hat{}$é/ó*-, cf. Lat. *poscō*, Ved. *pṛccháti* 'ask.' As pointed out by Anttila (1969:150), the State I forms of this solidly State II root (cf. Lat. *prex* 'prayer,' Lith. *prašaũ* 'ask') tend to have derived meanings, frequently having to do with 'asking in marriage.' Thus, Lith. *peršù* 'ask in marriage' is matched by zero-grade *piršti* 'woo,' and OHG *fergōn* 'request' is matched by State II *frāgōn* 'question.' These seem to be neo-full-grades to already-existing zero-grade formations. Derived "neo-full-grades" are also seen in a number of non-Latin Italic formations, cf. Umbrian **persklum** 'offering; prayer' and **persnimu** 'let him pray' (Meiser 2003:188). Finally, Armenian *p̣esay* 'suitor,' though it fits well semantically, has an initial *p̣* that is irreconcilable with *prek$\hat{}$-. Contra Anttila, there are no inherited forms in *perk$\hat{}$-.

2.3.8 *$terh_1$- 'bore through, rub'

Anttila (1969:154) notes that Germanic forms are the only State II examples here, cf. OHG *drāen* 'turn,' OE *þrāwan* 'throw,' OHG *drāt* 'thread' < *trē-. The rest of the cited forms are State I: Gk. τέρετρον 'drill,' τείρω 'wear out,' Lat. *terō*, OCS *tьrǫ* 'rub.' On the basis of Gk. τέρετρον, it seems reasonable to set up *$terh_1$- (as LIV^2 632 does), but Anttila prefers to view this form as analogical to *trē* (thus with a neo-full-grade *tere*). He proposes a Benvenistean root extension

to **ter-*: alternately **ter-h_1-* or **tr-eh$_1$-*. The laryngeal, however, seems to be securely reconstructable not only on the basis of τέρετρον, but also Lat. *terebra* 'auger' < **terasrā* < **terh$_1$-* (cf. *tenebra*, Ved. *támisrāḥ* 'darkness' < **temHsreh$_2$* (Weiss 2015:74)). The root itself, however, has been compared to a number of forms that appear to reflect **ter-d-*, thus constituting evidence for Benveniste's root enlargement theory. Examples of such formations include Ved. *tr̥ṇátti* 'drills, bores' < **tr̥-né-d-*.[47] On this view, then, Germanic **trē-* may indeed reflect a **tr-ē-* segmentation. A Benvenistean root segmentation **tr-ē-* vs. **ter-h$_1$-* (and **ter-d-*), of course, would rule out schwebeablaut. Alternatively, the LIV^2 (647) sets up a separate root **treh$_1$-* commenting that is is "[n]ur germ., wird meist als irgendwie zu **terh$_1$-* 'bohren' gehörig betrachtet." This may be too easy a solution, since, as in other places, Germanic clearly demonstrates secondary developments.

2.4 **h$_2$nek̂-* 'reach' and **h$_1$nek̂-* 'take'

We conclude this chapter with a rather more complex case involving forms in multiple daughter languages that seem to conspire to give the appearance of an original schwebeablauting pair of roots in PIE. Anttila (1969:110-111; 124-126) discusses a disparate collection of forms, with nearly as much semantic variety. Some of these are discussed in Chapter 8 ("Doubtful schwebeablaut"), while others are placed in Chapter 9 ("Basis of schwebeablaut"). Here, a broad range of forms are tabulated under State I and State II according to daughter language and reconstructed with an initial laryngeal (State II: variously "*Hneḱ-*/*Ane*(*n*)*ḱ-*"; State I: "*enk-*"). The etymological link between the forms in Chapters 8 and 9 will first be put into question, after which the remaining material will be examined on its own merits.

2.4.1 *Seṭ* vs *aniṭ* roots

Anttila (1969:110) notes that since Kuryłowicz' identification of Hittite *ḫ*-fricatives with (the then recently postulated) laryngeals, a frequent connection had been made between the Hitt. neuter *n*-stem *ḫenkan* 'fate; plague; death' and the well-known group of cognates attested in both

[47] Similar forms are discussed in Vine (1982:32ff.).

verbs — such as Ved. *náśyati* ‘is lost,’ YAv. *nasiieiti* ‘disappears,’[48] Lat. *noceō* ‘injure,’[49] etc., — and nominal formations like Gk. νεκρός ‘corpse,’ νέκυς ‘dead body,’ Lat. *nex* ‘death,’ Gk. νέκυς ‘dead body.’ This same pairing is notably presented in Benveniste 1935:155 as *ə₂én-k-* / *ə₂n-ék-* (“thème I, thème II”), thus serving as a key piece of evidence for his root theory.

Several Celtic forms appear to link quite well semantically with Hittite *ḫenkan* ‘fate; plague, death,’ and are not incompatible formally with **Henk̂-*. OIr. *écen*, Cornish *anken*, Welsh *anghen* all mean ‘necessity; act of violence’ and reflect Proto-Celtic **ank-*, which could go back to either **h₂enk̂-* or **n̥k̂-*. Gk. ἀνάγκη ‘force, necessity,’ likewise seems to convey a similar sense of ‘inevitability’ and ‘fate.’

Anttila prefers **h₂enk̂-* over zero-grade **n̥k̂-* for Celtic, and connects these to “**Hneḱ-*” ‘reach’ (from Chapter 9). The meanings are then divided by him into three semantic categories: (1) ‘death,’ (2) ‘necessity,’ and (3) ‘reach.’ Discarding the first one, (1) ‘death,’ as the original meaning (presumably because it is unable to account for the development of the other two meanings), he views (3) ‘reach’ as having been the basis for the derived meaning (2) ‘necessity.’ For Anttila, this is a point in favor of his thesis-wide claim that State I C*e*RC is usually derivative of an original State II CR*e*C, since “**Hneḱ-*” ‘reach,’ witnessed by the Old Irish perfect *-ánaic* ‘has reached,’ contrasts with State I forms that have derived meanings like Hittite *ḫenkan* ‘fate; plague; death,’ (and, by inference, Celtic and Greek as well).

From the outset, the group comprising Ved. *náśyati* ‘is lost,’ Gk. νέκυς ‘dead body,’ etc., can be eliminated on formal and semantic grounds. A fatal objection is the lack of a prothetic vowel in the Greek forms (cf. ὄνυξ ‘claw; hoof’ vs. Ved. *nakhá-* ‘claw; nail’ < PIE **h₃nog^{h}-*). The derived meaning ‘death’ found in a number of cognates from **nek̂-* is a secondary development from the original sense ‘disappear’ still found in Indo-Iranian — Ved. *náśyati* ‘is lost,’ YAv. *nasiieiti* ‘disappears’ — which better accounts for a semantic development

[48] Anttila curiously glosses ‘he drifts.’

[49] According to Ernout-Meillet (1959:440a), semantically weakend from an original *‘to bring death to someone.’

*‘disappear’ → ‘die.’ In other words, Gk. νεκρός, etc., and Hitt. *ḫenkan*, Gk. ἀνάγκη likely arrived at secondary ‘death’ meanings independently.[50]

With a clear division between PIE **nek̂-* and the forms unambiguously pointing to an initial laryngeal, the Celtic material reflecting **ank̂-* must be assigned to either the former or the latter. OIr. *éc*, Bret. *ancou*, Corn. *ancow*, Welsh *angheu* ‘death’ (all *u*-stems) present an interesting contrast with OIr. *écen*, Corn./Bret. *anken*, Welsh *anghen* ‘need; force.’ The former are all *u*-stems meaning ‘death’, which, according to Matasović (2009:37), have generalized the zero-grade **n̥k̂-u-* of the oblique cases (as with the oblique of the ‘name’ word, **anman-*), while the latter are tentatively reconstructed by him as going back to Proto-Celtic **ankinā* (undergoing *a*-affection: **ankinā* > **anken*).

The attractive semantic connection between this group and Gk. ἀνάγκη ‘necessity’ has frequently led to the view that these are related in some way: it is difficult, in any event, to conceive of a scenario where *‘death’ → ‘necessity.’ Both the Celtic and Greek forms are also somewhat obscure, formally. Gk. ἀνάγκη ‘force, necessity,’ a traditional candidate for a State I **h₂enk̂-*, is unlikely to be such, according to Anttila. His preferred solution is **h₂nénk̂-eh₂* (having the same root shape as Ved. *náṁśa-* ‘acquisition’), though he also allows for zero-grade **h₂n̥k̂-* + preverb ἀνά-, or **h₂nek̂-eh₂* + privative ἀ(ν)-. These reconstructions avoid schwebeablaut, if indeed Gk. ἀνάγκη belongs to **h₂nek̂-*, yet it appears that only some sort of reduplicated stem **h₂en-h₂enk̂-* will be able to account for the shape of this word. Frisk (1960:101) states “[n]icht sicher erklärt” and offers the standard comparanda already discussed (Old Irish *écen*, Hitt. *ḫenkan*). Other possibilities suggested by him are: (1) a connection with ἐνεγκεῖν ‘to bear,’ and (2), a segmentation ἀν-άγκη, with privative ἀν- and a base -άγκη, perhaps from a word meaning ‘arm’ (cf. ἀγκών ‘bend of the arm’). Chantraine (1968:82) offers similar suggestions, also noting that the ἀν- in ἀν-άγκη could be from the preverb ἀνά- (similar to Anttila above, but with a different morpheme boundary) with an original sense *‘take by the hand; embrace.’ Beekes (2010:97) proposes that the word may be a substrate item, but such a view detracts from the attractive semantic comparison with the Celtic material. In any case, it is

[50] Melchert (2014:219-227) demonstrates that Hitt. *nakku*(*wa*)- ‘(spirits of) the dead’ is an actual descendant of PIE **nek̂-*, thus ruling out any connection with *ḫenkan*, while solidifying the etymological distinction in Celtic between the *u*-stems and *n*-stems.

probably equally as difficult to come up with a scenario for tracing 'need; necessity; force' back to *$h_2nek\hat{}$- 'reach,' as it is to *$nek\hat{}$- 'disappear.'

2.4.2 Distinguishing two *$Hnek\hat{}$- roots

A preliminary step in assessing Anttila's tabulated forms (see Figure 2.6 below) is the elimination of unrelated forms. The need to go beyond *$h_2nek\hat{}$- (= Anttila's *$Hnek\hat{}$-) and delineate between two distinct laryngeal-initial roots *$h_1nek\hat{}$- and *$h_2nek\hat{}$- has been advocated by Beekes (1979:9-20) and is clearly demonstrated in García-Ramón 1999. The partial merger of these roots in non-Greek languages due to loss of laryngeals is somewhat difficult to tease apart. It is not surprising, therefore, that the Greek evidence has been disputed, for example, in Cowgill 1965:154, where the passing suggestion is made that Gk. ἐνεγκεῖν 'carry' is perhaps assimilated from earlier *ἀνεγκ-, based on the fact that OIr. *-ánaic* can only reflect *$h_2nek\hat{}$-. Yet a simple formal and semantic distinction is clearly to be seen in the Doric Greek compounds διᾱνεκής 'perpetual' and ποδηνεκής 'reaching down to the feet,' as pointed out in an LIV^2 footnote for *$h_2nek\hat{}$- (LIV^2 252). Since Doric keeps *$\bar{e}$ and *$\bar{a}$ distinct, διᾱνεκής (= Attic διηνεκής) can only reflect δι(α)- + *$h_2nek\hat{}$-, while ποδηνεκής reflects ποδ- + *$h_1nek\hat{}$-.

2.4.3 Screening forms

Anttila (1969:125) tabulates the forms traditionally viewed as belonging to *$Hnek\hat{}$-, which as we have seen above, involves at least two distinct roots, *$h_1nek\hat{}$- and *$h_2nek\hat{}$-. Upon closer inspection, adjustments to many of the etymologies of these forms serve to eliminate much of the supposed schwebeablaut. The distribution of forms between State I and State II is given below:

(10) **Hnek̂-* (Anttila 1969:125)

	State I	State II	
Skt.	*áṁśa-* ‘portion’	*na(ṁ)ś-* ‘attain’	
Gk.	ὄγκος ‘mass’	ἐνε(γ)κ- ‘carry’	
Hitt.	*ḫenkzi* ‘distribute’	*nikzi* ‘raise’	
Lith.	—	*nešù* ‘carry’	
ON	—	*nā* ‘reach’	
Arm.	*hunj-ǩ* ‘harvest’	—	
OIr.	*-uccai* ‘brings’	*-ánaic* ‘reached’	
Toch. B	*eṅk-* ‘grasp’	—	

The case of ὄγκος ‘mass, burden; pride’ (presumed to form a word equation with Skt. *áṁśa-* ‘portion’) is perhaps the most clear. This is a τόμος-noun that has been associated with ἐνεγκεῖν ‘carry,’ thus being characterized as having a resultative meaning *‘thing carried’ → ‘burden.’ However, it has additional distinct meanings, such as ‘pride,’ which are difficult to derive from ‘carry,’ and virtually every meaning featured of derivatives such as ὀγκόομαι ‘to be puffed up,’ ὄγκωσις ‘swelling’ or compounds such as ὀγκώδης ‘bulky, bombastic’ is unlikely to have been semantically derived from an original sense ‘mass’ (referring to weight). Instead, any notions of weight are secondary byproducts of the original idea of something ‘bulging.’ Such a semantic reconstruction reassigns ὄγκος to the root **h₂enk-* ‘curve,’ whose correspondents are Ved. *aṅká-*, Lat. *uncus* ‘hook.’

The Armenian, Hittite (State II) and Tocharian examples are also rather weak. Armenian *hunj-ǩ* ‘harvest,’ while conceivably going back to something like *‘dividend (of the father)’ is dismissed as “unnecessary” by Anttila. In any case, the consonantal laryngeal reflexes of Armenian are highly disputed (according to Olsen (1985:5-17), every case of preserved laryngeal reflexes can be matched by others showing loss of the laryngeal. Thus, for example, *hayc’em* ‘ask’ contrasts with *ayc’* ‘investigation,’ both being reconstructed from **h₂eḭs-sḱé/ó-*.[51] The cited

[51] Some, e.g. Kingenschmitt (1982:63) see this vacillation of *h* as unrelated to laryngeal reflexes.

Hittite verb *nikzi* glossed 'erhebt' is in fact *nini*(*n*)*k*- 'set in motion' (Kloekhorst 2008:400) which is better connected with another nasal-infix present represented by Lith. *įninkù* 'to occupy oneself with *x*,' *su-ninkù* 'pounce upon,' and Gk. νεῖκος 'fight, war' < **neik*- 'raise (oneself).'[52] Finally, for Tocharian, the outcome of either zero-grade **h*$_1$*n̥k̂*- or full-grade **h*$_1$*nek̂*- would have given Proto-Tocharian *änk*-, but Malzahn (2010:539), following Hackstein (1995:226-227), prefers a zero-grade. Hackstein lists two phonological possibilities for Toch. B *eṅk*-: either a **h*$_{1/2}$*onk̂*- sequence (**h*$_1$*enk̂*- would have given Toch. B †*yäṅk*-) or a zero-grade **h*$_1$*n̥k̂*- (**h*$_2$*enk̂*- would have given Toch. B †*aṅk*-). He thus prefers the zero-grade (**h*$_1$*n̥k̂*-), which would avoid schwebeablaut (State I **h*$_{1/2}$*onk̂*-).

2.4.4 Celtic evidence

The Celtic datum OIr. *ro·uccai* presents a slightly more complex problem. OIr. *ro·uccai* is an augmented form suppletive to *beirid* 'bears,' which is supposed to go back to a **h*$_1$*onk̂*-, thus constituting a schwebeablaut variant of **h*$_1$*nek̂*-. However, Schumacher (2000:162-163) has argued that *ro·uccai* and *do·uccai* are rather to be compared with Middle Welsh *hebrwng* 'accompany' (which has traditionally been segmented as *he-brwng* and was thought to be cognate with Goth. *briggan*, OE *bringan*, etc. With a *heb-r-wng* segmentation, this Middle Welsh verb, together with *ro·uccai*, (both < **onk*-) should be seen as constituting a causative of the OIr. primary verb *·ic* 'reaches,' (from **h*$_2$*nek̂*-). An argument furnished by McCone (1991:2) accounts for the possible source of the inner-Celtic **onk*-. The preterite stem **ānonk*-, as McCone notes, is the basis for the "anomalous but precisely comparable" Old Irish -*ánaic* and Indic *ānáṁśa*,[53] which reflect a virtual **h*$_2$*e-h*$_2$*nonk̂-e*. Such a stem could have been resegmented as **ān-onk*- in Celtic, thereby forming the basis for a new causative stem **onk*- > **unk*- > *·uccai*.

The more mystifying OIr. present *·ic* 'reaches,' has been variously analyzed. In his summary of scholarly approaches to the verb, Schumacher (2004:202) rejects on various phonological grounds: (a) McCone's (1991:1-3) postulation of an original 'Narten' present

[52] LIV^2 260^2.

[53] Both -*ánaic* and *ānáṁśa* are anomalous with respect to their forms, though something resembling an *n*-infix (and probably stemming from an original nasal infix present) in the Celtic preterite and Indic perfect stem **ānonk*- is also seen in other daughter languages, such as Lat. *nancīscor*.

*h_2ḗnk̂-/$h_2$énk̂-[54] → thematicized *ink-e/o-; (b) Thurneysen's (1949:130) reconstruction of a *i̯é/ó-* present *h_2n̥k̂-i̯é/ó-*; and (c) a different thematized *ink-e/o-*, originally from the weak stem of an athematic reduplicated present *h_2i-h_2n̥k̂-* (LIV^2 282). Schrijver (1993:41) demonstrates that a Narten *h_2ēnk̂-* would have given OIr. †*éc* based on the testimony of *sét* 'path, way,' a masc. *u*-stem which is likely cognate with Toch. A *ṣont* 'road' < Proto-Tocharian *ṣēntu- < *seh$_1$n-tu-* (cf. Skt. *sā́tu-* 'vagina?'). Both the Narten hypothesis and the reduplicated present *h_2i-h_2n̥k̂-* additionally work with following assumed development (**ēnk* >) **īnk* > **ink* > OIr. *·ic*. It is the final step **ink-* > OIr. *·ic* that is further contested by Schrijver, with the following counter examples: OIr. *léicid* < **li-n-k^{u}-*; OIr. *téit* < *(*s*)*tinkti-*.

The attractive solution offered by Schrijver (and following him, Schumacher) is a generalized zero-grade of the nasal-infix present (indirectly attested in Lat. *nancīscor*, and assumed to be the source of the nasal in Old Irish *-ánaic* and Vedic *ānáṁśa*). The strong and weak stem of the nasal-infix present would have been *h_2n̥-né-k̂- ~ *h_2n̥-n-k̂-′*, whose direct reflexes in Celtic are **annek-* and **annk-*, respectively. Proto-Celtic **annk-* would then have regularly given OIr. *·ic*.

2.4.5 Hittite evidence

Whereas the various forms discussed above do not appear to be viable candidates for State I forms belonging to either *$h_2$nek̂-* or *$h_1$nek̂-*, Hittite *ḫenkzi* 'to allot' and other associated forms have traditionally been viewed very favorably as candidates to be linked to *$h_2$nek̂-*. The dossier not only includes *ḫenkan* 'fate; plague; death,' whose problematic connections with Celtic were discussed above, but also a noun much closer to the semantics of the verb *ḫink-* 'offer', namely, *ḫenkur-/ḫenkun-* 'gift, offering.' The verb itself is further to be distinguished by its middle forms, which in Old Hittite, as pointed out by Oettinger (1979:171-177) uniformly meant 'bow.' While some have taken the active and middle to be homophonous, yet separate, verbs from different roots (e.g. Puhvel 1991:292-296), it is also possible (and therefore economically preferrable) to view the middle of *ḫink-* as having undergone a semantic progression: *'offer oneself' → 'bow.'

[54] McCone's justification for setting up a Narten present is partially based on a comparison with Hitt. *ḫink-* 'offer,' which, as we shall see, is equivocal.

The real issue lies with the various variant spellings of the verb, which are: <ḫenk>, <ḫink>, <ḫek>, <ḫik>, <ḫaink>, and <ḫaik>. A major question is whether the few attestations of <ai> are in fact legitimate, or mere scribal errors. The spellings, as tallied by Kloekhorst (2008:314-317), are listed below:

(11) SPELLING VARIANTS OF HITTITE *ḫink-* 'offer'

a. <ai> = 5x: *ḫa-ik-t*[*ar-i*] (OS),[55] *ḫa-ik-ta* (OH/MS), [*ḫa-i*]*k-ta-ri* (OH/NS), *ḫa-in-kán-ta* (OS or OH/MS), *ḫa-en-kán-t*[*a*] (NS).[56]

b. <e> = 3x: *ḫé-ek-ta* (OS), *ḫe-en-ik-ta* (MH/NS), *ḫe-en-ku-wa-aš* (NS).

c. <i> = all other attestations.

The <ai> spelling, which stands out as most peculiar, has variously interpreted. García-Ramón (1999:47-80), for example, does not take the aberrant spellings into account, operating at the outset with an assumed *ḫi*(*n*)*k-*. Others have tried to explain away the spellings as aberrations, either seeing them as kinds of reverse spellings (Puhvel 1991:295), or a type of hypercorrection of **e* > *ai* (AHP 144). Needless to say, the implications of <ai> reflecting an actual phonetic reality in Hittite are far-reaching. Should they be taken at face value for Hittite, they would result in a very peculiar (and likely non-occurring) root shape in PIE: **Heḫ*nK-.

Nevertheless, a number of facts, as pointed out by Kloekhorst (2008:316), lead him to ultimately take them seriously. Around half a dozen <ai> spellings are attested in different verbal forms, but all are notably middle verbs and either Old script (OS), or from an Old Hittite (OH) text. That various older texts repeatedly attest this spelling, demonstrates that <ai> cannot be explained away as the result of mere scribal error. If true, however, that would have the effect of drastically reducing the number of possible etymologies for this verb, to say nothing of its status as an example of schwebeablaut.

[55] OS = *Old script*; MS = *Middle script*; NS = *New script*; OH = *Old Hittite*; MH = *Middle Hittite*; NH = *New Hittite.*

[56] It seems fair to take <ae> here as a variant of <ai>.

As the example from KUB 57.26:3 (OH/NS) demonstrates, *ḫaikta* in context clearly belongs to the *active* verb: ^{m}*I*[*r-ka*]*b-tum* GUD.MEŠ *ḫaikt*[*a*] "Irkabtum gave cattle as a gift."[57] It therefore follows that if /ḫaink/ is a reality, then attempts by Oettinger (1979) and others to directly link the middle of *ḫink-* with the PIE root *h_2*enk-* (cf. Ved. *añc-* 'bend') become highly implausible. The assumption of /ḫenk/ or /ḫink/, and reconstructing a lengthened grade Narten middle *h_2*ēnḱ-* (per McCone 1991:1-11) in order to avoid the serious difficulty of explaining how an uncolored **e* appears next to the reflex of *h_2* (in essence, this is an appeal to Eichner's law) is likewise improbable. Etymologically, then, *ḫaink-* must reflect *$h_{2/3}$*eḭnK-*, a root shape that is extremely bizarre from the standpoint of PIE.

An effort to salvage a connection with *h_1*neḱ-* suggested by Melchert (1984:24[46]) involves the reconstruction of a preverb *h_2*o-* + *h_1*enḱ-* (from *h_1*neḱ-*). The preverb *h_2*o-*, presumably behind Av. and Ved. *ā-* 'towards; away; from,' has been cited to explain pairs like Gk. ὀκέλλω ~ κέλλω 'drive' and is supposed to be reflected in ὄζος, Hitt. *ḫašduēr* (?) 'branch, twig' < *h_2*o-sd-o-* (with *-*sd-* < **sed-* 'sit').[58]

Admittedly, the semantics of a *ḫink-* do seem to fit nicely with *h_1*neḱ-* *'seize,' whose original meaning is argued by García-Ramón (1999:51-52) to be closest to that of Toch. B *eṅk-* 'seize; grab,' since the isolated verb could not have been influenced by the kind of suppletive relationship with *b^h*er-* that existed in several other daughter languages (cf. Gk. φέρω ~ ἐνεγκεῖν). While the sense of Hitt. *ḫinkzi* 'proffers *x* to person *y*' seems at first glance to go the opposite direction of the action of a verb like Toch. B *eṅk-* 'seize; grab,' the semantic progression is quite easy to plot: *'seize' → *'grab' → *'hold (in one's hand)' → 'hold out; offer.' A clear parallel is seen in the verbs *ēpp-/app-* 'take, seize, grab,' and *parā ēpp-/app-* 'to hold out.'

While the resulting formation *h_2*o-h_1*enḱ-* would have likely given *ḫaink-*, it nevertheless involves a host of assumptions. The preverb itself is marginally attested (indeed its existence is doubted by some), and it is not found in any secure etymology (as is the nature). Other unrelated Greek pairs with and without a prothetic vowel (such as ἰμείρομαι ~ μείρομαι 'receive as one's portion') suggest other possible solutions for Gk. ὀκέλλω ~ κέλλω. The internal reconstruction of

---

[57] I thank Andrey Shatskov for bringing this to my attention (via Craig Melchert).

[58] See Dunkel (2014:323ff.) for more examples.

*h_2*o-sd-o*- for ὄζος and Hitt. *ḫašduēr*, OE *ōst*, and similar formulations such as even the popularly cited **ni-sd-o*- ‘nest’ (cf. Ved. *nīḍá*- ‘abode’), are perhaps too speculative exercises. Finally, it must be noted that the entire basis for postulating a schwebeablaut variant *h_1*enk̂*- is its supposed occurrence in another controversial etymology, that of Goth. *briggan*, OE *brengan*, etc. ‘bring.’ The suggested root contamination scenario involving *b^h*er*- ‘carry’ and *h_1*enk̂*- by Brugmann (1901:150-158) has not found wide acceptance. The etymology was proposed prior to the advent of the laryngeal theory, and would create difficulties for a supposed *$b^h_{\text{o}}r$-h_1*enk̂*- collocation.

In conclusion, reconstructing either *h_1*enk̂*-, or *h_2*enk̂*- appears to not be necessary for Proto-Indo-European. As we have seen, alleged evidence in other daughter languages for these schwebeablauting variants is dubious, or non-existent. Virtually all supposed examples are problematic, in one way or another.

CHAPTER 3

**h₂u̯es-* '(become) bright'

3.1 Overview of **h₂éu̯s-ōs-* 'Dawn'

The aim of this chapter will be to provide an account for the schwebeablaut featured in the verbal root **h₂u̯es-* '(become) bright' (LIV² 292) and its presumed nominal derivatives, which are reconstructible to **h₂eu̯s-*, chiefest among them **h₂éu̯sōs* 'Dawn.' This word is among the most iconic and securely reconstructible of Indo-European comparanda, functioning as a common lexical item and also having a specialization as the title of the deity in the IE pantheon of gods associated with the dawn. The form is well-known, in part because of its unique status as the better attested example of only two plausibly reconstructible animate amphikinetic *s*-stems in PIE (the other being the less secure **méh₁nōs* (?) 'moon' > Lat. *mēnsis*, Ved. *mā́s*, and probably Lith. *mė́nuo*). As pointed out by Meissner (2006:143), "[o]ne important and astonishing fact is that, while the inflection type itself [animate *s*-stems] must be very ancient and is clearly on its way out in nearly all languages and from the earliest attestations onward, apart from the word for 'dawn' as evidenced by ἠώς, Skt. *uṣā́s*, Lat. *aurōra* there is not a single absolutely certain word equation between any two Indo-European languages." More remarkable, in light of this, is the fact that this form is securely attested in multiple branches, with three grades (*-ōs-/-os-/-s-*) of the *s*-suffix faithfully continued in Indic (and partly in Greek).

Italic is represented by Lat. *aurōra*, with full-grade of the root and a frozen lengthened grade suffix *-ōr-*, generalized from the old nominative. The noun has been converted into a feminine *-eh₂*-stem; a very similar process is seen in *flōs* 'flower' → *Flōra* 'goddess of

flowers'.[59] The strong suffix of Lat. *aurōra* is matched by Aeolic αὔως 'dawn' (Doric ᾱϜώς, Ion. ἠώς, Attic ἕως). The long initial **ā* in Greek was earlier thought to be secondary and analogical (cf. Szemerényi 1956:188), but Kiparsky (1967:619-635) has demonstrated that metathesis of sonorant + **h* (< **s*) had occurred in early Greek **au̯hōs* > **ahu̯ōs*, leading to assimilation with the glide in the case of Aeolic (**au̯u̯ōs*) or compensatory lengthening of the preceding vowel, as in the case of other dialects (**āu̯ōs*).[60] The dialects together thus reflect a division between **au̯u̯ōs* (Aeolic) and **āu̯ōs* (other dialects), both of which go back to Proto-Greek **ausōs* via regular sound change. This division between the dialects is also similar in other sonorant + sibilant clusters, such as Aeol. ἐμμί vs. Att. εἰμί (both from **h₁esmi*). Greek ἠώς additionally continues **-os-* from the accusative in the weak stem, cf. gen.sg. ἠοῦς (-οῦς < **-ohes* <**-os-es*); thus the original tripartite ablaut distinction has been given up in favor of two.

Ved. *uṣā́s* and YAv. *ušå̄* 'dawn,' feature unambiguous zero-grade *uṣ-* (Av. *uš-*) in the root throughout, while the Vedic paradigm itself still preserves reflexes of all three ablaut grades in the suffix: nom.sg. *uṣā́s* (< **-ōs-*), acc.sg. *uṣā́sam* (< **-os-*, via Brugmann's law) and (archaic) acc.pl. *uṣás* (< zero-grade suffix **-s-*; directly from **h₂usm̥s* after the loss of geminate *ss* from **h₂us-s-m̥s*), which was later replaced by the more transparent *uṣásas* (in similar fashion to Gk. ἠοῦς). The oblique stem in Avestan features an archaic acc.sg. *ušå̄ŋhəm*, together with the less conservative gen.sg. *ušaŋhō*, with an imported oblique **-as-* on the analogy of other athematic formations (just as in later Vedic).

An unambiguous full-grade of the root is continued in Latin *aurōra*, while the other branches feature less clear outcomes. The zero-grade root seen in Ved. *uṣ-* and YAv. *uš-* has its counterpart in the phonologically ambiguous Gk. ἠ- (Aeol. αὐ- and Doric ἀϜ-), which is equally as likely to have have arisen from **h₂u-* as it is from **h₂au-*, according to Peters (1980:15).

Peters presented evidence that demonstrates that word-initial sequences of laryngeal + (syllabic) *u* resulted in a 'vocalized' laryngeal. Curiously, this did not occur with #H*i*C sequences, whose reflex appears to have been **i*C (with laryngeal loss). This has sometimes been

[59] The particular comparison of *aurōra* and *flōs* → *Flōra* has been noted by a number of scholars, e.g. Stüber 2002:105, de Vaan 2008:227.

[60] Sihler (1995:309) nevertheless views the long vowel as "unexplained."

seen as a specific demerit of Peters' account. Now, however, Bozzone (2013:1-26) has cogently argued that the outcome of word-inital #H*i̯*V and #H*i*C sequences was driven by conditions which were similar to Pinault's law, according to which medial laryngeals tend to disappear before *i̯*.[61]

Given the ambiguous phonology, then, one may perhaps argue that Gk. ἠώς reflects zero-grade **h₂us*-, on the testimony of reliably ancient χθῶν 'earth' (< **dʰĝʰ-ōm*) and ὕδωρ 'water' (**ud-ōr*).[62] Certain instances of older-looking amphikinetic formations may also be found in Latin, cf. *cruor*, *-ōris* 'blood.'[63]

Conversely, regarding zero-grade Ved. *uṣ*-, Av. *uš*-, Stüber (2002:105) has argued for the possibility that Waxi *yišīγ* 'early morning' and Balochi *pōši* may complicate this picture and present evidence for original full-grades in Indo-Iranian. Waxi *yišīγ* mechanically reflects **aušah*- (with suffix *-īγ*) and Balochi *pōši* 'day after tomorrow,' reflects **upa-aušah*- (with the Balochi suffix *-ī*). The extremely late attestation of these forms must be viewed with great caution, however.

3.2 **h₂u̯es*- '(become) bright'

A distinct verbal root in State II (*h₂u̯es*-), is set up by LIV² (292) and glossed 'become bright.' As the root appears to be only attested in Indo-Iranian (apart from the possibility of Baltic, discussed

---

[61] The original formulation of Pinault's law was improved by Byrd (2015:198ff.), who observed that laryngeal loss was limited to the pharyngeals **h₂* and **h₃*, and only when followed by a tautosyllabic yod, cf. **kreu̯h₂-i̯o-* > **kreu̯io-* > Ved. *kravyá*- 'flesh.' The reason for the distinction in outcome between loss of the pharyngeals and the retention of **h₁* — likely a glottal fricative — is due to the inabilty of pharyngeals to undergo palatalization (occasioned here by the following **i̯*). Similarily, according to Bozzone, **h₂* and **h₃* were lost in word-initial position before *i̯* (later yielding initial ζ), while *#*h₁i̯* sequences were palatalized to **hʲ*, later resulting in a rough breathing. The same underlying process was identified by Bozzone for the syllabic counterpart to yod. Thus, #H*i* sequences yielded similar outcomes: word-initial #*h₁i* > Gk. ἱ- (with rough breathing), while #*h₂i* and #*h₃i* > ἰ- (smooth breathing). With this hypothesis, an independent account was offered by Bozzone for the previously puzzling rough breathing of Gk. ἵππος (< **h₁ku̯-o-*, with intermediate schwa secundum).

[62] Interestingly, the root vowel in Gk. δώτωρ 'giver' (< **deh₃*-) is kept distinct from that of the parallel hysterokinetic derivative δοτήρ 'giver' (< **dh₃*-). Contrast this with the Vedic equivalents *dā́tā* / *dātā́*, in which the root ablaut has been levelled.

[63] Lat. *cruor* is described by Weiss (2015:261) as an internal derivative of the neut. proterokinetic noun **kréu̯h₂-s-ø* (cf. Gk. κρέϝας 'flesh, meat.' Since internal derivatives were built from the weak stem of the source formation, it may be that a **kruh₂-ōs* reconstruction is a viable option.

below), the reconstruction of initial *h_2 is based on its presumed affiliation with the 'Dawn' word *$h_2e\underline{u}s$-$\bar{o}s$.[64] Key to this root being linked with 'dawn' is its inchoative semantics, since the dawn grows in brightness and is not fully bright as is the day. Thus, *'become bright, or light' → 'that which becomes bright; dawn.'

For Indic, the verb appears in some 45 hymns in the Rig Veda, of which 14 are exclusively addressed to 'Dawn' (not counting others which address different deities). A discussion of various stems may be found in Stüber 2002:103-106 (in addition to LIV^2 292). A *sk̂é/ó*-present is continued in Ved. *uccháti* (< *$h_2$us-sk̂é/ó-). In Iranian, a Young Avestan participial stem *usaṇt-* is seen in the accusative singular *usaitīm*, (from Yašt 14.20, functioning as an appositive to acc.sg. *ušå̊ŋhəm* 'dawn'). The only Indo-Iranian stems with full-grade of the root (State II) are the Vedic aorist *ví…āvas*, the perfect *uvā́sa*, and the causative *vāsáyati.* The root aorist seen in the Rigvedic form *ví … āvas* (< *(*e*-)$h_2\underline{u}es$-*t*) 'it has (just) become bright,' is clearly associated with 'Dawn,' as shown in the hymn below:

(12) RIG VEDIC *ví…āvas* (RV I.113.9ab)[65]
úṣo yád agníṃ samídhe cakártha ví yád ā́vaś cákṣasā sū́ryasya |
"Dawn, since you have caused the fire to be kindled,
since you have shone forth with the eye of the sun,"

The only putative non-Indo-Iranian cognates of the verbal root *$h_2\underline{u}es$- are Lith. *aũšta* (inf. *aũšti*[66]), Latv. *àust* 'to dawn,' though these forms are controversial (LIV^2 293^3 "denominative Neubildung möglich."). While the Baltic inchoative *sta*-presents have traditionally been connected with PIE *sk̂é/ó*-presents (and this would give weight to an apparent word equation between Ved. *uccháti* and Lith. *aũšta*, Latv. *àust*), the details are not as clear-cut.

Gorbachov (2014:21-53) has now shown that the development of PIE *sk̂ to Baltic *st* is fully justified. He argues that the affrication (*sk̂ > *ść) and subsequent dissimilation (*ść > *st*)

---

[64] The general presence of an earlier laryngeal may be seen in a long augment form, like the aorist *āvas* < *e-$h_2\underline{u}es$-.

[65] Jamison & Brereton 2014:264.

[66] The similar-looking shape of the infinitive *aũšti* (Latv. *àust*) and 3sg. *aũšta* (Latv. *àust*) is due to the simplification of a geminate sequence in the present stem: Baltic infinitive **aus-tei* vs. 3sg. **aus-sta.*

of the consonant sequence only occurred before a front vowel, which introduced a phonological split in original *sk̂é/ó*-presents.[67] Subsequent to this, the new **ska*-/**ste*- allomorphy was eventually given up in favor of a blended *sta*- in the entire present paradigm (Baltic has famously generalized the theme vowel *-*a*- (< *-*o*-) in all three persons and numbers).

In his discussion of the distribution of the Baltic *sta*-stems, Gorbachov notes that about 70 are shared between Latvian and Lithuanian (out of a total of around 300), and it is this group that would reasonably form the core of the older formations. About half of the 70 verbs continue zero-grade of the root as would be expected for *sk̂é/ó*-presents. Among these are a few promising word equations such as Lith. *gìmsta* 'is born' < **gᵘm̥-sk̂é/ó*-, cf. Ved. *gácchati* 'go, come' and Gk. βάσκε 'come!'[68] It appears, though, that zero-grade of the verbal root simply continued to be used by default during the very earliest period of productivity of the *sta*-stems, as only a few secure word equations with other daughter languages can be established. The other half of the 70 verbal stems match the intonation and vowel grade of the verbal base, either because they are not inherited from the parent language, or because they have secondarily adopted the shape of the 'canonical' verbal stem as perceived by speakers.

Since Lith. *aũšta* and Latv. *àust*, as members of this group of 70 shared verbs do not feature zero-grade †*ušta*, they may be explained in one of the two ways. The first possibility is that they are an early Baltic innovation and thus ultimately denominal formations of some sort. The other option would be to see them as an actual continuation of PIE **h₂us-sk̂é-ti* (an analysis that might be preferred for reasons of economy), which developed into an earlier stem **ušta*- that was later reshaped by analogy with a nominal stem in full-grade **auš*-. While a direct reflex of the animate *s*-stem **h₂éu̯s-ōs* is not continued in Baltic, the origin of all State I variants must nevertheless somehow be located in nominal formations, and not in the verb, regardless of the actual history of Lith. *aũšta*, Latv. *àust* (since PIE *ské/ó*-presents are formed to zero-grade of the root, in any event).

This Baltic verb is therefore of little probative value in assessing the original shape of the Proto-Indo-European verbal root. It is the above-mentioned aorist *ví…āvas*, the perfect *uvā́sa*,

[67] Gorbachov 2014:33.

[68] Gorbachov 2014:28.

and the causative *vāsáyati* in Indic that necessitate a State II reconstruction of the root. Furthermore, the strong association of verbal *uṣ-/vas-* in Indo-Iranian with the 'Dawn' word in the Rig Veda inevitably leads one (for reasons of economy) to reconstruct an original verbal root *h_2u̯es-* (with inferred initial *h_2) that must somehow have been the source of the amphikinetic animate *s*-stem (along with various other words that are characterized by State I (*$h_2$eu̯s-) in their root). As such, this root is frequently cited in the literature as a primary example of schwebeablaut, cf. Stüber (2002:103): "*√h_2u̯es gilt gemeinhin als klassisches Beispiel für eine Wurzel mit schwebeablaut (vgl. Antttila 1969:119)."

3.3 Survey of other forms

Our survey of forms must include a discussion of the various other related categories of words connected in some way to the root in question. These may be grouped into 5 types:

(13) NOMINAL FORMATIONS TO *(h_2)u̯es-
   a. Other 'dawn' stems (primarily in Vedic) that are generally late and deverbal.
   b. Words for 'spring' reconstructible to *(h_2)u̯es-*r*-.
   c. Various stems with an *r*-formant and 'dawn' semantics (frequently 'locatival').
   d. Words for 'gold' in Baltic and Italic (and possibly in Tocharian).
   e. Words for 'east/south' in the western IE languages with a -*ter*(*o*)- suffix.

3.3.1 Miscellaneous stems

Included in this group are Vedic forms such as *vy-úṣ-* 'daybreak,' which, together with its preverb *vi-* is likely to be associated with the aorist *ví ... āvas* mentioned above. The preverb especially expresses and reinforces notions such as 'separation' and 'division,' which go hand in hand with the original inchoative semantics of the verbal root (indeed the very idea of the day 'breaking'). Here, too, belongs the *i*-stem *vyùṣṭi-* 'daybreak.' Ved. (-)*vastár-* 'Illuminator' appears as the second member of compounds (especially for *doṣā-* 'darkness' and *prātar-* 'daybreak') and contains a -*tar-* suffix frequently used for deverbative agent nouns (cf. *dā́-tar-* 'giver' ← *dā-*

‘give’). Finally we have Ved. *vástu-*, together with its verbal infinitive *vástave* ‘to dawn.’ All these nominal forms either reflect zero-grade or State II.

3.3.2 **(h₂)u̯es-r-*

The forms in this group have remarkably stable semantics across the daughter languages. YAv. *vaŋri* ‘in spring,’ Greek ἔαρ, Latin *vēr*, *-is*, Arm. *garown*, ON *vár* ‘spring’ are all close in meaning. An interesting semantic development is found in Baltic: **u̯aserā* *‘spring’ → OLith. *vãsera*, Latv. *vasara* ‘summer.’ The old meaning has been continued by Lith. *pa-vãsaris*, Latv. *pa-vasaris* ‘spring.’ Morphological unity is also high in these forms. The above group, together with Baltic (yet interestingly not Slavic; see below), all have in common a stem reconstructible to **u̯es-*(*e*)*r-*.

Slavic and Vedic seem to break this pattern in a number of forms that feature particular *n*-suffixes: cf. OCS *vesna* and Ved. *vasantá-* ‘spring.’ The individual morphological history and makeup of these stems is not entirely clear (are they are to be reconstructed to a single heteroclitic *(*h*₂)*u̯es-r/n-*?). Ved. *vasantá-* invites formal comparison with *hemantá-* ‘winter,’ which, however, would render the Slavic *n*-stem isolated.

There is the important matter of whether or not to reconstruct an initial laryngeal **h*₂ and therefore assign this group together with the ‘dawn’ words. The Greek evidence seems to clearly speak against a connection with **h*₂*u̯es-*, since this would require a special rule for laryngeal loss in Gk. ἔαρ < **u̯ésar* < **u̯ es-r̥*. Furthermore, the semantic shift *‘(become) bright’ → ‘spring’ entailed for such a connection would conceivably have given forms intermediate in meaning; as things stand, the descendents of *(*h*₂)*u̯es-r-* uniformly mean ‘spring’ (or are otherwise clearly secondary from original *‘spring,’ in the case of Lith. *vãsera*, Latv. *vasara* ‘summer’). In view of this, Ved. *vāsará-* ‘of the morning’ looks out of place, despite its outward formal similarity to the ‘spring’ words. It is not likely to be comparable with Lith. *vãsara* ‘summer’ and is instead morphologically and semantically more plausibly reconstructed as a *vr̥ddhi*-derivative of an old *er*-locative, reflected in the Ved. compound *vasar*(*-hā*) ‘striking (at dawn) (?).’ Neither Ved. *vāsará-* nor any of the ‘spring’ words discussed above present an issue for schwebeablaut.

3.3.3 'Dawn' words with *r*-formant

Of greater interest are various forms in the daughter languages that are descriptively categorized as follows: they attest an *r*-formant (variously described), but are not comparable to the 'spring' words, having instead various other meanings, such as 'at dawn,' or 'early.'

Many of the words in this group appear in the locative, as if recharacterized forms of earlier *er*-locatives, which are marginally attested types of locatives. Thus, for example, Gk. ἦρι 'early,' Ved. *usrí* 'at dawn' look like broadly similar locatival formations that are reinforced with the locative ending *-i*. Two even more archaic looking forms in Vedic (without the locative *-i*) have been standardly cited as actual examples of frozen *er*-locatives. The first, Ved. *uṣar* (a vocative), is a *hapax legomenon* in the Rig Veda, found in RV I.49.4cd: *tắṃ tvắm uṣar vasūyávo | gīrbhíḥ káṇvā ahūṣata.* 'Just you, **Dawn**, have the Kaṇvas, longing for goods, called upon with songs' (Jamison & Brereton 2010:162). This form is more typically seen as the first member of the compound *uṣar-búdh-* 'waking at dawn.' The second bare *er*-locative, Ved. *vasar-há́*, is a slightly obscure compound found only in a single line (RV I.122.3a) that reads: *mamáttu naḥ párijmā vasarhá́.* 'Let the earth-circling one [=Wind], **rising at early morning**, invigorate us' (Jamison & Brereton 2014:284). The second member of the compound is generally taken as being from Ved. *hā-* 'spring, leap,' which forms a middle present *jíhīte*, though another option is Ved. *han-* 'strike,' hence 'striking at dawn' (*vasar-há́*).[69] Both *uṣar* and *vasar-há́* will be discussed below in more detail.

Fairly obvious delocatival derivatives featuring the same *r*-formant (= *er*-locative) can also be found in Greek. The adverb αὔριον 'tomorrow' and adjective ἠέριος 'early' look like thematized delocatival formations, with ἠέριος having as its source the same type of form that

[69] Jamison, in her online commentary of Jamison & Brereton (2014), argues for **hā-* 'move,' given that wind generally rises at dawn: "The 2nd member of the cmpd *vasarhá́* is taken by Gr and Re as *-hán-*, hence 'striking at dawn', but a connection with √*hā* 'change position, move' makes more sense (so Ge, tentatively Scar 700). Wind does regularly rise at dawn, but it is hard to conceive that it smites then. This probably requires us to take the underlying form as *-hắs*, contra the Pp. The 1st member *vasar-* is only attested here, as a variant to the (likewise secondary) locatival *uṣar*. See Lundquist XXX."

gave rise to contracted ἦρι[70] < *$\bar{a}_{\underline{u}}er$- < *$auser$(-)[71] and with αὔριον being from an unattested locative *$auri$[72] < *h_2us-r- (?).[73] Formally, then, Ved. *usrí* is better matched by the *er*-locative that gave rise to Gk. αὔριον, rather than Gk. ἦρι < */ē̦eri/ < *$auser$-i.[74]

Additionally, several other formations have frozen locatival semantics (or at least plausibly derived so), for example Gk. ἀήρ 'mist' ← *'(that which occurs) at dawn.' Still other 'dawn' words occur elsewhere in the daughter languages with the same *r*-formant, yet without clear locatival semantics. For example, the Ved. adjective *vāsará-* 'of the morning,' while not having a locatival meaning, seems nevertheless to be a *vr̥ddhi* derivative of what looks like an actual *er*-locative in *vasar-há́* (mentioned above).

Lith. *aušrà* and Latv. *àustra* 'dawn,' which have sometimes been suggested as the basis for a word equation with Ved. *usrá-*, are not likely to be very old in their attested shapes. They must instead share a history with dialectal Lith. *aušarà* 'dawn,' which likely cannot be anything but their direct antecedent. The development of *$aušarā$ → Lith. *aušrà*, Latv. *àustra* can be conceptualized in the following way: since a segmented *$auš$- was perceived as the root, the remainder of the word -$arā$ is likely to have been reimagined by some speakers as being identical with the more familiar -$rā/a$- suffix (IE *-reh_2/ro-) in its identity. Lith. *aušarà*, for its part, may

---

[70] Gk. ἦρι, with unexpected contraction (as compared to ἠέριος), is argued by Hajnal (1992:64) as being due to the necessity of distinguishing the isolated locative */ē̦eri/ 'early (morning)' > Gk. ἦρι 'early' from its homophonous counterpart */ē̦eri/ 'in the cloud(s)' > ἠέριος. Citing its Homeric attestation, Hajnal demonstrates that ἠέριος had an earlier usage '(that which is) in the clouds; heavenly' which he takes as evidence that the old locative behind this form was the actual paradigmatic locative of Gk. ἀήρ/ἠέρ- 'mist; cloud.'

[71] Hajnal (1992:58-59) considers the other competing reconstruction advanced for ἠέριος and ἦρι, namely an unattested locative *$\bar{a}_{\underline{i}}eri$, cf. Av. *aiiarə* 'day.' This may be rejected on account of the unexplained lengthened grade. All previous attempts to explain this away via metrical lengthening or *vr̥ddhi*, etc, have failed.

[72] The Greek gloss αὖρι for ταχέως 'quickly' is unlikely to be related (*Anecdota Graeca* 464).

[73] Typological parallels for this semantic development abound: cf. Spanish *mañana* 'tomorrow' ← Vulgar Latin *māneānа* 'early (in the morning)'; German *morgen* 'tomorrow' ← *Morgen* 'morning'; Latvian *rīt* 'tomorrow' ← *rīts* 'morning.'

[74] Though even this comparison might not be an actual word equation, either. To state that a form *h_2usr-i existed already in the parent language requires several additional assumptions. Due to the phonological ambiguity mentioned above, it is not immediately certain whether αυρι- goes back to *$h_2e_{\underline{u}}sr(i)$ or to *$h_2usr(i)$. Furthermore, Ved. *usrí*, if it is truly ancient, appears to have been fully integrated (synchronically) into the paradigm of an *r*-stem (cf. gen.sg. *usr-áḥ*), and could thus be explained as a mere paradigmatic locative to an *r*-stem, rather than being an old recharacterization of an *er*-locative.

be identified with the frozen locative **auser*(*-i*) that gave rise to Gk. ἦρι mentioned above.[75] The middle vowel does not pose any difficulties, as the sequence *(C_1)*a*C_2*e*C_3*a* is observed to have sometimes become (C_1)*a*C_2*a*C_3*a* in Baltic, cf. Latv. *vasara* and OLith. *vãsera*, both 'summer' (virtual **u̯oser-eh*$_2$).

The preceding dossier of forms with an *r*-formant has led many to attribute them as having developed from an original *er*-locative in Proto-Indo-European. The precise PIE function of the so-called '*er*-locatives' is disputed. They, together with the parallel '*en*-locatives,' do not appear to have been fully paradigmatic case forms; rather, they could be attached to a limited set of stems, almost functioning descriptively as adverbial suffixes. The stems to which these suffixes could be attached were restricted to a certain semantic domain, usually with respect to time/temporality and space/location, cf. Gk. χεῖμα 'winter (weather)' vs. Gk. χειμέριος 'wintry,' and Lat. *nox* 'night' vs. Lat. *nocturnus* 'belonging to or having to do with the night.'[76] The reconstruction an *er*- or *en*-locative in the parent language may often be justified when some of the forms in question appear to have locatival semantics, and when the reconstruction of an original *r*- or *n*-stem (or heteroclitic *r/n*-stem) is not feasible or plausible.

As mentioned above, two more or less direct reflexes of *er*-locatives have traditionally been seen in the Rig Vedic hapax legomena *uṣar* and *vasar*(*-há*). However, a detailed survey of the Rig Vedic background of *uṣar*(-) by Lundquist (2014:87-90) has shown this form to be likely a clever poetic backformation from *uṣarbúdh-* itself, given that it does not appear in an especially archaic group of poems and is better seen as part of a versified collection of sandhi variants of the vocative of the 'dawn' word within its poem: *úṣo*, *uṣas*, *úṣaḥ*, and finally, *uṣar.* The use of *uṣar-* itself in the compound *uṣarbúdh-* is seen by Lundquist as analogous to the compositional usage of *prātar-* in the Rig Veda.

---

[75] Alternatively, dial. Lith. *aušarà* could be more distantly related to Lith. *aušrà*, the first being a direct thematicization of the bare *er*-locative, the second a secondary thematicization of a hysterokinetic derivative, the existence of which may be demonstrated by several case forms of an *r*-stem *usr-* in Vedic, as well as by Gk. ἀήρ. However, it is unlikely that such an *r*-stem derivative existed already in the parent language. It nevertheless remains the case that the alternation between **auser*(*-i*) (> Gk. ἦρι) and **ausr-* (> Gk. αὔριον) might be also justified for Baltic, especially if OCS *utro* 'morning, dawn' is taken as further evidence of Proto-Balto-Slavic **ausr-*. The mysterious lack of *-s-* in the Slavic form, however, makes it more problematic (Derksen 2008:510).

[76] A neo suffix *-rnus* enjoyed limited productivity in several words: *vespernus* 'of the evening,' *diurnus* 'of the day, daily,' etc.

While a similar synchronic account of the formation of the other *er*-locative, *vasar*(*-hā*), is given by Lundquist (2014:98), he does not seem to give adequate reasons for why the language would have created not one, but two, independent *er*- (or rather *ar*-) locatives based on two different synchronic stems, yet with (nearly) identical semantics. Indeed, Lundquist specifically states that, "[t]he difference between *vasar*- and *uṣar*- would not be one of chronology (late PIE vs. pre-PIE, respectively), but of two different derivatives made to two different stems." However, given the rarity of actual *er*-locatives in Indo-European, the parallel Greek formations discussed above make it more likely than not that *vasar*(*-hā*) is in fact inherited. Since Greek attests clear derivatives matching *uṣar*- and *vasar*-, it is hard to imagine that these are inner-Indic (or Indo-Iranian) creations. In fact, many of the Indo-Iranian '*ar*-locativals' cited by Lundquist (2014:91) have a PIE pedigree, one way or another, and his second (smaller) list (Lundquist 2014:94-95) of IE *er*-locative word-equations demonstrates that this derivational process may be securely reconstructed for the parent language. The entire issue of *er*-locatives will be further addressed later below.

3.3.4 **h₂é-h₂us-o-* 'gold'

Part of the dossier of forms claimed for **h₂eu̯s-* and **h₂u̯es-* includes a word for 'gold,' which is attested in two, perhaps three branches. The most secure candidates are Baltic and Italic (Sabellic and Latin). Lith. *áuksas* (dialectal *áusas*), OPruss. *ausis* 'gold' (also occurrirng in the accusative *ausin* in the Enchiridion) appears to be matched by Lat. *aurum*, Sab. *ausum*, also meaning 'gold.'[77] Tocharian A *wäs* (neut.), B. *yasa* (masc.) 'gold' is also sometimes said to be cognate with these, reflecting Proto-Tocharian **w'äsā* < **(h₂)u̯eseh₂*.[78] Should these 'gold' words be ultimately linked to **h₂u̯es-*, their apparent schwebeablaut must be addressed.

Three formal problems may be identified. First, the acute in Lithuanian is unexpected, and implies a *seṭ* root, *h₂eu̯Hs-* (the regular outcome of VRH sequences in Baltic was VRH >

[77] Latvian has lost this form, though its former existence in the language is probably demonstrated by the use of *auzas* 'oats,' a form that seems to continue a morphologically frozen **ausas* 'gold' in several *dainas* (Baltic oral poetry). The context (having more to do with gold than with oats) demonstrates that the archaic form (with more appropriate semantics) likely existed in a prior state of the language (Karulis 2001).

[78] Adams 1999:487.

V̄R, which yielded a subsequent acute tone). Secondly, OPruss. *ausis* and Lat. *aurum* disagree on the gender of the noun (although East Baltic has lost the neuter gender, it was alive and well in Prussian). Finally, Toch. A *wäs*, B. *yasa*, if cognate with the Baltic and Italic forms, nevertheless reflect a State II form, if from *$h_2\underline{u}es$- (with implied initial laryngeal).

We first examine the Lithuanian acute. The field of Balto-Slavic accentology is a notoriously contested branch of Indo-European linguistics, and one of the key points of contention in the discussion is the ultimate source of the acute ~ circumflex contrast characteristic of these daughter languages. While the precise details are disputed, it now seems clear that all long vowels very early in Proto-Balto-Slavic had a 'marked' (glottal?) prosodic feature, which is the ultimate source of the Lithuanian acute. These long vowels are generally agreed to have had at least two undisputed sources: (1) lengthening due to Winter's law (VC > V̄C; where C = a voiced unaspirated stop), and (2) compensatory lengthening from the loss of laryngeals (*eh_1, *eh_2, *eh_3 > *$\bar{e}$, *$\bar{a}$, *$\bar{o}$). A third source — the original lengthened grade vowels *$\bar{e}$ and *$\bar{o}$ — is disputed.

Driessen (2003:347-362), following Kortlandt and others, views lengthened grade vowels as having led to an eventual circumflex (and *not* an acute) in Baltic. Yet even if they did ultimately yield an acute in Lithuanian, this cannot have been the source for the acute in *áusas*, as there is no lengthened grade for **a* in Proto-Indo-European as standardly reconstructed,[79] and neither *$\bar{e}$ or *$\bar{o}$ would have yielded Latin *aurum* or Lith. *áu*(*k*)*sas.* Nor could Winter's law have been the source of the Lithuanian acute, according to Driessen, as any hypothetical plain voiced stop (for example, *d* in Proto-Baltic **audsas*) would have been assimilated before the sibilant in Latin, producing †*aussom*, a form which would have been immune to subsequent rhoticization. This leaves compensatory lengthening via the loss of tautosyllabic laryngeals as the only viable option.

Driessen's solution is to postulate a reduplicated thematic formation *h_2*é*-h_2*us*-*o*-*m*, which neatly matches the profile of another verifiably ancient reduplicated thematic formation: PIE *$k^{\mu}e$-$k^{\mu}l$-*o*- 'wheel' (> Ved. *cakrá*-, Gk. κύκλος, Toch. A *kukäl* 'chariot,' OE *hwēol* 'wheel').

[79] See, however, Chapter 1 regarding the reconstruction of an ablaut series for **a.* Some authorities work with lengthened grade *$\bar{a}$ on the basis of forms like Latin *nārēs* and English *nose*, both presumably from **nās*- (Fortson 2010:81).

The wheel word appears to have followed a C_1e-$C_1C_2(C_3)$-*o*- pattern: *$k^{\underline{u}}elh_1$- → *$k^{\underline{u}}e$-$k^{\underline{u}}l$-*o*-, with loss of the laryngeal.[80] Were this applied to *$h_2\underline{u}es$- '(become) bright,' one should arrive at either *h_2e-h_2us-*o*-[81] or *h_2e-$h_2\underline{u}$-*o*-. Since the loss of the laryngeal from *$k^{\underline{u}}elh_1$- was phonologically regular in *$k^{\underline{u}}e$-$k^{\underline{u}}l$-*o*-, it is technically not clear whether the third consonant of a root was actually employed in the pattern. All consonants, however, must have employed (for obvious reasons), as no formation in PIE has been demonstrated to dispense with a segment from the root.[82] Granting this, a *h_2e-h_2us-*o*- would have supplied the long initial diphthong in Proto-Baltic (*$\bar{a}usa$-) and subsequent acute in Lith. *áu*(*k*)*sas*. The same long initial diphthong in Italic would have in turn been shortened in *$\bar{a}uso$- > *$auso$- via Osthoff's law, which stipulates that long diphthong sequences, regardless of their origin, are shortened before a consonant.

A phonological parallel, Lat. *caulis* 'stem (of a plant), plant, cabbage,' is cited by Schrijver (1991:268). Cognate with OIr. *cúal* 'faggot, bundle of sticks,' the form must be from *keh_2ul-, with the expected acute showing up in Lith. *káulas* 'bone.' Independent confirmation for the laryngeal is provided by the phonological behavior of the implied root *$keh_2\underline{u}$- 'strike; split.' In PIE, roots of this shape (C*e*H$\underline{\text{U}}$) typically underwent laryngeal metathesis in zero-grade formations (C*e*H$\underline{\text{U}}$: CHU- > CUH-). The Paradebeispiel is Ved. *pāyáyati* 'drinks' (with full grade *$peh_3\underline{i}$-), which alternates with *pītá*- 'having been drunk' (zero-grade *pih_3-*tó*-). The zero-grade of *$keh_2\underline{u}$-, with metathesized laryngeal, is shown by Lat. *cūdō* 'strike, beat' < *kuh_2- + -*d*- root extension.[83] Lith. *káulas* thus forms a perfect phonological parallel to our OLith. *áusas* in that both, by virtue of their acute, require a long diphthong that can only be supplied by a *eh₂u*C sequence (since indeed other vowel lengthening options have been excluded).

---

[80] Another archaic formation very similar to this form is the 'beaver' word, which may be seen, for example, in ON *bjórr* (< PG **bebru*-), Lith. *bebrùs* 'beaver,' and the Ved. adj. *bhabhrú*- 'brown' — all from an essentially identical reduplicated formation (only built to a *u*-stem: *b^he-b^hr-*u*-).

[81] The medial consonant $\underline{u}$ would have become vocalic when surrounded by obstruents (on the view that the laryngeals were phonetically fricatives).

[82] Though certain formations in PIE reduplicate a portion of the root, the full root is nevertheless retained in the base.

[83] An alternative view is discussed by de Vaan (2008:149), according to which the root vocalism of Lat. *cūdō* spread by analogy with that of compounds in -*cūdō*, where *au > $\bar{u}$ is regular (in non-initial syllables), yet this is argued against by Scrijver (1991:285), who notes that the attestations of simplex *cūdō* are to early for such an explanation to hold.

Driessen's reconstruction, if correct, neatly accounts for how the verbal root *$h_2\underset{\smile}{u}es$- '(become) bright' could have acquired the meaning 'gold.' The following table compares the derivation of *$k^{u}\acute{e}$-$k^{u}l$-*o*- to Driessen's *$h_2\acute{e}$-h_2us-*o*-:

(14) REDUPLICATED THEMATIC NOUNS IN PIE

	Verbal root $C_1C_2(C_3)$	→	**Reduplicated derivative $C_1\acute{e}$-$C_1C_2(C_3)$-*o*-**
Form	***$k^{u}elh_1$-***		***$k^{u}\acute{e}$-$k^{u}l$-o-***
Meaning	'turn (oneself)'	→	('rotating object' →) 'wheel'
Features	*-ne/n-*durative		Descriptive term for technical tool
Form	***$h_2\underset{\smile}{u}es$-***		***$h_2\acute{e}$-h_2us-o-***
Meaning	'become bright'	→	('bright/shining object' →) 'gold'
Features	*$\hat{sk}\acute{e}/\acute{o}$-*inchoative		Descriptive term for precious metal

The derivational process generates a technical term that also captures something of the action semantics of the verbal root. The reduplication in *$k^{u}\acute{e}$-$k^{u}l$-*o*- 'wheel' has long been viewed as an semantically intensifying morphological element, similarily, a reconstruction *$h_2\acute{e}$-h_2us-*o*- would neatly account for the semantic derivation *'become bright' → 'gold.' Both concretized derivations simultaneously carry intensified semantics. From the various verbal roots which produced alternative 'gold' words in Indo-European (such as *$\hat{g}^{h}el$- 'shine' : *$\hat{g}^{h}\underset{\circ}{l}$-*to*- > OE/OS/OHG *gold*, OCS *zlato*) we may gather that there was no canonical word for 'gold' in the parent language, rather, neologisms tended to convey something of the brilliant shine of the precious metal.

A remaining issue is the masculine in Old Prussian (against the expected neuter, cf. Lat. *aurum*). As pointed out by Driessen (2003:358), however, following Illič-Svityč' law, original barytone *o*-stem neuters in PIE became masculine already in Proto-Slavic, cf. PIE *$d^{h}\underset{\smile}{u}\acute{o}r$-*o*-*m*

'door' → OCS *dvòrъ* (masc.), while only oxytone neuter *o*-stems remained unaltered.[84] This law is commonly attributed to Proto-Baltic as well, which would mean that our form, if originally initially accented, would have become masculine.[85]

Should Driessen's reconstruction be valid, Toch. A *wäs*, Toch. B. *yasa* 'gold' would be unlikely to belong to either **h_2é-$h_2$us-o-*, or **h_2u̯es-*. Alternative sources have been proposed for these forms, taking them to be borrowed from either a substantivized Vedic adj. *vasu-* 'excellent; good' (or perhaps Ved. *vásā* 'shining; white'?), or a borrowing from Proto-Samojed **wesä* 'metal' (cf. Yurak *ẃeśe* 'iron, money'). Driessen (2003:350) presents provisional evidence that Proto-Tocharian **w'äsā* might have meant more than merely 'gold,' to judge by the semantics of possible loanwords in Turkish and Mongolian.

3.3.5 **$h_2$us(-s)-tero-* 'east'

A number of Indo-European languages attest a word for 'east' whose semantic development is easy to account for: *'dawn, sunrise' → 'place where the dawn rises; east.' Notably, Latvian *àustrumi*, ON *austr*, YAv. *ušastara-*, all 'east' are characterized by a *-tr-* or *-ter-*.

The IE suffix **-tero-* is most clearly seen in ON *austr*, OS *ōstar*, etc. (< PG adverb **auster*) and YAv. *ušastara-* 'eastern.'[86] The bases **aus-* and *ušas-*, to which **-tero-* is attached, however, clearly differ. Since YAv. *ušastara-* 'eastern' is both semantically and formally parallel to the Germanic words, it is preferable that these be cognate on some level. It is the actual shape of Young Avestan base *ušas-* (with virtual **-es-* as the oblique ← **$h_2$us-s-*), however, that

[84] Interestingly, Slavic seems to have extended this beyond *o*-stems, cf. neut. **méd^h-u-* → OCS *medъ* (masc.) 'honey.' The same development, however, does not appear to have occurred in Old Prussian, cf. <meddo> (Elbling Vocabulary). Though <o> typically corresponds to **ā*, the Old Prussian orthography is notoriously imprecise, and the compilers of the Old Prussian corpus generally seem to betray the marks of non-familiarity with this Baltic language, as pointed out by Petit (2010:145), and others. Given its etymological background, this is clearly an intact neuter *u*-stem.

A related orthographical issue is the the prevalence of masculines in <is> in the Old Prussian text over against corresponding simple thematic stems in Lithuanian (*-as*) and Latvian (*-s*). Some attribute this to scribal indifference or error, others to a general tendency of **-iu̯o-* stems to advance at the expense of old plain thematics in the language.

[85] Evidence for reconstructing barytone accentuation for C_1e-$C_1C_2(C_3)$-*o*- (as opposed to theme vowel accentuation) is the application of Verner's Law to **k^{u}é-k^{u}l-o-*. The contrast between ON *hvél*, OE *hwēol* 'wheel' (reflecting PG **h^{w}eh^{w}laz* < PIE **k^{u}é-k^{u}l-o-*) and Vernerized ON *hjól* (reflecting PG **h^{w}eula-* < PIE collective **k^{u}e-k^{u}l-éh$_2$*) shows barytone accent on the *o*-stem singular (Ringe 2006:108).

[86] IE **-tero-* has both directional and contrastive functions, cf. Ved. *úttara-* 'upper' (< **ud-tar-*) and Gk. δεξιτερός 'right' (as opposed to left). Its use in the 'east' words is clearly more directional than contrastive.

demonstrates that the ‘east’ word in PIE was built to the *s*-stem *$h_2$éu̯s-ōs*, and not some other base. As with the ‘gold’ words, then, schwebeablaut may not need to be invoked here. Instead, the locus of schwebeablaut between *h_2u̯es-* and *$h_2$eu̯s-* forms is found in the actual derivation of *$h_2$éu̯s-ōs*. Since YAv. *ušastara-* is strikingly archaic and unlikely to be secondary, the other parallel ‘east’ words (in State I) — e.g. ON *austr*, Latv. *àustrumi* ‘east’ — may be understood as secondary remodelings.[87]

Lat. *auster* ‘south wind, south’ must also be related to these words, though it has undergone further semantic development. Various theories have been advanced to explain this semantic shift; perhaps an intermediate meaning *‘south-east’ can be justified due to false ancient assumptions about the orienation of the Italian peninsula.

Latv. *àustrumi* (m.pl.) ‘east’ is a deadjectival noun transparently formed from an old lost adjective **austr-s* ‘east.’ In the modern language, it is it semantically and morphologically paired with another plural noun *riẽtumi* ‘west’ (dial. *riẽtrumi*), which looks like it has been modelled on the pattern of *àustrumi.*[88] While *-str-* could have arisen via *t*-anaptyxis, cf. *stràume* ‘stream’ (< PIE **sreu̯* -; Ved. *srávas-* ‘flow’), syncope of *-*ster-* is equally possible. Examples of such include Latv. *uõtr-s*, Lith. *añtr-as* vs. OE *oþer*, ON *annarr* < **an-tero-* ‘other,’ as well as Lith. *katràs* ‘which (of two),’ Latv. *katrs* ‘each’ vs. Ved. *katará* < *k^{u}o-tero-*. This is preferrable, as is argued above, since it allows us to collapse all the ‘east’ words into a single PIE formation, *$h_2$us-s-tero-*. In fact, as we have seen, the various forms with *-r-* across the daughter languages are likely to have arisen from an original *er*-locative in the parent language (recall that it was argued that Lith. *aušrà* ‘dawn’ is unlikely to be an example of Caland *-ro-*, in view of dialectal Lith. *aušarà*, which rather looks like a thematicized *er*-locative **aušer*). Besides this, Lith. *aušrà* and Latv. *àustrumi* (< **austrs*) are not directly comparable due to their quite different semantics (‘dawn’ vs. ‘the east’).

---

[87] This assumes, of course, that all the ‘east’ words in *-*tero-* are ultimately cognate, instead of being independent formations. On balance, the collocation of the ‘dawn’ word + *-*tero-* = ‘east’ seems unique enough to warrant such an assumption.

[88] Derivatives with *-um-* are generally deverbal, cf. *vęz-umi* ‘cart full of goods’ (< root allomorph **ved-i̯-*), from *vest* ‘convey’ (< **ved-ti*). Latv. *riẽtumi* is no exception, being from *riẽtêt* ‘to set (of the sun).’

We consider next the place of OE *Ēostre* (oblique *Ēastron*), OHG *ōst*(*a*)*ra* 'Easter,' which also appear to have *-*tero*-. Descriptively, the Germanic forms go back to a feminine *n*-stem, without morphological parallel in any other Indo-European languages (as, indeed, are many of the productive Germanic *n*-stems). The prototypical Germanic *n*-stem in *-*ōn* > *-*õ̃* is a direct descendent of amphikinetic *n*-stems in PIE. In Germanic, it enjoyed a period of productivity during which it eventually outstripped all other types of *n*-stems (proterokinetic and hysterokinetic) and produced many forms that are clearly post-PG creations. Germanic **austrō*(*n*) appears to be just one such example. It is, nevertheless, also a well-motivated innovation, if we assume the post-Proto-Germanic survival of PIE **h₂éu̯s-ōs* (as was argued above). If inherited in Proto-Germanic as **aúzōz*, its transfer from the opaque *-*ōz* to the productive *-*õ̃*-stems (or perhaps even to *-*ōn*, if early enough) would have been a relatively simple affair. The agentive (mythological) semantics of **h₂éu̯s-ōs* 'Dawn,' paralleled in the Germanic feminine *n*-stem **austrõ̃* 'Spring deity,' argue, on balance, for unbroken inheritance. The alternative scenario seems comparatively less likely: it would require the early loss of **h₂éu̯s-ōs* in Germanic, after which a neologism *austrõ̃* for a suspiciously similar goddess would have been built to **austera*- 'east.'[89]

3.4 The locus of schwebeablaut in **h₂u̯es-*

Having surveyed the previous collection of forms, we have isolated the locus of schwebeablaut to the actual derivation of **h₂éu̯s-ōs*. This section will attempt to give an account for the

[89] Of course, as was argued above, the antiquity of YAv. *ušastara*- argues for the secondary nature of Germanic **austera*-. Without the survival of **h₂éu̯s-ōs*, however, there would have been no analogical model for **austera*- itself. If this account (somewhat speculative) is true, then medial -*t*(*e*)*r*- in these forms could have been introduced via contamination from Germanic **austera*-, possibly at at time when the adjective still meant *'toward the dawn.' A possible reason for this could have been that the reshaping of **auz-ō*(*n*) → **austr-ō*(*n*) was a means of recharacterizing the function and meaning of the deity's name, whose etymological origins might have already become obscure at this point.

emergence of the 'Dawn' word from *h_2u̯es-.[90] A key element of the argument will be linked to the observed tendency (first identified by Nussbaum (1986:190)) of old *er*- and *en*-locatives to co-occur with formations that give the appearance of schwebeablaut (cf. *$\hat{g}^h$i̯em- > Lat. *hiems* 'winter' vs. *$\hat{g}^h$éi̯m-en > Ved. *héman* 'in winter').

3.4.1 Animate *s*-stems in PIE

As previously mentioned, only two animate *s*-stems can be reconstructed for Proto-Indo-European with any degree of confidence. By far the best attested example is *$h_2$éu̯s-ōs 'dawn' > Ved. *uṣā́s*, Av. *ušå̄*, Gk. ἠώς, Lat. *aurōra*, etc. The other example, *meh_1n-ōs 'month,' can be deduced somewhat tenuously from Ved. *mā́s*-, Av. *må̄*, Lat. *mēnsis*, Lith. *mė́nuo*, etc. One or two others are more marginally attested or inferred, for example, a frozen accusative perhaps seen in Gk. αἰῶ 'age' < *$h_2$éi̯u̯-os-m̥. A related form, Gk. αἰές 'always; ever,' whose exact origin is debated, is sometimes taken to be an endingless locative of the same *s*-stem, allowing us to set up *$h_2$éi̯-u̯-ōs, for which, however, there is no confirmation outside of Greek.[91] An important question concerning animate *s*-stems is how the type relates (if at all) to the productive *inanimate* *s*-stems of the type *$néb^h$-os / *$néb^h$-es-os.

A recent proposal by Rieken (2001:73-79) concerning the derivational history of *$meh_1nōs$ would put the entire 'class' of PIE animate *s*-stems (if indeed it merits such a designation) into question. Rieken begins by reconstructing an *n*-stem *$méh_1$-ōn, for which she cites Hittite *meyan*- (with a secondary intervocalic glide). The frequent occurrence of the locatival phrase *witti meyani* 'at the annually reoccurring point in time' is argued by Rieken as cause for identifying this *$méh_1$-ōn with the more familiar 'moon' words in the other daughter

---

[90] It is instructive to note that the particular distribution of the ablaut grades among the descendants of *h_2u̯es- in the daughter languages coincides with (and is perhaps influenced by) the fate of its verbal reflexes. In the case of non-Indo-Iranian languages, for example, the loss of virtually all verbal reflexes (State II *h_2u̯es-) meant that no such influence could be analogically extended to any nominal derivatives, which therefore exhibit either zero-grade *$h_2$us- or State I *$h_2$eu̯s-. Conversely, only in Vedic and Avestan are nominal formations limited to a State II (*vas*-) : zero-grade (*uš*-/*uṣ*-) opposition (there being no State I †*oṣ*-). This is perhaps due, in part, to the survival of the IE verb. In other words, a possible reason for the generalized zero-grade root of Ved. *uṣā́s*, in contrast to the full-grade of other IE languages (perhaps also Gk. ἠώς), was the desire to eliminate allomorphy between nominal formations and verbal formations (due to schwebeablaut).

[91] Alternatively, per a suggestion made by Vine (2009:220), Gk. αἰές may be seen as a frozen genitive to an old acrostative *$h_2$éi̯-u- (gen.sg. *$h_2$éi̯-u-s → *$h_2$ei̯-u̯-es).

languages, which seem to reflect **meh₁n-ōs*. In fact, Rieken views **meh₁n-ōs* as a type of derivative of **méh₁-ōn* itself. The connection point between the two forms, according to her, is the genitive of the *n*-stem, namely **m(e)h₁-n-és*,[92] from which a neo amphikinetic *s*-stem was backformed.

As more so-called decasuative derivations have recently been invoked among scholars, some have begun to question the ability of actually establishing such derivations, and whether they are typologically comparable in other languages. It has been argued that no language has ever made use of a derivational process that takes a synchronic case form from a paradigm (as opposed to a stem or a root) in order to produce an entirely new derivative. However, such objections might be overcome with some qualifications about the process.

It should be pointed out that decasuatives generally only involve formations related to time and location (and for good reason), both of which are primarily associated with locatival functions, but also involve adverbial semantics more broadly (as, for example, deinstrumental derivation is argued by Weiss (2015:290) for Latin formations in *-ūno-* (cf. *fortūna* 'chance') ← **fortū* 'by chance' (instr.sg.)). It is precisely such locatival formations which are liable to become isolated from the rest of their paradigm and undergo subsequent adverbialization. Hence, a frozen adverb **m(e)h₁nés* 'at the (annual) period of time' is a better candidate for a backformed **méh₁nōs* 'month,' since its speakers would no longer have connected this form to its former paradigm, nor indeed would they segment a genitive desinence *-és*. In light of this, it might be better not to speak of formations such as **méh₁nōs* as being entirely 'backformed' — as if the form **m(e)h₁-n-és* were an actual hypothetical genitive belonging to **méh₁-n-ōs* in the minds of speakers — but rather as entirely new derivations built according to a defined pattern. In other words, the fact that the new derivation replaced the desinental *-e-* of **m(e)h₁nés* with *-ō-* (in the strong cases) is not necessarily evidence that speakers viewed the antecedent of **méh₁nōs* as an actual genitive.

Returning, then, to **h₂éu̯s-ōs*, one wonders whether there might be some justification for also viewing it as secondary in some fashion. On its face, it is difficult to view **h₂éu̯s-ōs* 'Dawn'

[92] A **mh₁nés* ~ **méh₁-ōn* alternation is a rather large allomorphic burden for speakers to shoulder, but the pristine archaism of YAv. *paθō* 'path' (gen.sg.), which beautifully reflects the original stem of the amphikinetic genitive **pn̥t-h₁-és* (in contrast to nom. **pént-oh₁-s*) would seem to indicate that speakers could indeed tolerate such forms.

as a straightforward primary derivative from *$h_2\underset{\sim}{u}es$-. As is well known, many amphikinetic formations are secondary (internal) derivations from older acrostatic, proterokinetic, and hysterokinetic nouns. The clearly secondary nature of many amphikinetic formations is echoed by Widmer (2004:113): "Für eine Untermenge der amphikinetischen Stämme ist prinzipiell davon auszugehen, dass sie nicht primär gebildet, sondern interne Derivate von anders flektierenden Stämme sind."

The classical ablaut patterns adduced for the amphikinetic class are themselves quite unique as they appear to violate certain tendencies observed in the other types. For example, in the other accent-ablaut classes, only one full-grade accented morpheme occurs in strong and weak cases. An accent/full-grade leap of more than one morpheme (from strong to weak cases) is similarily unique to the amphikinetic pattern, as is the number of allomorphs (amphikinetic formations have 3, or even 4, if one counts endingless locatives).

There are therefore good formal and semantic reasons to think that *$h_2\acute{e}\underset{\sim}{u}s$-$\bar{o}s$ 'Dawn' is unlikely to be a primary formation directly built to the verbal root *$h_2\underset{\sim}{u}es$- '(become) bright.' Although this *s*-stem has been described as an old collective in the literature (thus *$h_2\acute{e}\underset{\sim}{u}s$-*os*-$h_2$), and even a possible starting point for the entire feminine gender and eh_2-stems already in the parent language (cf. Fritz 1998:255-264 on the source of the feminine gender), it is extremely difficult to see how 'Dawn' could have been an old collective in any sense.

One novel approach by Widmer (2004:95-96) has been to argue for an otherwise unattested original neuter *s*-stem *$h_2\underset{\sim}{u}\acute{e}s$-*os*- : *$h_2\underset{\sim}{u}es$-*és*- as the source of an internally derived *$h_2\acute{e}\underset{\sim}{u}s$-$\bar{o}s$ 'Dawn.' While an internally-derived amphikinetic *s*-stem is attractive in terms of accounting for the semantic development of a personified deity 'Dawn' (and has parallels in other Indo-European formations), other problems remain. Widmer justifies the reconstruction of *$h_2\underset{\sim}{u}\acute{e}s$-*os*- (long since lost) by appealing to the frequent parallel creation of *r/n*-heteroclites beside *s*-stems, cf. *$\underset{\sim}{u}ed$-*o/es*- (> Gk. ὕδος 'water') besides *$\underset{\sim}{u}\acute{e}d$-$\underset{\circ}{r}/n$- (> Hitt. *wātar* 'water'). The cited examples above require him to unify the many 'spring' words discussed earlier (almost all from *$\underset{\sim}{u}es$-*r*-) with the 'dawn' words under a single root. As was argued, this is seriously compromsied by the lack of there is no evidence for an initial laryngeal in the 'spring' words (cf. Gk. ἔαρ < *$\underset{\sim}{u}es$-$\underset{\circ}{r}$-). Conversely, the *r*-formant in the 'dawn' words is unlikely to originate from

an original *r*-stem (or the like), in view of the distinct locatival semantics of many of the words. Instead, it may be argued that these are derivations of various kinds from an old *er*-locative.

There are, nevertheless, certain 'dawn' formations that are difficult to reconcile as being derived from the amphikinetic *s*-stem itself. These might argue for the existence of a primary derivative that was intermediate between verbal **h₂u̯es-* and amphikinetic **h₂éu̯s-ōs*. In particular, the Greek compound ἠϊκανός 'rooster' (← *'early singer'; -κανός is cognate with Germ. *Hahn* 'cock' < **kan-* 'sing'), with first member ἠϊ-, appears to be cognate with Gk. ἦρι 'early' and the entire 'dawn' complex. If so, however, it is not immediately apparent how an *s*-stem endingless locative **h₂us-es*(*-i*) (with expected full-grade of the suffix) could actually be behind ἠϊ- or indeed the *uši-* seen in several Avestan compounds like *Uši-då̊* (apparently the place name of a certain mountain[93]). Some have viewed the connecting vowel in the Greek compound (**-i*) as part of a Caland system that includes the Vedic adjective *usrá-* 'reddish; light.' Alternatively, Meissner (2006:145) considers whether forms like ἠϊ-κανός and *Uši-då̊* might instead be evidence for an original root noun. As will be argued below, a similar question might be asked of the *er*-locatives discussed earlier, which are likewise difficult to derive directly from an amphikinetic *s*-stem. These might lend further support for the reconstruction of an original root noun (primary) derivative.

3.4.2 *er*-locatives

As was noted, compelling evidence from the peculiar locatival semantics of many forms in the daughter languages, such as Gk. ἀήρ *'that which is found at dawn' → '(morning) mist' and frozen adverbs like ON *ár* 'early; in the morning' have lead many scholars to reconstruct an *er*-locative for **h₂éu̯s-ōs* 'dawn.' However, questions about the details of such a process remain.

The *er*-locative formant was clearly not a case desinence and is extremely limited in distribution. Even more so than their counterparts (the *en*-locatives), the *er*-locatives are identifiably found in a select few Indo-European formations, all relating to time or location. To take one example, the acrostatic *t*-stem **nókᵘ-t-s* / **nékᵘ-t-s* 'night' (cf. Lat. *nox* ~ Hitt. gen.sg. *nekuz*) formed an *er*-locative which gave rise to Gk. νυκτερός 'by night.'

[93] Kellens 1974:212-214.

It is a matter of dispute, however, whether these originally induced ablaut (as did regular case forms), or instead would have been properly attached to actual endingless locatives themselves. For example, the Ved. *en*-locative *jm-án* (one of two locatives belonging to *kṣām* 'earth,' the other being *kṣam-i*) certainly looks like it patterned paradigmatically with other oblique cases, such as *jm-áḥ* (gen.) and *jm-ā́* (instr.), instead of being built to an old endingless locative. To cite another example, Rau (2007:281-293), in a survey of decasuative formations, reconstructs the *er*-locative for νυκτερός as **nok$^{\mu}$t-er*. If this *er*-locative had originally acted like a regular case ending, we would expect an oblique stem **nék$^{\mu}$t-* (forming **nek$^{\mu}$t-er*), on the other hand, should the *er*-locative have been attached to the endingless locative itself, we would have expected **nĕk$^{\mu}$t-* (on the view that endingless locatives generally exhibit either full- or lengthened grade of the oblique stem).[94]

However, a number of considerations argue, on balance, for taking *en-* and *er-* locatives as having been originally formed to actual endingless locatives. Their restricted distribution shows that they were not part of a large productive system in the parent language. It is therefore to be noted whenever they are in fact attested, especially since they were in competition with the other two types of locatives (the *-i* desinence and the endingless type). The origin of the *en*-locative (perhaps identical with the preverb **en*), and especially its *er*-counterpart (probably from a deictic element **-(*e*)*r*), makes it more probable that they were used to 'reinforce' and recharacterize the locative semantics and morphological shape of already existing locatives. In other words, the particles adjoined to the endingless locative would not have have the status of full case endings. Later on, of course, the antecedent of a form like *jm-án* would have become fully incorporated into the paradigm, along with the accompanying stem restructuring (following the model of oblique cases, cf. *jm-áḥ*, etc.).

We can therefore make a case that the original *er*-locative to **h$_2$u̯es-* should have been made to an endingless locative that had temporal semantics. On both accounts, **h$_2$éu̯s-ōs* 'Dawn' falls short (as the supposed source for the attested *er*-locatives). To judge from the early usage of Ved. *uṣā́s*, Gk. ἠώς and Lat. *aurōra*, the original and primary referent of this form was actually the deity herself, and not merely the physical manifestation. As noted by Lundquist, the "*s*-stem

[94] The initial vowel of Gk. νυκτερός has probably been remodeled on the pattern of νύξ itself.

uṣási ‘at dawn’ (5x) [was] paradigmatic, but never used of Dawn, and might have been forbidden from Dawn hymns due to its reading, which would be not ‘in the dawn’ but ‘in the Dawn,’ an unfortunate innuendo.”[95] It is therefore possible that locative *uṣási* (whether from an original endingless locative or not) was not a direct inheritance from **h₂éu̯s-ōs*, even though synchronically it was paradigmatic in Vedic. The *er*-locative, as a reinforcement for an endingless locative, would have been even less likely to originate from the title of a deity. In fact, in order to account for **h₂eu̯s-ōs* as the source of derivatives such as Gk. ἀήρ and ἠέριος, Vedic *uṣr-* and *vāsará-*, and Lith. *aušarà*, scholars must invoke the **ss > s* rule in the parent language, in effect treating the marginal *er*-locative as a regular case ending built to the oblique **h₂us-s-*.

The previous discussion has taken into account some of the criticisms of decasuative derivation (desinental and *er*-/*en*-locatival) and has attempted to better describe the conditions which are likely to have brought them about. We may therefore summarize the criteria for justifying a decasuative reconstruction as follows:

a. The formation in question must involve a stem generally amenable to locatival semantics relating to time or location;
b. This would be facilitated either by a case form that had become paradigmatically isolated due to adverbialization (i.e. a paradigmatic locative), or,
c. The case form would have become morphologically opaque and ‘bleached’ of grammatical clarity (i.e. an old endingless locative)

In the case of (b), such a scenario could account for the creation of an entirely new derivation incorporating the entire stem of its antecedent. In the case of (c), the scenario could account for the reinforcement of an endingless locative with a deictic particle *-(*e*)*r*, which is seen in various pronominal and adverbial elements (cf. Latv. *kù-r* ‘where,’ *tù-r* ‘there,’ Gk. ἄρα/ἄρ/ῥά).

We may now propose a possible account for the derivational history of **h₂éu̯s-ōs* ‘Dawn’ that would serve to explain its anomalous schwebeablaut.

[95] From an earlier draft of Lundquist 2014.

3.4.3 Proposal for **h₂u̯es- → *h₂éu̯s-ōs*

From the verbal root **h₂u̯es-* 'become bright,' a root noun *nomina actionis *h₂u̯es-* / **h₂us-és* 'dawn (ref. to time)' could have been made in similar fashion to **ker-* 'cut off' → **ker-*/**kr-és* 'termination' (cf. Gk. κήρ 'death' vs. κάρ·θάνατος (Hesychius)[96]). The original impetus for the subsequent *er*-locative (itself the source of various derivatives) could have been a morphologically opaque endingless locative of this root noun itself, namely **h₂u̯ēs*. Such a commonly used form (in the common colloquialism 'at dawn') would had led to various recharacterization strategies. Two key independent formations for the root noun itself would have been employed:[97]

a. The deictic particle *-(*e*)*r* would have been directly affixed to the endingless locative, thus recharacterizing (and reinforcing) the endingless locative **h₂u̯ēs* in common usage to **h₂u̯ĕ̄s-er*.[98] This would then be the original source of the *vr̥ddhi*-derivative *vāsará-*.
b. The use and function of the standard genitive (**h₂us-és*) to the same root noun would have expanded — also at the expense of the bare endingless locative **h₂u̯ēs* — to include a genitive of time, such that **h₂usés* could have become isolated from the rest of the paradigm and specialized into an adverbial formation continuing the meaning 'at dawn.'

Taking first the *er*-locative **h₂u̯es-er*: The justification for postulating a **h₂u̯es-* base, as opposed to the oblique **h₂us-s-* of **h₂éu̯s-ōs* is that the deictic particle *-(*e*)*r* never was a paradigmatic case like the locative *-*i*, and thus could not be attached to a stem, but was rather affixed to a self-contained form. As such, if *-(*e*)*r* was originally affixed to the *s*-stem **h₂éu̯s-ōs*, we would have expected it to be added to the endingless locative **h₂us-es*, yielding **h₂us-es-er* > †*uṣasar*. Furthermore, as pointed out above, the original semantics and morphology of certain

---

[96] Weiss 2015:260.

[97] This may be a matter of chronology, with an earlier generation of speakers generating one form, and a later generation generating the other.

[98] Admittedly, one deficiency of this account involves explaining the required root vowel shortening of the original endingless locative. Perhaps some kind of vowel reduction was trigged by the addition of the *er*-locative, as will be similarily argued (in Chapter 4) in order to explain certain parallel *er*-locatives: cf. double full-grade **(d^h)ĝ^h-em-en* 'on earth' → OLat. *hemo* vs. 'reduced' **(d^h)ĝ^h-em-en* 'on earth' → Lith. *žmuõ* 'man.'

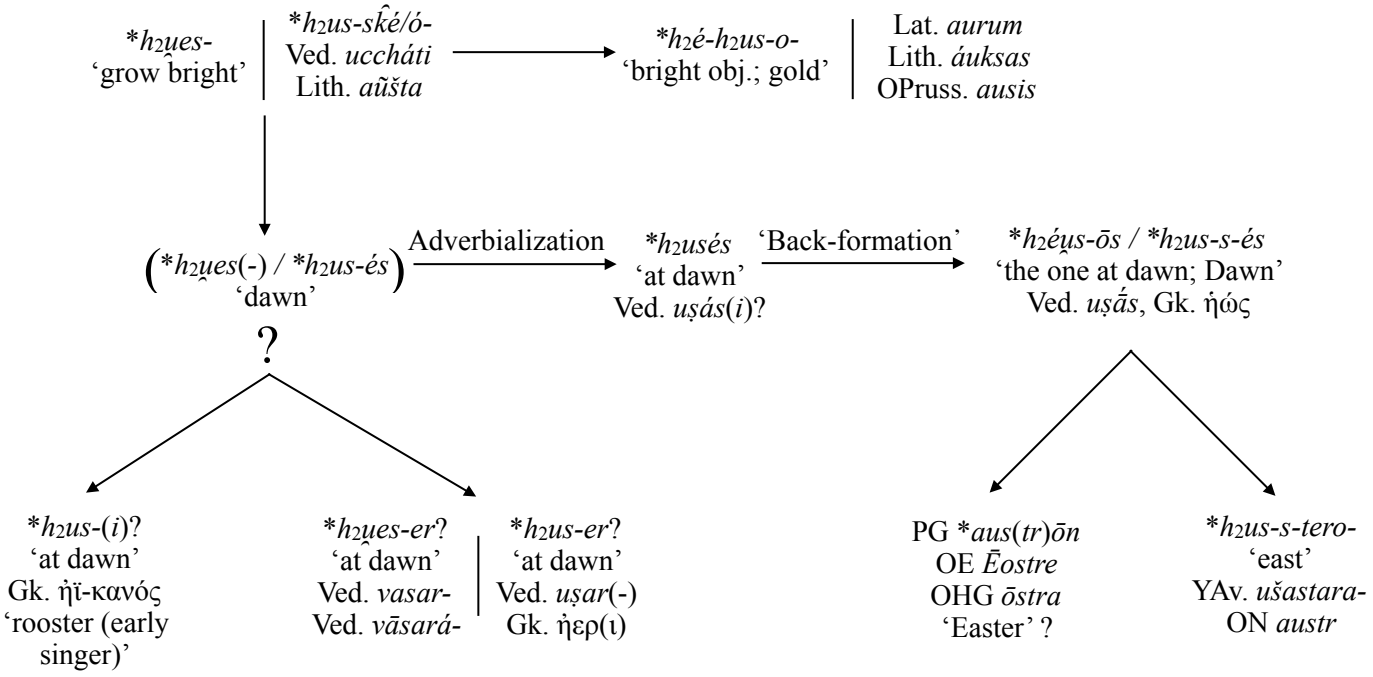
amphikinetic derivatives, including, likely *h_2*é̯us-ōs* ‘Dawn,’ point to a specialized derivative unlikely to be a primary formation. No endingless locative would have ever been made to such a form (i.e. the innuendo of ‘in Dawn’). Furthermore, there would have been even less incentive to create a recharacterized locative with affixed *-(*e*)*r*. Indeed, *h_2*é̯us-ōs* ‘Dawn,’ would have been susceptible to neither tendency.

As for our second form, a genitive of time *h_2*us-és* ‘at dawn’ could have become adverbialized and detached from the rest of the paradigm of the root noun. A parallel may in fact be found in the adverb *$ĝ^h$*-di̯es* (> Gk. χθές, Lat. *her-ī* ‘yesterday’), which was possibly an old frozen genitive singular of the root noun for day, cf. Ved. *sa-dyáḥ* ‘within one day.’ An isolated form like *h_2*us-és* is a plausible candidate for a brand new amphikinetic *s*-stem agent noun *h_2*é̯us-ōs* meaning ‘Dawn.’ It is to be noted that two other deities in the Indo-European pantheon[99] have broadly similar parallels: *s(*e*)h_2-u̯ōl* > Lat. *Sōl* ‘Sun’ and *$séh_1mō$(*n*) > Lat. *Sēmō* ‘seed god.’[100] Both are internally derived secondary agent noun amphikinetics (the major difference being that they originate from proterokinetic formations). The fact that the full-grade of the root of *h_2*é̯us-ōs* (as called for in the strong cases of amphikinetic nouns) was inserted into the ‘wrong’ place (= ‘schwebeablaut’) supports the assumption that *h_2*é̯us-ōs* was a derivative made to a type of formation that no longer was associated with its State II verbal root *h_2*u̯es-* (such as our candidate adverb *$h_2$uses* ‘at dawn’), and therefore had no particular full-grade root shape to follow (C*e*RC vs CR*e*C). A parallel to the scenario sketched out above is found in Vine 2009:205-224, where a degenitival neuter *s*-stem *u̯et-os* is backformed from the genitive of time of a root noun *u̯et-es* (seen also in Ved. *vats-á-* ‘yearling’ < *u̯et-es*).

[99] Strictly speaking, Latin presents the best evidence for both amphikinetic formations; however, even a form like Gk. ἡέλιος < *seh_2u̯el-i̯o-* is hard to explain as being derived from an original proterokinetic noun.

[100] Note also Gk. Ἀυξώ ‘goddess of growth.’ While this form is probably late, it is a witness to an inherited pattern.

(15) SUMMARY OF DERIVATIONS



CHAPTER 4

*$\hat{g}^h\underset{\wedge}{i}em$- 'winter'

4.1 Overview

The various Indo-European words for 'winter' and 'snow' constitute a large group in the daughter languages, some of which feature a rather great accumulation of suffixes. As an example one might cite Gk. χειμερινός 'having to do with winter,' with three or four distinct suffixes depending on where morpheme boundaries are drawn. In fact, the question of how to draw morpheme boundaries will become significant in elucidating ablaut patterns for this root and its derivatives. Perhaps the definitive account of these formations and their derivational relationships (together with extended footnoted discussions) is Friedman 2003:1-20, which we will engage with.[101] The immediate issue pertaining to schwebeablaut is the perceived alternation between a group of forms showing the glide preceding a vowel (cf. Lat. *hiems* 'winter') and another group showing the glide following the vowel (cf. Gk. χεῖμα 'winter').

4.2 'Winter' and its *m*-formant

The various winter words and their derivatives are conspicuously characterized by a stem ending in *-m*, which virtually every formation, complex or simple, minimally possesses. Among all the

[101] Another important, more recent, work is Steer (2013), especially pp. 63-82, which, however, this dissertation was unfortunately unable to address due to time constraints.

derivatives in every daughter language, the sole exceptions are found in Indo-Iranian and Germanic.

In Indo-Iranian, these include Ved. *hāyaná-* 'year' (Atharvaveda) and an inferred Avestan *n*-stem *zaiian-* (assumed on the basis of a nom.sg. *zaiia* and instr.sg. *zaēna*). But given that Ved. *héman* 'in winter' (loc.sg. only (Yajurveda)) occurs beside Ved. *hāyaná-*, it is better to take this form as reflecting an underlying **ĝʰēi̯m̥nó-* sequence (as opposed to invoking the *asno*-rule here). This can either be seen as a *vr̥ddhi*-derivative to an actual neuter abstract **ĝʰéi̯-men-* in Vedic (thus Darms 1978:381 and EWAia II 819) or, as suggested by Friedman (2003:2), a thematic delocatival formation directly built to an *en*-locative **ĝʰéi̯m-en* (reflected by Ved. *héman*) itself. Parallels for this second scenario cited by Friedman include an exocentric derivative **u̯eden-ó-* (Arm. *getin*, gen. *getnoy* '[fertile] ground') ← **ud-én* 'on/at water' (Ved. *udán*) as well as the renewed inner-Vedic formation *haimaná-* 'wintry, cold' ← Ved. *héman.*

A number of reasons, however make it preferrable to derive *hāyaná-* 'year' from the oblique of an actual neuter abstract. Notably, Ved. *hāyaná-* 'year' reveals no apparent locatival semantics (it is the calendar year that winter occurs *in* (= locative), and not vice versa). Unlike the *en*-locative cited in the Armenian parallel **u̯eden-ó-* (with preserved full-grade in Arm. *getin*), *hāyaná-* is built to what looks like the weak stem (**haim-n-* → **hāym̥n-a-*) of *heman-* (cf. Ved. weak stem *nā́m-n-* 'name' vs. endingless locative *nā́m-an*). Under either scenario, however, Ved. *hāyaná-* is not a genuine example of a 'winter' word that lacks an *-m.*

As in Vedic, parallel Avestan forms in *-m* (cf. Av. *zim-*, oblique of *ziiå̊* 'winter') occur alongside the alleged *n*-stem *zaiian-*. Tremblay (1996:126[86]) has suggested that the nom.sg. hapax *zaiia* (Fragment Westergaard 8.2) be corrected to *zī ā* "et lui," which would leave the instr.sg. *zaēna* as the only supposed *m*-less form.[102] Friedman (following EWAia II 819) takes the other hapax *zaēna* (Vendīdād 16.12) as the reflex of **zai̯m-ā* (according to the *asno*-rule).

The Avestan adjective *zaiiana-* 'of the winter,' also lacking *m*, looks quite similar to Vedic *hāyaná-*, and only requires the additional assumption that the *vr̥ddhi*-lengthened vowel of

[102] The relevant passage is cited by Tremblay: *hā druxš aŋaṯ aš-aoǰišta haēča ā δaθaiti* (mss. *āθaiti*) *zaraθuštra staxrahe. mərətō zī.ā* (mss. *zaiia*) *auuaθa slaxrō, yaṯ hā druxš ǰiti* (mss. *aeili*) *mərəzuui xšaθrača* (mss. *xšaθrata*) *anghaṯ Mahrkušō auua-miriiāiti.* "la Druǰ sera très fort, et elle recevra le † … † du fort. Et le mort sera fort comme la Druǰ, quand elle sera brève de vie et de puissance, comme Mahrkuša quand il mourra."

the initial syllable of **zāiiana-* was shortened before *ii* (cf. *raiia* (instr.sg.) 'by wealth' vs. Ved. *rāyā́* (de Vaan 2003:119)).[103] The hypothetical bare *n*-stem in Indo-Iranian (on the basis of Ved. *hāyaná-* and Av. *zaēna*) is therefore likely a mirage.

For Germanic, Old Icelandic *gói* 'mid-February to mid-March' was viewed by Collinder (1928:179), and following him, Szemerényi (1959:121), as reflecting a bare root **ĝʰōi̯-* (part of an *n*-stem **ĝʰōi̯-ēn* (per Collinder) or **ĝʰōi̯-ōn* (per Szemerényi)), hence without the *m*-formant. Bjorvand & Lindeman (2000:300) instead posit a Proto-Germanic **gōi̯-*/**gō-* alternation — on the basis of ON *gói* and Faroese *gø* 'late winter' — as evidence for an old root noun **ĝʰōi̯* / **ĝʰéi-s* (→ **ĝʰi̯-és*). In both analyses, then, the segmentation of a State I root is seen as legitimate.

Friedman (2003:7[1]) points out, however, that ON *gói* inflects as an inner-Scandinavian *īn*-stem, and that the archaic Old Norse compound *gó-mánaðr* 'snow month' (contrast Swedish *göje-månad* 'February' with remade initial member *göje-*) may be evidence of a more original stem **gō-*, which was later remade into **gōīn-*. This is also the view of Kroonen (2013), who notes that forms such as ON *gœ*, Faroese *gø*, and Norwegian *gjø* 'late winter' could have simply absorbed the glide. He cites further support for original PG **gõ̃* < **ĝʰ(i̯)ōm* with the Old Low Franconion Marburg glosses *in-gimus* 'one year (= winter) old animal' and *tui-gimus* 'two year (= winter) old animal.' These nicely match Lat. *bīmus* 'two years old' (< **dṷi-himo-*) and *trīmus* 'three years old' (< **tri-himo-*) and reflect PIE **ĝʰim-ó-*, thus establishing a high degree of probability that PG **gõ̃* itself reflected an original stem with a final *-m*.

The implicitly required loss of the glide after **ĝʰ-* for **ĝʰ(i)i̯ōm* > PG **gõ̃*, however, seems ad hoc and inexplicable, when compared to its survival in a form like ON *liggja* 'to lie' < **légʰ-i̯e/o-*. A parallel example is provided by Kroonen: PG **kewwan* 'to chew' < **ĝi̯eu̯H-e-*, and so the evidence is ambiguous.[104] Besides these select forms, however, all other 'winter' or 'snow' words likely reconstructible to the same root (or stem?) feature an ending in an *-m*. In short, the

---

[103] Alternatively, de Vaan (2003:97) operates with an *n*-stem *zaiian-* and views *zaiiana-* as a simple derivative in *-a-* without *vr̥ddhi*. However, such an *n*-stem, as we have seen, is without parallel in all of Indo-European.

[104] The apparent absence of the glide in OIr. *gaim* 'winter' also seems to be an issue. The likeliest preform **gam-i-* may in fact be directly attested in the personal name GAMI-CUNAS (gen.sg.) found in an Ogham inscription. Schrijver (1995:106-110) proposes the following developments: **ĝʰi̯em-* > Proto-Celtic *gi̯em-* > *gem-* → renewed *i*-stem *gem-i-* > OIr. *gaim*.

word for ‘winter’ in the parent language would have been either a root noun ending in *-m*, or an actual *m*-stem.

4.3 What type of formation was ‘winter’?

Avestan, Greek, Latin, Armenian (and possibly Germanic) show the most primitive forms for ‘winter,’ yet they are difficult to reconcile with each other. Gk. χιών ‘winter,’ for example, seems to require either an amphikinetic stem or an acrostatic (root noun?), but it is difficult to determine which one. See a comparison with structurally similar forms below:

(16) ACROSTATIC AND AMPHIKINETIC FORMATIONS

	k̂(u)u̯ó̆(n)	**IE ‘winter’**	***dʰ(é)ĝʰ-ōm***
		Nominative	
Ved.	*śvā́*	—	*kṣā́ḥ*
Av.	*spā*	*ziiå̊*	*zå̊*
Gk.	κύων	χιών	χθών
		Accusative	
Ved.	*śvā́nam*	—	*kṣā́m*
Av.	*spānəm*	*ziiąm*	*ząm*
Gk.	κύνα	χιόνα	χθόνα
		Genitive	
Ved.	*śúnaḥ*	—	*kṣmáḥ / gmás / jmáḥ*
Av.	*sūnō*	*zimō* (*zəmō*?)	*zəmō*
Gk.	κυνός	χιόνος	χθονός
		Locative	
Ved.	—	*héman*?	*kṣámi* / *jman*
Av.	—	—	*zəmarə*
Gk.	—	—	—

The paradigm of the ‘winter’ word (in Vedic, Avestan and Greek) appears to share certain features of both amphikinetic *d^h*éĝ*^{h}*-ōm* ‘earth’ and quasi-acrostatic **k̂*(*u*)*u̯ṓ*(*n*) ‘dog.’

In Indo-Iranian, the Avestan oblique case forms of acc.sg. *ziiąm* (YAv.) and gen.sg. *zimō* (also read *zəmō*; OAv./YAv.) allow for the reconstruction of a stem or root-final *m* in the nominative (YAv.) *ziiā̊*. The nominative singular **zi̯ās* is analogical to the old accusative singular **zi̯ām*, itself from *ĝ^{h}i̯om-m* (via Stang's law).[105] The genitive singular *zimō*, in turn, shows an oblique stem *zim-* < **ĝ^{h}im-*.

In Greek, we find χιών ‘snow’ for the nominative, and χιόν-, a slightly different oblique, with word-final *-n* (< *-*m*) analogically extended throughout the entire paradigm. The unambiguous *o*-grade strong stem, coupled with a contrasting oblique (fully mobile at least in Indo-Iranian) recalls **k̂*(*u*)*u̯ṓ*(*n*) ‘dog.’[106] In short, the ‘winter’ word could either reflect an amphikinetic **ĝ^h*(*é*)*i̯-ōm* or Friedman's “quasi-acrostatic” root noun (R(*ó*)-E(*z*) ~ R(*z*)-E(*é*); with neo-mobile accent and ablaut), which may be directly reconstructed to the late proto-language. Under the “quasi-acrostatic” scenario, the Greek oblique χιον- ← **ĝ^{h}i-m-* would be the innovation and Avestan *zim-* the direct inheritance. Under the amphikinetic scenario, on the other hand, Gk. χιόν- patterns predictably with the weak stem of Gk. χθών (χθόν-) ‘earth,’ while Avestan *zim-* (along with *zəm-* ‘earth’) would demonstrate a tendency to eliminate full-grade of the root in the oblique. All things being equal, then, amphikinetic **ĝ^h*(*é*)*i̯-ōm* is the slightly preferrable option.

Still other forms differ in various details. Arm *jiwn* ‘snow’ agrees with Greek in terms of semantics and can be taken back to **ĝ^h*(*i*)*i̯ōm* (as does ON *gó-mánaðr* ‘snow month,’ in all likelihood). Note that the neat agreement between Greek, Armenian and Germanic (sharing *o*-grade and the meaning ‘snow’) is not continued with Avestan *ziiā̊*, which means ‘winter,’ and is ambiguous as to its vowel grade.

[105] Hoffmann & Forsmann (2004:141)

[106] Formations from C*e*R(C) roots, such as **k̂*(*u*)*u̯ṓ*(*n*) / **k̂un-és*, as well as **dór-u* / **dr-éu̯-s* (> Ved. *dā́ru* / *drós* ‘tree’) were likely originally “true” acrostatics like **nók$^u̯$-t-* / **nék$^u̯$-t-* ‘night’ (Lat. *nox* vs Hitt. gen.sg. *nekuz* / nek^{w}ts/). The original paradigm **k̂u̯ón-s* / **k̂u̯én-s* was reshaped according to the strong tendency of the full-grade to “shift” one morpheme to the right in the oblique stem.

Due to the semantic split ('snow' vs. 'winter'), Friedman takes Lat. *hiems* (together with the Hittite hapax dat./instr./loc.sg. *giemi* 'in winter') to constitute a separate formation linked by internal derivation: "quasi-acrostatic" *$\hat{g}^h$(*i*)i̯ṓm* / *$\hat{g}^h$im-és* 'snow' → proterokinetic *$\hat{g}^h$(*i*)i̯ém- / *$\hat{g}^h$im-és* 'snow season' (→ 'winter'). Such a scenario, however, is complicated by at least two factors: (1) it is not entirely clear whether root nouns ever paticipated in the internal derivational process characteristic of the four accent-ablaut classes (since they lacked an overt suffix), and (2) even if this were the case, the weak stem of such a root noun (*$\hat{g}^h$im-) does not form a comparable foundation as the strong stem of a proterokinetic (*$\hat{g}^h$i̯em-); cf. genuine acrostatic *krót-u- / *krét-u- (Ved. *krátu-* 'power') → proterokinetic *krét-u- / *kr̥t-éu̯- (Gk. κρατύς 'powerful').[107]

The primary motivation for the postulation of the scenario above is the testimony of Lat. *hiems* and Hitt. *giemi*. But the hapax *gi-e-mi*, as pointed out by Melchert (1984:127[90]), could merely be a "faulty spelling for *gi-im-mi*, like hapax *li-e-ši* for *li-iš-ši*." Hitt. *gimmi* is, in fact, much more securely attested, and must reflect *gimn-i*; in other words, it is plausibly identifiable with Gk. χεῖμα 'winter' and Ved. *héman* (all from virtual *$\hat{g}^h$ei̯-men-). Furthermore, as noted above, the neat agreement between Greek, Armenian and Germanic (sharing *o*-grade and the meaning 'snow') is not continued with Avestan *ziiå̊*, which means 'winter,' and is ambiguous as to its vowel grade.

Part of Friedman's motivation in reconstructing an actual root noun ("quasi-acrostatic") formation seems to be due to his claim that the assumed *m*-stem of *$\hat{g}^h$i(i̯)-ōm is ad hoc, since PIE *d^hé$\hat{g}^h$-ōm 'earth' (> Gk. χθών, Ved. *kṣā́ḥ*) would be the sole reconstructible representative of such a class.[108] But the rarity of a particular stem type (especially if it looks like an ancient

---

[107] Nevertheless, the 'winter' : 'snow' division appears to be a significant one, thus perhaps suggesting an alternative scenario: an original hysterokinetic stem *$\hat{g}^h$i̯-ém- / *$\hat{g}^h$i-m-és 'winter' → amphikinetic *$\hat{g}^h$(é)i̯-ōm / *$\hat{g}^h$i-m-és *'(thing characteristic) of winter'? (→ 'snow'). However, the only evidence for hysterokinetic → amphikinetic derivation in Indo-European is found in compound formation, e.g. hysterokinetic *ph_2-tér- / *ph_2-tr-és (Gk. πατήρ 'father') → Gk. ἀπάτωρ 'having no father; fatherless' (virtual amphikinetic *-ph_2-tōr / *-ph_2-tr-és). While internally derived amphikinetic formations appear to have been made from any of the other accent-ablaut classes, it is not clear what sort of semantic development would arise from this particular derivational process, if indeed it existed in PIE for non-compound formations. Now, however, Steer (2013:3-9) has argued for such a process in the parent language.

[108] Steer (2013:54-92) has attempted to reconstruct both 'earth' *d^h(*e*)$\hat{g}^h$ōm and 'winter' *$\hat{g}^h$(*e*)i̯ōm as root nouns. But the reality of the root vowel in Hitt. *tēkan* (gen.sg. *taknaš*) 'earth' appears to rule out any such possibility for *d^hé$\hat{g}^h$ōm, at least.

relic) is not a particularly valid reason (a priori) to reject the reconstruction of another possible formation of the same type.[109]

It appears, however, that under any scenario, the generalization of the oblique grade must have occurred in Latin *hiems*.[110] A common expression 'in/during winter' would perhaps give weight to the oblique stem, or more especially, the endingless locative, should Lat. *hiems* be a sufficiently ancient formation. It is interesting to note that the endingless locative **ĝʰi̯em* would have been identical for either an amphikinetic or "quasi-acrostatic" stem.

4.4 **ĝʰei̯mn̥-*

The crux of the schwebeablaut problem here involves the perceived alternations between the primitive 'winter' stem (ending in *-m*) described above and a well-attested (however ancient) neuter abstract represented by Gk. χεῖμα and Alb. *dimën*, supplemented by further indirect evidence in Vedic, Hittite, and possibly Avestan (if *zaēna* < **ĝʰei̯mn-* is to be taken as a representative). Greek χεῖμα 'winter,' as pointed out by Friedman (2003:10[18]), is archaic (Homer +) and restricted to poetry in its original distribution, making it unlikely to be a secondary inner-Greek creation.[111] Likewise, Albanian *dimën* (Gheg) 'winter' (Tosk *dimër*[112]) is a standard thematization of what looks like an original neuter abstract: Proto-Albanian **dimena-*[113] < **ĝʰei̯men-*, cf. *emër* / *emën* 'name' < **enmena* (Orel 2000:218).

Friedman compares *dimën* to OCS *zimьnъ* 'wintry' and Lith. *žiemìnis* 'pertaining to winter.' However, the Lithuanian form is a trivial adjective in *-inis*, being made to Lith. *žiemà*. Lith. *-inis* is an extremely productive suffix used to produce attributive adjectives, cf. *auksas*

---

[109] The validity of *m*-stems has also been recently affirmed by Pinault (2012:276-277).

[110] Certain other acrostatic and amphikinetic nouns result in the generalization of the strong stem in Latin. Thus, acrostatic R(*o/e*)-S(*z*) ablaut à la **dóm* : **dém* 'house' or **nókʷ-t-s* : **nékʷ-t-s* 'night,' resulted in the generalization of the strong stem in Latin, cf. *domus* 'house' and *nox* 'night,' respectively. Similarily, Lat. *soror* 'sister' reflects the generalized strong stem of **su̯ésōr* / **susr-és*, and *aurōra* 'dawn' < **h₂éu̯s-ōs* / **h₂us-s-és* 'dawn'. Recall, however, that other, apparently ancient formations have generalized zero-grade of the root, cf. Lat. *cruor* 'blood.'

[111] Gk. χεῖμα is itself the launching pad for a host of clearly secondary forms such as χειμάζω, χειμαίνω, etc.

[112] Intervocalic *n* is preserved in Gheg, but changed to *r* in Tosk, a process known as Tosk rhoticism (Orel 2000:49).

[113] Albanian *i* can reflect either PIE **ei̯* or **i*, cf. *ikëj* 'to go away, run away' < **h₁ei̯-* (Orel 2000:13).

'gold' → *auksinis* 'pertaining to gold.' Likewise, Slavic adjectives in *-ьпъ* < **-ino-* are the most numerous single adjectival group in OCS, cf. *rěka* 'river' → *rečьпъ* 'pertaining to (the) river' (Halla-aho 2006:94). Therefore the implied word equation between OCS *zimьпъ* (derived from *zima*) and Lith. *žiemìnis* (derived from *žiemà*) is not likely to be especially significant, nor is it needed as support for the antiquity of Gk. χεῖμα, Alb. *dimën*, since corroborating evidence exists in other languages.

The additional evidence that might be added here is either argued away or otherwise interpreted differently by Friedman. This includes the *$\hat{g}^h\check{e}\underset{\cdot}{i}m\underset{\cdot}{n}o$- sequences in Ved. *hāyaná-* and Av. *zaiiana-* discussed above, which could represent thematicizations of the old neuter abstract. The evidence of isolated locatives in Hittite and Vedic additionally argues for an original neuter abstract in PIE. Thus, Hitt. *gimmi*[114] 'in winter' (< *$\hat{g}\bar{e}mn$- or *$\hat{g}imn$-) and the denominative *gimaniye/a-* (< (*$\hat{g}\bar{e}man$- or *$\hat{g}iman$-) can be taken back to *$\hat{g}^he\underset{\cdot}{i}men$-.[115] In Indo-Iranian, Ved. *héman* (loc.sg. only; Kāṭhaka Saṃhita+), together with a hapax *hemantáṅ* (RV X.161.4b), may also lend further support for original PIE *$\hat{g}^he\underset{\cdot}{i}men$-. These forms will be discussed more in detail below.

With the likelihood that PIE additionally possessed a neuter abstract *$\hat{g}^he\underset{\cdot}{i}men$- besides *$\hat{g}^h\underset{\cdot}{i}em$-, two major questions invariably present themselves: (1) how is *$\hat{g}^he\underset{\cdot}{i}men$- to fit within the overall derivational history of the other 'winter' words, and (2) how did this neuter abstract in State 1 come to exhibit schwebeablaut, in contrast to the State II *$\hat{g}^h\underset{\cdot}{i}em$- previously discussed (especially if *$\hat{g}^h\underset{\cdot}{i}em$- was originally a root noun).

The derivational question is logically prior to the latter and has generated numerous proposals, as reviewed by Friedman (2003:2). These include the following: (1) *$\hat{g}^he\underset{\cdot}{i}men$- as a type of denominal *n*-stem, (2) *$\hat{g}^he\underset{\cdot}{i}men$- as a denominal (and degeminated) heteroclitic *men-/mer-*stem, (3) *$\hat{g}^he\underset{\cdot}{i}men(t)$- as an "individualizing" *-n(t)* formation, and, (4) *$\hat{g}^he\underset{\cdot}{i}men$- as a straightforward deverbal neuter abstract built to a root *$\hat{g}^he\underset{\cdot}{i}$-. As will be demostrated, all of the

[114] The GI sign here is technically ambiguous between /ge/ and /gi/. Henceforth, wherever /gi/ is assumed, the possibility must be retained for readings such as *gemmi*, *gemaniye/a-*, etc.

[115] Compare the geminate *-mm-* of *ge/immi* (< **-mn-*) to the *-man-* sequence of denominal *lam*(*ma*)*niie/a-* 'to name, call,' cf. Gk. ὄνομα, Ved. *nā́man-* 'name' (Kloekhorst 2008:599-600). Given the productivity of *ie/o*-stems in Hittite, *gimaniye/a-* may be a more recent creation.

above have serious deficiencies, and none, with the exception of the final scenario, even address the schwebeablaut issue.

4.4.1 Denominative stems

A denominal *n*-stem, something like **ĝʰi̯em-* → **ĝʰéi̯ m-n̥-* / **ĝʰim-én-*, is rather ad hoc, as pointed out by Friedman. The only other comparable example of a secondary *n*-stem is **h₂óngʷ-n̥-* / **h₂n̥gʷ-én-* 'ointment, butter' > Lat. *unguen*, OIr. *imb*. Even this is a not direct comparison, however, as **h₂óngʷ-n̥-* / **h₂n̥gʷ-én-* is deverbal (from **h₂engʷ-* 'to smear' (LIV² 267)), as contrasted with the denominal (from **ĝʰi̯em-* / **ĝʰei̯m-*) formation of **ĝʰéi̯m-n̥-*. Even here, however, Melchert (2010:163-181) presents an attractive account for setting up a regular neuter abstract **h₂éngʷ-mn̥-* as the ultimate source of Lat. *unguen*, OIr. *imb*, etc. The regularly observed loss of *m* between an obstruent and a non-syllabic *n* (the *asno*-rule, cf. Ved. *áśman-* : *áśnas* 'stone' < **h₂(e)k̂-mn-és*) could easily have accounted for the appearance of an *n*-stem in the daughter languages (from original **h₂óngʷ-mn̥-* / **h₂éngʷ-mn-*). For this analysis, Melchert assumes the existence of a few reconstructible neuter abstracts in PIE with acrostatic inflection, on the basis of examples such as Gk. πῶμα 'lid, cover' < **póh₂-mn̥ -* / **péh₂-mn̥-* (**peh₂-* 'protect').

Similar to the proposal mentioned above is the one offered by Tremblay (1996:126), which requires a secondary neuter abstract built directly to **ĝʰi̯em-*, thus **ĝʰi̯em-men-* (or the like), with subsequent degemination of *mm* already in PIE. Such a scenario is wholly without parallel and therefore unlikely. Indeed, the impressive comparative evidence of neuter abstracts compiled by Friedman (2003:10[17]) from Vedic, Avestan, Greek, Hittite, and Latin strongly points to their nearly exclusive formation from verbal roots (with a few exceptions).

4.4.2 Individualizing **-n(t)-*

Oettinger (2001:301-315) reconstructs an 'individualizing' (and substantivizing) **-n(t)-* for Gk. χειμών 'winter,' Hitt. *gimaniye-* 'spend the winter' (← **ĝʰei̯m-on-*), on the one hand, and Gk. ἀ-χείμαντ-ος 'not stormy,' Hitt. *gimmant-* 'winter' (< **ĝʰei̯m-on-t-*), on the other, thus identifying

both types as originally united under a single suffix.[116] He identifies this suffix with the clear individualizing function of **h₂ner-on-* 'the quintessential man' (Lat. *Nerō*) ← **h₂ner-* (Gk. ἀνήρ, Ved. *nar-* 'man') and employs it to account for numerous disparate phenomena in the parent language, such as the origin of the Germanic weak adjective, the ergative case in Hittite, the possible source of *nt*-participles in PIE, in addition to other items. The difference between **-n* and **-nt*, according to Oettinger, amounts to a purely phonological epenthesis of *t* that may be observed in many kinds of environments: cf. **meli-t-* 'honey,' **i̯ek̑ᵘr̥-t-* 'liver.' As a parallel, Oettinger cites certain Germanic data, cf. OHG *nie man* > Middle High German *niemant* 'nobody' (Modern German *niemand*).

As a theory, Oettinger's account seems to be too 'powerful' (both phonologically and morphologically). While the epenthesis of *t* appears to be clearly defined in Germanic (generally after nasals in word-final position), Oettinger's *t* seems to occur in almost any environment, without well-defined conditions. Morphologically, **-n(t)-* was added to various types of adjectives and nouns, it appeared in numerous ablaut grades (**-en(t)-*, **-on(t)-*, **-n(t)-*), and its resulting semantic function varied from 'concretizing,' to 'individualizing,' to 'stigmatizing.' It is therefore difficult to see what the postulation of a **ĝʰei̯m-(o)n(t)-* contributes, explanatorily. It is also wholly unable to address the entire issue of schwebeablaut.

Friedman does, however, take Hitt. *gimmant-* to be segmented as *gimm-ant-*, and therefore a trivial inner-Hittite *-ant*-derivation. This productive suffix in Hittite (a key part of Oettinger's individualizing **-n(t)-*) observed in the terms for the seasons (as well as 'year,' 'day' and 'night') was examined first by Goetze (1951:467-476) in detail, who first noted that in every case, a simplex stem appeared beside one containing the added *-ant-* suffix. Thus, dat.-loc. *gimmi* 'in winter' occurred next to a stem *gimmant-* 'winter' (e.g. nom. *gimmanza*, dat.-loc. *gimmanti*, gen. *gimmantaš*, etc.), likewise, dat.-loc. *ḫamešḫi* and gen. *ḫamešḫaš* 'spring' were matched by *ḫamešḫanti* and *ḫamešḫantaš* 'spring,' respectively, and so forth. A semantic distinction between the two types was claimed by Goetze, citing, for example, the following text:

[116] This amounts to a rejection of Oettinger 1982, containing a prior theory that connected the origin of the *t*-suffix(es) with the ablative case.

(17) KUB XIII 4 II 52 ff.[117]

nu ma-a-an EZEN.M[EŠ] EZEN-*aš me-e-ḫu-u-ni UL e-eš-ša-at-te-ni nu* EZEN *ḫa-me-eš-ḫ*[*a-an-da-aš*] *I-NA zé-e-ni i-ia-at-te-ni* EZEN *zé-e-na-an-da-aš-ma ḫa-me-eš-ḫi e-eš-ša-at-te-ni*
"If ye do not celebrate the festivals at the proper time appointed for (that) festival, if (for instance) ye celebrate the spring festival in the fall, but celebrate the fall festival in the spring, …"

According to him, the 'season' forms suffixed with *-ant-* formally refer to the particular season as a whole, whereas the simplex forms indicate a stretch of time within that season. The semantic functions here are thus parallel to the relationship between *tuzzi-* 'troops' and *tuzziyant-* 'army.' It is instructive, however, that for Hitt. *gimm-*, only the locative is attested without *-ant-*, whereas the nominative *gimmanza*, genitive *gimmandaš*, and dat.-loc. *gimmanti* are always formed to a *gimmant-* stem. A similar distribution is seen for the other seasons (though the genitive does occur sporadically with *ḫamešḫa-* 'spring' and *zēna-* 'fall,' sans *-ant-*), leading Kloekhorst (2008:280, 328) to view the *-ant-* forms of the seasons as being paradigmatic, synchronically. Notice that the distribution of *-ant-* here with the seasons differs from that of Hitt. *išpant-* 'night,' where the loc.sg. *išpanti* is robustly attested. An attractive comparison between YAv. *xšapan-* / *xšafn-* 'night,' and a *t*-extended *išpant-* (< **kʷspen-t-*) has been noted by Nussbaum (2004:7). This is explored in more detail below.

4.4.3 Deverbal **ĝʰeu̯-mn̥-*

An attractive (and tempting) solution would be to simply posit two parallel original stems, thus, **ĝʰéu̯-mn̥* alongside the amphikinetic *m*-stem **ĝʰ*(*é*)*u̯-ōm.* This scenario would not require any *ad hoc* derivational morphology since it simply sidesteps the whole issue of a secondary **ĝʰéu̯-mn̥.* Additionally, it would render the entire schwebeablaut issue non-existent, with a morpheme boundary in Gk. χι-ών, Ved. *hé-man*, etc. The reconstruction of an *m*-stem (built to an implied root **ĝʰeu̯-*) can account for Av. *ziiå̊*/*zim-*, Gk. χιών, Lat. *hiems*, etc., equally as well as a root noun **ĝʰu̯em-* (though both reconstructions are not without their problems, as was seen above).

[117] Goetze 1951:469-470.

Nevertheless, Friedman (2003:2) rejects such an option out of hand as untenable due to a number of considerations. In the first place, there is no other evidence that such a root ever existed in PIE. The Indo-Iranian verb cited by Friedman (2003:9[15]), represented by Ved. *hi-* and Av. *zaii-* 'impel, drive,' is the only remotely plausible candidate. It, however, would entail a very difficult and implausible semantic development. Furthermore, as mentioned earlier, Friedman hesitates to reconstruct an *m*-stem here due to the extreme rarity of such formations. The only other possible *m*-stem, **dʰéĝʰ-ōm* 'earth,' has been disputed in the past, and is still contested, cf. Steer 2013. Nevertheless, disyllabic Hitt. *tēkan* 'earth' clearly rules out a root noun reconstruction. Willi's (2007:169-194) intriguing account also offers very interesting evidence for a genuine root **dʰeĝʰ-*, and therefore, by extension, supports a real *m*-stem.

In any case, there need not be any *a priori* rejection of the reconstructing of an *m*-stem. The real difficulty with a **ĝʰeu̯-mn̥* segmentation is the unlikely conclusion that the root **ĝʰeu̯-* happened to coincidentally feature stems of various types, all of which began with **-m.* It was demonstrated above that *all* the 'winter' words, regardless of their synchronic morphological structure, share a base form with **m.* This is a curious fact only if we segment all 'winter' stems from **ĝʰeu̯-* and thus end up with complex suffixes such as *-men-* (cf. Gk. χεῖμα) and *-mer-* (cf. Lat. *hībernus* 'of winter'), in addition to the *m*-stem discussed above. In sum, the **m* seen in **ĝʰeu̯men-* and **ĝʰeu̯mer-* is unlikely to be traced back to the suffix(es) *-men-/-mer-*. Instead, whether or not we reconstruct an actual *m*-stem or a root noun **ĝʰiu̯em-* as the most primitive form (with final **m*) that serves as the basis for all the rest of the 'winter' derivations, for all intents and purposes, late PIE treated **ĝʰiu̯em-* as the 'winter' root (or base) from which all other nominal derivatives may be traced. This, in turn, necessitates that **ĝʰeu̯-men-* (and **ĝʰeu̯-mer-*), while securely reconstructible on the basis of numerous daughter languages, must itself be somehow secondary to **ĝʰiu̯em-*.

4.4.4 Locative **ĝʰeu̯m-en*

Building on the foundation of other recent scholarship, chiefly Nussbaum 1986:52[11], Friedman's (2003:2-3) own solution is to reconstruct an original *en*-locative **ĝʰeu̯m-en* directly continued by the Ved. locative *héman* 'in winter.' Further indirect support for this form, according to

Friedman, may be seen in the *vr̥ddhi*-derived Ved. *hāyaná-* and Av. *zaiiana-* < **ĝʰēi̯mn̥-o-* (supported by the Armenian parallel *getin*, *getnoy* < **u̯eden-ó-* ← **ud-én* 'on/at water' (Ved. *udán*)), while Hittite *gimaniye/a-* 'spend the winter,' *gimmi* 'in winter,' and *gimmant-* 'winter,' in turn, are also taken as various derivatives, ultimately from the same **ĝʰei̯m-en.* Hitt. *gimmaniye/a-* is reconstructed as a delocatival **-i̯é/ó-*formation to **ĝʰei̯men*, with a Vedic parallel, cf. *ratharyáti* 'ride on a chariot' ← pre-Indic *roth₂-ér* 'on a chariot.'[118] The locative *gimmi*, in turn, is seen by Friedman as a trivial *i*-extended **ĝēman* < **ĝʰei̯men*, similar to Ved. *usrí* ← Ved. *uṣar* 'at dawn.' Hitt. *gimmant-* is taken as a representative of forms with 'individualizing' *-ant-*, built to a secondarily thematized **ĝēman* (< **ĝʰei̯men*), just as the root noun **kᵘsóp-/*kᵘsép-* (Ved. *kṣap-*, OPers. *kšap-* 'night') → pre-Hittite **kᵘsép-ont-/*kᵘsp-n̥t-'*. Finally, only Gk. χεῖμα 'winter' would constitute a bona fide (inner Greek) *-men*-formation backformed to the *en*-locative **ĝʰeimen.* This is similar to the process seen in ἀιέν 'forever, always' (*h₂ei̯-éu̯* + *én*) → ἀιών 'age,' where an *en*-locative to **h₂ói̯-u-* is the source for a backformed amphikinetic noun.[119]

Friedman's scenario, when juxtaposed with the alternatives outlined above is clearly the most attractive solution; however it suffers from a different type of implausibility, inasmuch as it requires the putative *en*-locative **ĝʰei̯m-en* to be have survived in multiple daughter languages, but only in the guise of multiple independent decasuative formations (Ved. *héman* 'in winter' excepted). These include: (1) a (parallel?) *vr̥ddhi*-thematization in Vedic and Avestan (*hāyaná-* and *zaiiana-*), (2) delocatival **-i̯é/ó-*present and *i*-extended *gimmi* (< **gimn-i*) in Hittite, both from the preserved *ĝʰei̯m-én*, in addition to *gimmant-*, and (3) a backformed *men*-stem χεῖμα in Greek.

For the Hittite forms, Friedman's account further requires some sort of syncope to have taken place in Hittite: **ĝʰei̯men* > **ĝēman* > **ĝēmn-* > Hitt. *gimmi*, *gimmant-*. Such a scenario seems to not be as preferable as the simple alternative: projecting an actual *men*-stem (however secondary) back to the (late) proto-language (cf. Albanian *dimër* / *dimën*, rejected by Friedman, which nevertheless forms a word equation with Gk. χεῖμα).

---

[118] The status of Ved. *ratharyáti* as an old *er*-locative has rather convincingly been disputed by Lundquist (2014:93).

[119] The precise relationship between ἀιέν and ἀιών is disputed.

As for the schwebeablaut problem (which has now been pushed back to the *en*-locative **ĝʰe̯im-én* < **ĝʰi̯em-*), it is rather unsatisfactorily dismissed with the unexplained claim that "[*en*-locatives] are known to exhibit schwebeablaut elsewhere."[120] This view, or something like it, is echoed by a number of other scholars, and will now be examined at length.

4.5 Schwebeablaut and *en-*/*er*-locatives

Friedman is joined in his assessment of the link between *en*-locatives and schwebeablaut by Nikolaev (2009:468): "[I]n my opinion, *schwebeablaut* should be seen as a property of the derivational basis [of delocatival formations]" and, in what amounts to a similar conclusion, Nussbaum (1986:190): "It would seem that double full grade became characteristic of endingless, *-en*, and *-er* locatives in general[.]" The canonical examples usually cited include:

(18) SCHWEBEABLAUT AND LOCATIVES

a. *s*-stem **h₂éu̯s-ōs* 'dawn' : *er*-loc. **h₂u̯es*(*-s*)*-er* 'at dawn'
   > Ved. *vasar-*(*há*) → *vāsará-* 'of the morning';

b. *m*-stem **dʰéĝʰ-ōm* 'earth' : *en*-loc. **(dʰ)ĝʰem-en* 'on earth'
   → **(dʰ)ĝʰemōn* 'the one of the earth' (OLat. *hemo*);

c. root noun **h₃nebʰ-* 'navel' (Ved. *nā́bh-*) : *en*-loc. **h₃enbʰ-en* *'on/in the navel'
   → **h₃enbʰ-ōn* 'abdomen' (OS (acc.pl.) *ámbón*);

d. root noun or *m*-stem **ĝʰi̯em-* 'winter' : *en*-loc. **ĝʰe̯im-en* 'in winter'
   > Ved. *héman* 'in winter.'

It is instructive, however, to note that all of the above examples are contradicted or negated by parallel zero-grade *en-* or *er*-locatives:

[120] Friedman 2003:2.

(19) VARIANT LOCATIVE FORMATIONS

a. *$h_2$éu̯s-ōs* or root noun *h_2u̯es-* (?) 'dawn' : *er*-loc. *$h_2$us*(-*s*)*-er* 'at dawn'[121]

> Ved. *uṣar*, Gk. ἀήρ;

b. *d^hé$\hat{g}^h$-ōm* 'earth' : *en*-loc. *(d^h)$\hat{g}^h$-m-en* 'on earth' → *(d^h)$\hat{g}^h$mōn* 'of the earth'

> Lith. *žmuõ*, Goth. *guma*;

c. root noun *$h_3$neb^h-* 'navel' (> Ved. *nā́bhi-*) : *en*-loc. *h_3n̥b^h-en* *'on/in the navel'

→ *h_3n̥b^h-ōn* ? (Lat. *umbō* 'boss').

Finally, *$\hat{g}^h$ei̯m-en* itself appears to have been paired with a parallel *er*-locative *$\hat{g}^h$im-er*, to judge by forms such as Arm. *jmeṙn* 'winter' and Gk. χίμαιρα 'she-goat,'[122] where neither an *r/n*-stem analysis is feasible, nor is evidence of a Caland system (for hypothetical *$\hat{g}^h$im-ro-*) to be found. The pairing of *en-* and *er*-locatives is also clearly seen elsewhere, cf. Av. *zəmarə-gūz-* 'hidden in the earth' < *(d^h)$\hat{g}^h$-m-er.*

This evidence may be bolstered by a further example given by Nussbaum (briefly mentioned above), which is an alternative account of the derivational relationship between the Vedic root noun *kṣap-*, the Young Avestan *n*-stem *xšapan-/xšafn-*, and Hitt. *išpant-*, all 'night.' In derivational terms, the *n*-stem *xšapan-/xšafn-* is taken to be a back-formation from an *en*-locative *k^usep-en* 'at night,' made to an original root noun (continued by Ved. *kṣap-*). In Hittitte *išpant-*, on the other hand, we see an alternative *en*-locative *k^usp-en*, with a reduced root morpheme *k^usp-*. The entire chain may be illustrated as follows:

(20) *k^usep-* 'night'

k^usóp-/k^usép-* 'night' (> Ved. *kṣáp-*, OPers. *kšap-*)

k^usep-en 'at night' (→ YAv. *xšapan-/xšafn-*? 'night')

k^usp-en 'at night' (→ Hitt. *išpan-t-* 'night')

---

[121] It is not necessary to take a position here on whether this *er*-locative is built to the actual *s*-stem, or to the root noun analysis proposed earlier.

[122] Even Gk. χειμέριος 'wintry' may be added here, as it is probably the sole example of a full-grade root with the *r*-formant, and hence, probably owes its root shape to the influence of χεῖμα.

Several points may be concluded in light of the above.

Firstly, as was discussed in the preceding chapter, it is difficult to determine merely on the basis of ablaut alone whether in fact *en*-locatives (and *er*-locatives) were ultimately (originally?) built to actual endingless locatives; here, each of the cases listed above appears to feature examples with full-grade and zero-grade. In the case of **kʷsép-* 'night,' for example, the two contrasting *en*-locatives **kʷsep-en* and **kʷsp-en* do not directly indicate what type of base they were originally affixed to (even as they do not rule out an endingless locative). It is rather the argument about the nature of these non-desinental formants that makes it plausible that they were originally attached to a full form.

Secondly, given the vacillation between full-grade and zero-grade in *en-* and *er*-locatives, it seems probable that somewhere along the way, these forms (but not the similar-looking *r-* or *n*-stem endingless locatives) originally underwent *reduction* of the ablaut of the base via some phonological means.[123] The question remains whether this reduction was universal, even for later full-grade forms, such as **kʷsep-en* → YAv. *xšapan-/xšafn-* (in which case, this *en*-locative would be directly comparable to Hitt. *išpant-*). On such a view, the full-grade counterparts would be somehow secondary. Regardless, the loss of full-grade of the base in *en-*/*er*-locatives should be distinguished from a view which holds that schwebeablaut was actually a (morphophonemic?) function of these formants (thus Nikolaev), or indeed that it was the secondary product of accidentally inserted full-grades (thus Nussbaum). The examples cited as evidence for this above are all suspect in their own ways:

a. Recall that an account has been presented for an *er*-locative **h₂u̯es-er* (> Ved. *vasar-* (→ *vr̥ddhi*-der. *vāsarά-*)) from an original root noun, reduced to **h₂us-er* (> Ved. *uṣar*, Gk. ἀήρ), but even if this is rejected, the scenario whereby endingless locative **h₂us-es* + *er* first leads to a reduction of the suffix **-es-* > **-s-* (= Ved. *uṣar*), only after which a subsequent full grade is inserted into the 'wrong' place (= Ved. *vasar-*) - is hardly credible.

[123] Or perhaps this was accomplished through analogical means: thus, an *en*-locative such as *jm-an* appears to be fully 'integrated' in the paradigm of *kṣam-*, cf. gen.-abl. *jm-áḥ.* This was certainly not the original state of affairs.

b. OLat. *hemo* ‘man,’ as a putative derivative of **$d^h\hat{g}^h$ém-en* (in contrast to Lith. *žmuõ*, Goth. *guma*) is disputed: Livingston (2004:31-36) presents an account whereby *hemo* should be read as *hēmō* and taken as an analogical backformation of a falsely resegmented *n-ēmō* ‘nobody.’ Lat. *nēmō*, which is standardly viewed as a contraction of *ne* + *hemō*, may in turn be nothing more than a contraction of *ne* + *homō*. However, even if one accepts OLat. *hemo* at face value, it is hardly evidence for an ‘incorrectly inserted’ full-grade, when in fact **$d^h\hat{g}^h$-em* itself should be the starting point for the en-locative, and not **$d^h\hat{g}^h$m-*.

Finally, Lat. *umbō* ‘boss (of a shield)’ and OS *ámbón* (acc.pl.) ‘abdomina’ are problematic as examples for a number of reasons. The connection of OS *ámbón* with the rest of the **$h_3$neb-* material, which uniformly features words meaning ‘navel’ (or else references concepts that have an analogy to ‘navel’), is by no means assured (Anttila (1969:123-124) rejects this form as evidence for schwebeablaut). If, however, one accepts the basic etymology of this form, it is clearly preferable to connect it directly to Lat. *umbō* (thus NIL 385), as both are the only examples of *ōn*-stems in the entire **$h_3$neb^h-* complex.[124] Nussbaum’s scenario, however, whereby a regular endingless locative (not an *en*-loc.) **$h_3\underset{\circ}{n}$bh-én* to **h_3n(e)b^h-ōn* ‘navel’ is the source for a backformed **$h_3$enb^h-ōn* ‘ **(region) at the navel’ → ‘belly,’ is invoked by the author because ‘the Germanic formation has both schwebeablaut and an exocentric meaning (i.e. exocentric to ‘navel’)’[125]

However, it does not appear to be particularly difficult to trace a semantic development *‘navel’ → ‘abdomen’ (at least less complicated than invoking two separate *ōn*-stems), and, in any case, the particular ‘schwebeablaut’ cited for OS *ámbón* need not be seen as a problem requiring an Indo-European-level solution. A hypothetical Germanic *n*-stem with an ablauting *a* : *u* root (in IE terms **o* : *z*) of the type **maþō* (> Goth. *maþa* ‘worm’) / **muttaz* (> OE *moþþe* ‘moth’) ‘moth’[126] might be reconstructed for OS *ámbón*, where the oblique **um*C- (: Lat. *umbō*

[124] MIr. *imbliu* ‘navel’ is a secondary *n*-stem built to a base form in -(*e*)*l*-.

[125] Nussbaum 1986:191.

[126] Kroonen 2011:218.

< *$h_3n̥b^h$-) would have originally alternated with strong stem *naC- (< *h_3nob^h-; cf. OE *nabula* 'navel' < PG **nab*-). The allomorphy inherent in the resulting paradigm was usually levelled out in favor of one base which could often be of a mixed nature. Thus, for example, **maþō* / **muttaz* is itself a reworking of expected **maþō* / **unttaz*, where the CVC shape prevailed. The working out of the heavy allomorphy that resulted from the application of regular sound laws to the *n*-stems in Germanic is detailed in Kroonen 2011:138-140. It is to be pointed out that the particular 'schwebeablaut' patterns seen here are a peculiarily Germanic phenomenon, and thus, it is quite possible that OS *ámbón* owes its shape to such processes, rather than to any larger, Proto-Indo-European considerations.

4.6 **ĝʰim-én*, **ĝʰim-ér*

One is therefore justified in turning to the hypothetical *en*-locative *$ĝ^heı̯m$-*en* and reevaluating its implied schwebeablaut. A summary of the arguments made so far is therefore in order:

a. The parent language in its latest common stage securely attests either a root noun *$ĝ^hı̯óm$- / *$ĝ^him$-*és* or an *m*-stem *$ĝ^h(é)ı̯$-*ōm* / *$ĝ^hi$-*m*-*és* side by side with a *men*-stem *$ĝ^heı̯mn̥$ / *$ĝ^himén$-;
b. This permits the reevaluation of at least some of Friedman's evidence for an *en*-locative *$ĝ^heı̯men$ in favor of the traditional view, namely a fully paradigmatic *$ĝ^héı̯mn̥$ / *$ĝ^himén$-;
c. However, since the examined alternatives are not plausible or able to account for the data, it is nevertheless attractive to posit original *en*- and *er*-locatives (with an *en*-locative as the ultimate source of IE *$ĝ^héı̯mn̥$ / *$ĝ^himén$-), on the evidence of Gk. χειμέριος, Arm. *jmeṙn*, etc., especially as these tend to pattern together elsewhere in the parent language (where there is no demonstrable evidence of an original heteroclitic *r/n*-stem);
d. The motive of such a putative *en*- or *er*-locative would have been to semantically and morphologically 'reinforce' an opaque endingless locative (with the criteria for such a development restricted to the semantic domains of space and time);

e. The endingless locative is standardly considered to have been (usually?) one ablaut grade stronger than the oblique stem (Schmidt 1889:308).

With these considerations reviewed, it may be argued that the original base for the *en*- and *er*-locative of 'winter' was in fact the endingless locative *$\hat{g}^h$*i̯em* 'in winter,' which is the expected form for either an *m*-stem *$\hat{g}^h$(*é*)*i̯*-*ōm* or a root noun *$\hat{g}^h$*i̯om*-. Both newly minted locatives would have thus been of the following shape: *$\hat{g}^h$*i̯em-en* and *$\hat{g}^h$*i̯em-er* 'in/during winter.' With subsequent developments (phonological syncope?), both would likewise have eventually become reduced to *$\hat{g}^h$*imen* and *$\hat{g}^h$*imer*, cf. *$d^h\hat{g}^h$*-m-en* (→ Lith. *žmuõ*, Goth. *guma*) and *$d^h\hat{g}^h$*-m-er* (> Av. *zəmarə*). This *$\hat{g}^h$*imer* is the direct source of Arm. *jmeṙn* 'winter' and Gk. χίμαιρα 'she-goat' (*$\hat{g}^h$*im-r-ih*$_2$; with further reduction of the *er*-suffix due to thematicization; cf. **h*$_2$*us*(-*s*)-*er* (> Ved. *uṣar*) → **h*$_2$*us-r-o*- > Ved. *usrá*-).

What, then, is the fate of IE *$\hat{g}^h$*imen* and how did *$\hat{g}^h$*e̯imn̥* / *$\hat{g}^h$*imen*- come to be formed from it? It would appear that the most straightforward explanation simply involved a basic understanding, strongly perceived by speakers, that the strong stem of *men*-formations required a base of the shape C(C)*e*(C)C-*mn̥*. A reanalysis of *$\hat{g}^h$*imen* 'in/during winter' would first involve the recognition of the stem formant in *$\hat{g}^h$*i-men* (thus patterning exactly like the oblique stem, sans desinence). From there, it would have been a trivial matter to build a strong stem *$\hat{g}^h$*e̯i-mn̥* according to the standard pattern. The analysis offered here thus differs slightly from others in that it does not require speakers to have necessarily mistaken *$\hat{g}^h$*imen* for anything else. The base root noun (or *m*-stem) survives well (with complex ablaut) into the individual histories of multiple daughter languages, and thus speakers would have been unlikely to 'forget' the root shape (State I *$\hat{g}^h$*i̯em*-, or zero-grade *$\hat{g}^h$*i̯-em*-) of 'winter.' Instead, in forming a neo-*men*-stem, they were forced to operate according to the standard morphological principles, which disallowed *$\hat{g}^h$*i̯e-mn̥* (with a coda-less root).

Under the view just developed, Ved. *héman* is not a pristine archaism of an *en*-locative, but rather a standard endingless locative to the well-attested *$\hat{g}^h$*e̯imn̥* / *$\hat{g}^h$*imen*-, which itself had arisen out of the original *en*-locative (cf. oblique *ās-n-ʹ* vs. locative *āsán* 'mouth'). Ved. *héman* 'in winter,' contra Friedman (2003:2) need not be seen as a direct reflex of an old *en*-locative,

especially when eliminating (or explaining otherwise) the evidence for *$\hat{g}^h e\underset{\cdot}{i}m\underset{\cdot}{n}$ / *$\hat{g}^h imen$- appears to be a rather daunting task, even for the forms within Indo-Iranian (let alone elsewhere in Indo-European). The *vṛddhi*-derived Ved. *hāyaná*-, for example, is better taken as evidence of the presence of *$\hat{g}^h e\underset{\cdot}{i}m\underset{\cdot}{n}$ / *$\hat{g}^h imen$- in Indo-Iranian (as in Albanian and Greek), per the arguments developed at the beginning of the chapter.[127]

As was stated, unlike the *en*-locative cited by Friedman in the Armenian parallel *getin* (gen. *getnoy*) '[fertile] ground' < *$\underset{\cdot}{u}eden$-*ó*- ← *ud-én* 'on/at water' (cf. Ved. *udán*), Ved. *hāyaná*- is built to what looks like the oblique (*$ha\underset{\cdot}{i}m$-*n*- → *$h\bar{a}\underset{\cdot}{i}\underset{\cdot}{m}n$-*a*-) of a *man*-stem, as opposed to an actual locative form (cf. oblique *ās-n-ʹ* vs. locative *āsán* 'mouth'). It is furthermore possible that Av. *zaēna* (< *$za\underset{\cdot}{i}mn$-*ā*) provides direct evidence for an actual case form of the proterokinetic stem in Indo-Iranian.

Nevertheless, reconstructing late Proto-Indo-European *$\hat{g}^h e\underset{\cdot}{i}m\underset{\cdot}{n}$ / *$\hat{g}^h imen$-, based on the evidence in the daughter languages, need not lead to difficulties with schwebeablaut, should we accept that the form of the *en*-locative was *$\hat{g}^h im$-*en* (in parallel with certain reflexes of a corresponding *er*-locative *$\hat{g}^h im$-*er*, cf. Arm. *jmeṙn* 'winter,' Gk. χίμαιρα 'goat,' ON *gymbr* 'lamb' (< *$\hat{g}^h im$-*r*-*ih*$_2$).[128]

[127] Nor can the renewed *haimaná*- 'wintry, cold' be taken as yet another later thematicization of an inherited *en*-locative.

[128] Properly, 'a one-winter old animal.'

CHAPTER 5

Schwebeablaut in *s*-extended roots

5.1 Overview

The LIV^2 entry *h_2*u̯*eks*- has a footnote explaining it as "[w]ahrscheinlich schon uridg. aus einer *s*-Bildung (Inchoativ?) von *h_2*eu̯g*- 'stark werden' abstrahiert…"[129] This pair of verbal roots is part of a larger pattern of pairs of roots that exhibits schwebeablaut of the following shape: C*e*RC ~ CR*e*C-*s*. It will be argued in this chapter that these differ from previously discussed instantiations of schwebeablaut in that, to some extent, these forms individually function as separate roots already in PIE, and that they therefore cannot be discounted using the methods employed thus far in the dissertation. The best attested pair for this class, namely LIV^2 *h_2*eu̯g*- / *h_2*u̯eks*-, will be examined in detail, and other probable examples will be added to the dossier. Some remarks as to the identity and nature of the *s*-formant (characterized present? root extension?) will be appended.

Due to the clearly delineated distinction between simplex roots in State I (C*e*RC), as opposed to *s*-extended roots in State II (CR*e*C-*s*), a phonological solution will be proposed, following the suggestion briefly made in Schindler's (1970) review Anttila's work. Recent findings from the work of several scholars (Byrd 2010, Keydana 2004, Kobayashi 2004) on Proto-Indo-European syllabification will be employed to argue that the schwebeablaut seen in these forms is properly viewed as a synchronic phonological process of metathesis induced by

[129] LIV^2 288.

the violation of an undominated constraint in Proto-Indo-European that prohibited medial syllable codas of more than two consonants.

5.2 *$h_2eu̯g$- and *$h_2u̯eks$-

Two roots listed in the LIV, *$h_2eu̯g$- 'stark werden' and *$h_2u̯eks$- '(heran)wachsen, groß werden'[130] have been usually viewed as belonging together. In pre-laryngeal terms, "*aug*-" and "*au̯eg*-" are listed in IEW 84-5 along with various other ablaut grades (*u̯ōg*- and *ug*-). Under the same heading ("mit *s*-Formans") are also *au̯ek-s*-, *auk-s*-, *u̯ek-s*-, and *uk-s*-.[131] Further back, Brugmann (1886:492-3), in a section on the phenomenon now termed schwebeablaut, lists "Ai. *ṓjas*- 'Kraft, Stärke' gr. αὔξω 'ich mehre, steigere,'"[132] alongside "[A]i. *vákṣaṇa-m* 'Stärkung' *vā́ja-s* 'Kraft' gr. ἀ[ϝ]έξω 'ich mehre'" without comment (on -*s*).

Anttila (1969:118) views "Aweg-" (in modern form *$h_2u̯eg$-) as "one of the better schwebeablauting roots." Its counterpart "Aewg-" is listed in his "State I derivatives" column (part of the tabular summary "Schwebeablauting items and their explanations"[133]). Just as with the other examples listed in that column, *$h_2u̯eg$- (State II) is seen as the original shape of the root, which developed a secondary State I (*$h_2eu̯g$-) in several of the daughter languages. More recently, Weiss (2011:77[38]) appears to explain *$h_2eu̯g$- / *$h_2u̯eg$(-*s*-) in terms of classical schwebeablaut (as an example of a newly created root from a zero-grade form with a misplaced vowel).[134]

In formal terms, Lat. *augeō* and Goth. *aukan* 'increase,' two examples that reflect *$h_2eu̯g$-, appear to be related to their close semantic counterparts Ved. *vákṣati* and Gk. ἀ(ϝ)έξω

---

[130] LIV^2 274-5; 288-9.

[131] It is interesting to note that IEW segments the *s*-formant, while Anttila (1969) appears to ignore it.

[132] Brugmann formalizes the schwebeablaut with *yx* and *xy*, where "*y* bezeichnet einen Vocal von beliebiger Qualität und Quantität, *x* die consonantischen *i̯*, *u̯*, Nasale, Liquidae." Ved. *ṓjas*, Gk. αὔξω, etc., are cited as examples of the former, while Ved. *vákṣaṇa-m*, *vā́ja-s*, Gk. ἀ(ϝ)έξω, etc., are examples of the latter.

[133] Anttila 1969:175.

[134] "Both a root of the shape CERC and a root of the shape CREC have zero-grades of the shape CR̥C. If on the basis of an ambiguous zero-grade a new full-grade is created with the ablauting vowel in the "wrong" place, this is known as *schwebeablaut*, 'floating ablaut.'"

‘grow.’ The latter may be mechanically reconstructed as reflecting *h_2u̯*eks*-, a shape which is readily decomposable as *h_2u̯*eg*- + -*s* (thus with State II). The appearance of schwebeablaut seems clear, and Anttila accordingly deals specifically with several such examples in his thesis, though he never identifies *s*-extended roots separately as a category. It will be shown that, in fact, the original state of affairs was one in which State I (h_2e̯u̯*g*-) never occurred with the *s*-formant, while, conversely, State II (*h_2u̯*eg*-) was always characterized as *h_2u̯*eg-s*-.

5.2.1 Doubtful forms

Anttila gives the pairs Gk. αὔξω / ἀέξω ‘increase,’ Lat. *augeō* / *vegeō*, Goth. *aukan* / *wahsjan*, and Ved. *vā́ja* / *ójas* ‘strength’ (among other forms), where, with the exception of Gothic, schwebeablaut appears to occur between word pairs both with and without the *s*-formant, seeming to discount this as a relevant factor. Some of these, however, are dismissed by him. Lat. *vegeō* ‘bin munter’ is “semantically dubious.” Ved. *vā́ja*-, glossed by Anttila as ‘strength,’ and rejected on semantic grounds, actually means ‘prize,’ thus even more distant. Its comparandum Ved. *ójas*- belongs with *ugrá*- ‘strong’, while Vedic forms in *aukṣ*-, as pointed out by Anttila, are simply augmented from *ukṣ*-: *aúkṣat* (1x) RV X.55.7b, *aúkṣīṣ* (1x) RV X.27.7a.

Schrijver (1991:75) compares *vegēre* ‘to be strong, thrive’ with Gk. ἀ(ϝ)έξω, Goth. *wahsjan* ‘to grow,’ but these possess the *s*-formant and are semantically distinct (as is Ved. *vákṣati* ‘grows’). LIV^2 (660) sets up a root *u̯e*ĝ*- ‘munter, lebhaft, kräftig werden,’ with a causative *u̯o*ĝ*-éi̯e/o*- clearly justified by Ved. *vājáyati* ‘spront an’ and Goth. -*wakjan* ‘wecken.’ Lat. *vegeō* would appear to fit these, except for the root vocalism, which is unexpected (†*vogeō*). Watkins (1973:55-65) has proposed that the *#u̯oC… > #u̯eC… (where C = dental) rule in Latin (cf. 2nd century B.C. *votō* > *vetō* ‘I forbid’[135]) may be expanded for velars as well, and therefore allow *vegeō* < *u̯o*ĝ*-éi̯e/o*-.[136] According to Weiss (2009:140[24]), however, it may be preferable to compare the root vowel of *vegeō* to *mereō* ‘to merit,’ presumably, then, constituting an

[135] Weiss 2009:140.

[136] Watkins (1973:198) rejects the gloss ‘bin munter’ and argues that *vegeō* consistently means ‘arouse, quicken,’ thereby eliminating the possibility that it reflects a stative in -*eh*$_1$-.

unexplained subtype of the second conjugation featuring full-grade of the root.[137] Ultimately, whether or not *vegeō* can be equated with the Vedic and Gothic causatives *vājáyati* and -*wakjan*, it clearly belongs with the same root **u̯eĝ-* (and not with **h₂u̯ek*(*s*)-).

OIr. *fér* 'grass,' MW *gweir* 'hay,' reflecting Proto-Celtic **u̯eg-ro-* is tentatively connected by Matasović (2009:408-409) to **h₂eu̯g-*, with an admittedly complicated semantic development: *'outgrowth' > 'grass.' Goth. *wahsjan* is cited as support for the schwebeablaut, though the Celtic forms lack the -*s*-. Lubotsky, in a personal communication to Matasović, suggested instead a connection with the same root **u̯eĝ-* discussed above. A semantic parallel would be Medieval Latin *vegetatio* 'vegetation' < *'a quickening' (< Lat. *vegetāre* 'grow, quicken').

Ved. *vā́ja-* 'Wettkampf, Entscheidungskampf, Sieg,'[138] is connected by Jamison (1983:51, 89) to its denominal intransitive verb *vājáyati* 'um den Siegespreis kämpfen'[139] (different from the above mentioned transitive *vājáyati*), occurring only participially in the Rig Veda.[140] Thus, Ved. *vā́ja-* and both kinds of *vājáyati* are semantically and formally distinct from **h₂eug-* (> Lat. *augeō*, Goth. *aukan* 'increase') and **h₂u̯eks-* (> Gk. ἀ(ϝ)έξω 'grow').

Finally, two verbal stems are set up by Adams (1999:130) for Tocharian and connected to **h₂eu̯g-*: Toch. B *aukā-* 'grow' and *auk-* 'increase.' These however are disputed by Hackstein (1995:336ff.), and following him, Malzahn (2010:546-549). According to Hackstein, the attestations of a supposed root *auk-* are either ghost forms or belong to an unrelated root showing a different syntactic and semantic structure by taking dual objects and meaning 'set *x* in motion.' The ghost form *aukat*, from a presumed verb *aukā-*, is not to be segmented from its entire attestation *aukatsāmat*, which would otherwise require two verbal stems (*aukā-* and *tsāmā-*) that are not found elsewhere in Tocharian. Malzahn (2010:547) also prefers *sañ̃aukeṃ* to the segmented *sañ̃*, with alleged subjunctive *aukeṃ*. Ultimately, all cases of *auk-* are to be distinguished from a separate verbal root *auks-* (Toch. A *oks-*) which will be discussed below.

---

[137] The transitive semantics of this verb (de Vaan (2008:657) glosses 'enliven'), distinct from *mereō* 'to merit,' together with a securely reconstructible **u̯oĝ-éi̯e/o-* on the basis of Ved. *vājáyati* and Goth. -*wakjan* would still seem to rule in favor of Watkins' formulation.

[138] EWAia II 540.

[139] EWAia II 540.

[140] Lubotsky 1997 II 1270: *vājáyan* (2x), *vājáyantā* (1x), *vājáyantaḥ* (4x), *vājáyantī* (1x).

It is also noteworthy that a separate root *$h_2\underset{\cdot}{u}eg$- is set up by LIV^2 (286), thus, with the same shape as *$h_2\underset{\cdot}{u}eks$- (State II) sans final -*s* (under the assumption that *$h_2\underset{\cdot}{u}eks$- < *$h_2\underset{\cdot}{u}eg$-*s*-). This root is reconstructed on the basis of a comparison between Hitt. *ḫuekzi* 'to slaughter, butcher,' its nasal infix present Hitt. *ḫunikzi* 'to batter, bash, crack'[141] and OPers. *vaj*- 'to gouge out (eyes)'[142] (1st. pret. act. *avajam*).[143] However, such a comparison has been questioned (e.g. Cheung 2007:204) on the basis of semantic implausibility. In any event, neither of the comparanda (Hittite or Old Persian) are reconcilable with *$h_2\underset{\cdot}{u}eks$- '(heran)wachsen, groß werden' and *$h_2e\underset{\cdot}{u}g$- 'stark werden.'

5.2.2 Reconstructible verbal stems

A simple thematic present *$h_2é\underset{\cdot}{u}g$-*e*- is set up by LIV^2 (274) on the basis of Goth. *aukan* 'sich mehren' and Lith. *áugu* (Latv. *aûgu*)[144] 'wachsen.' Lat. *augeō* 'to increase,' found with both transitive and intransitive meanings, is tentatively set up as causative *$h_2o\underset{\cdot}{u}g$-$\acute{\underset{\cdot}{e}}$*i̯e/o*-, which, however is unattested elsewhere (and would further require some type of analogical reshaping of the verbal root in Lat. *augeō* itself). The unexpected lack of *o*-grade in the root is similar to the case of Lat. *vegeō* above, and it may not inexorably require the reconstruction of an original causative-iterative. In fact, a number of such second declension causatives (that are not obviously old statives) are collected by Schrijver (1991:449) in addition to *augēre*: *svādēre* (< *$s\underset{\cdot}{u}eh_2d$-) 'to recommend, urge, advise' *terrēre* (< *ters-)[145] 'to frighten,' *cēvēre* (< *$keh_1\underset{\cdot}{u}$-) 'to move the haunches in a lewd or effeminate manner,' *merēre* (< *mer-) 'to receive as one's wage

---

[141] Kloekhorst 2008:348-349, 363.

[142] Cheung 2007:204.

[143] From the Bīsutūn inscription (§32 H): <*u-t-a-š-i-y* : [I *c-š*]-*m* ***a-v-j-m***> 'und ließ ihm ein Auge ausstechen;' (Schmitt 2009:60).

[144] The accentuation of the root is due to Winter's law, which appears to be corroborated by the *ū* of Lith. *pa-ūgiù* 'heranwachsen.' If this is not "Neoablaut" as termed by NIL 331[28], then the formation must necessarily have arisen at the time of the operation of Winter's law itself.

[145] Here, however, Nussbaum (1999:412[87]) proposes to derive *terrēre* directly from original *tros-$\acute{\underset{\cdot}{e}}$*i̯e/o*-, via intermediate **tərz*-, simultaneously accounting for both the apparent schwebeablaut (cf. Skt. *trásati* 'tremble') and unexpected *e*-grade of the root. Compare **trino*-, **tərno*- > *ternī* 'triple' (original State II in *$tre\underset{\cdot}{i̯}es$ > Lat. *trīs*, Latv. *trîs*) and **sakrodōt*- > **sakərdōt*- > *sacerdōs* 'priest.'

or reward,' and perhaps *movēre* (< **meu̯H-*) 'to impart motion to, move.'[146] This exhausts the verbal data for forms lacking the *s*-formant in the daughter languages, if Toch. A *ok-*, Toch. B *auk-* are not in fact connected to **h₂eu̯g-*.[147]

5.2.3 Reconstructible stems with *s*-formant

Germanic, Vedic, Greek, and Tocharian inherit verbal stems with semantics plausibly connected to **h₂eu̯g-*, yet with an additional *-s* attached to the root. For Greek, Anttila (1969:118) examines the pair αὔξω/ἀ(ϝ)έξω 'increase, increase in power, strength' appearing to show schwebeablaut between αὐξ- (< **h₂eu̯ks-*) and ἀ(ϝ)εξ- (< **h₂u̯eks-*). Sihler (1995:57) also cites αὔξω as justification for a **h₂eu̯k-s-* reconstruction.

The Greek stem αὐξ- is widely attested for verbs (αὐξάνω (also αὔξω) 'increase' (Pindar +)), nouns (αὖξις, αὔξησις 'growth, increase' (Hippocrates+)), compounds (αὐξίτροφος 'promoting growth' (Orphica+), αὐξιφαής 'increasing light' (Manetho+)), and many other forms. In contrast, Gk. ἀ(ϝ)έξω is "poet. form of αὔξω (αὐξάνω), [found] once in Herodotus, twice in the Tragedies."[148] This distribution leads LIV² (289) to label ἀ(ϝ)έξομαι (ἀ(ϝ)έξω) a "Neubildung." It is difficult to see, however, what analogical model would have modified αὔξω (with verbal base αὔξ-) → ἀ(ϝ)έξω. In fact, the antiquity of ἀ(ϝ)έξω is virtually secured by the Myc. personal name *A-we-ke-se-u* /Awekseus/. A direct comparison for ἀ(ϝ)έξω may be found in ON *vaxa*, OE *weahsan*, Goth. *wahsjan*, etc. 'grow.' The Germanic form is a Class VI strong verb. Class VI verbs exhibited *a* ~ *ō* ~ *ō* ~ *a* ablaut; cf. OE inf. *faran* ~ pret. *fōr* 'travel':[149]

---

[146] Note, however, the discussion in Vine 2006:218, where the alleged examples (with the exception of *movēre*) can be reasonably accounted for from other *e*-grade forms occurring in each verb, for example, *augēre* could have imported the vowel of its *s*-aorist *auxī*, etc. Intransitive *movēre* is argued by Vine to historically "reflect a compromise between the stem formation of an original causative, and the vocalism (originally involving one or more *e*-grades) of the inherited transitive."

[147] The LIV's *s*-aorist **h₂ḗu̯g-*/**h₂éu̯g-s-* > Lat. *auxī* of course shows an unrelated *s*-morpheme.

[148] LSJ 28.

[149] Ringe & Taylor 2014:348.

(21) GERMANIC **wahs(j)a-* 'grow' (CLASS VI)

	Goth.	**OE**	**ON**
Pres.	*-wahseiþ*[150]	*weahsað*[151]	*vaxa*
Pret.	*wohs*	*wēox*	*vóx*

One tendency of this class was to have variants among the daughter languages both with and without a *j*-present stem (< IE **-i̯e/o-*). Thus, for example, Goth. *swaran* 'swear' (< **swar-a-*) alternates with OE *swerian* (< **swar-ja-*) 'swear.'[152] The root vocalism of Gothic *wahsjan* is therefore unlikely to have continued the *o*-grade of an old PIE causative. It has distinctly non-causative semantics and it is not likely to be an old causative directly comparable to the Ved. hapax *vakṣayam*[153] (LIV^2 "lassen wachsen" (< **h₂u̯oks-éi̯e/o-*)). Contra LIV^2 (288), which claims that the other Germanic forms lacking *j*-presents have secondarily created simple thematic presents, these are directly comparable to Gk. ἀ(ϝ)έξω, which must be taken as archaic (compared to αὔξομαι), as is also argued by Jasanoff (2003:75[27]). It will further be argued later that Gk. ἀλέξω 'ward off, turn aside,' together with Ved. *rákṣati* 'schützen, beschützen, behüten, bewachen,'[154] may establish a PIE present type CR*e*C*s-e/o-* (among other *s-e/o*-presents).

Returning to Gk. αὔξω — a **h₂eu̯ks-* will, of course, give αὐξ-, but a zero-grade **h₂uks-* is equally possible.[155] Peters (1980:15) compares αὔξω with Ved. *úkṣati* 'be(come) strong' and postulates that they are in fact, an exact match. Ved. *úkṣati*, however, is part of a rather confusing Indo-Iranian picture of forms in *ukṣ-* and *vakṣ-*. Comparing Indic with Avestan, Jamison (1983:139) cites intransitive *uxšiieiti* 'becomes strong' as well as an transitive participle *uxšaiiant-* (in OAv. *ašaoxšaiiant-*). As can be seen, however, neither the causatives Av. *uxšaiiant-* / Ved. *vakṣayam*, nor the non-causative presents Av. *uxšiieiti* / Ved. *úkṣati* are an exact match.

---

[150] 3sg.: *…unte ufarwahseiþ galaubeins izwara…* "because your faith grows greatly" (2 Thess. 1:3).

[151] 2pl. imper.: *Weahsað gē o̧nd mo̧nigfāldiað…* "Be fruitful and multiply" (Gen. 9:1).

[152] Mailhammer 2007:90.

[153] RV X.49.8d.

[154] EWAia II 422.

[155] Peters 1980:5ff. See Chapter 2 for a summary of his arguments.

Examining first the non-causative present formations, there appears to be a contradiction with respect to the type of stem attested within Indo-Iranian, with Vedic witnessing a simple thematic *-a-* and Avestan a *-ya*-present. It is significant, however, that the root accent of *úkṣati* is anomalous, i.e. it is contrary to the *tudáti*-type. Jamison (1983:139) makes a suggestion via Insler that: "it may be better to consider it [*úkṣati*] a redactional change for an act. *-ya*-present **úkṣyati*, with correct root accent. **Úkṣyati* would then be cognate to Av. *uxšiieiti.* Restoration of **úkṣyati* creates no textual problems, since *y* is often omitted after *-kṣ-* in manuscripts." The LIV^2 (257) therefore posits an original PIE *i̯é/ó*-present **h₂uks-i̯é/ó-* with zero-grade of the root, thus, a primary *i̯é/ó*-present of the type Ved. *mányate* 'thinks,' Gk. μαίνεται 'is mad' (< **mn̥-i̯é/ó-*). In the case of Greek αὔξω, however, due to lack of parallels, it is difficult to determine what the regular outcome of a sequence **ksi̯* would have been.

Turning next to the causatives, it may be pointed out (as Jamison argues), that in Indo-Iranian, the original ablaut variants *ukṣ-* / *vakṣ-* went their separate ways and developed into distinct verbal roots. That *ukṣ-* came to be viewed as a verbal root in its own right is clear from the *iṣ*-aorist *aúkṣīs*, which is not the expected †*ávākṣīs.* Thus, for example, a matching causative built to **ukṣ-* (and clearly secondary, from an Indo-European point of view (i.e. against expected **h₂u̯oks-éi̯e/o-*)) is found in RV VI.17.4b *ukṣayanta.* However, Jamison goes further in stating that the Ved. hapax *vakṣayam* itself was also secondarily built to the *vakṣ-* of the perfect *vavákṣa*[156] 'ist (heran)gewachsen.' This in turn would require the well-attested Avestan causative *vaxšaiia-* to likewise be considered a secondary causative. This view is complicated by the lack of a corresponding perfect in Avestan (accidental gap in attestation?). Given the fact, however, that both Gk. ἀ(ϝ)έξω and Goth. *wahsjan* / ON *vaxa* can be reconstructed as thematic presents (**h₂u̯eks-e/o-*), and that the forms with the *s*-formant seem to have been associated with verbal stems in the parent language, we are perhaps justified in supposing that the existence of causatives to *vakṣ-* in both branches of Indo-Iranian warrants the assumption of a similar *s*-present.

[156] LIV^2 (298[7]) gives its likely history (via Kümmel 2000:438-41): **h₂a-h₂u̯óks-* / **h₂a-h₂uks-* → Proto-Indo-Iranian **u̯-ā-u̯ákš-* / **u̯-ā-ukš-* > **u̯āu̯ákš-* / **u̯ău̯ukš-* → **u̯ău̯ákš-* / **u̯ău̯ukš-* > *vavákṣ-* / **vavukṣ-* → *vavákṣ-* / *vavakṣ-*.

Lastly, the Tocharian verbal root *auks-* (Toch. A *oks-*) 'wachsen, zunehmen,' distinguished by Hackstein (1995:336ff.) from *auk-* (Toch. A *ok-*) 'fließen lassen' somewhat complicates our emerging picture of distinct State I **h₂eu̯g-* and State II **h₂u̯eks-*. It would appear that the two roots were conflated some time during the prehistory of Tocharian, after which any separate reflexes of **h₂eu̯g-* disappeared (if Toch. B *auk-* / Toch. A *ok-* is etymologically unrelated). It may be pointed out that only Germanic retains clear verbal reflexes of both **h₂eu̯g-* and **h₂u̯eks-*, while Vedic, Greek, Latin, Baltic, and apparently Tocharian, have retained only one of the two.[157] The expansion of one root at the expense of another almost everywhere perhaps argues for the fact that this process had likely already begun in the late parent language.

5.2.4 Nominal stems

The NIL, following the LIV, has separate headings for both **h₂eu̯g-* (NIL 328-332) and **h₂u̯eks-* (NIL 354-356). As can be seen from figure (22) below, Armenian, Baltic, Italic and Tocharian have generalized one verbal stem, while only Germanic robustly attests formations of all types in **h₂eu̯g-* and **h₂u̯eks-*. It is difficult to argue how early Albanian lost its verbal stems in **h₂eu̯g-*, but this is likely to have been a recent process in Greek and Indo-Iranian, to judge by their more transparent nominal formations (verbal abstracts). The actual motivation for their loss is also plausibly attributed to the nascent homonymy to parallel **h₂u̯eks-* stems within each language. The table below gives the distribution of verbal and nominal stems among the two roots:[158]

[157] The etymology of *auk-*/*ok-* presents problems of its own, as Hackstein links the Tocharian verb to **u̯eg^{u}-*. The proposed solutions **u̯e-ug^{u}-* and **oh₁-ug^{u}-* (with a lexicalized preverb) seem ad hoc, though admittedly, a Vedic parallel *ā́ ukṣ-* "beträufeln" exists for the second reconstruction (Hackstein 1995:347-348).

[158] For reasons of space, only a selection of forms is included. See, for example, the discussion of ἀ(ϝ)έξω vs. αὔξω below.

(22) DISTRIBUTION OF *$h_2eu̯g$- / *$h_2u̯eks$-[159]

	***$h_2eu̯g$-**		***$h_2u̯eks$-**	
	Verbal	**Nominal**	**Verbal**	**Nominal**
Alb.	-	*ag* ‘twilight’	-	-
Anat.	-	-	-	-
Arm.	*ačem* ‘increase’	-	-	-
BSL	*áugu* ‘grow’	*augmuõ* ‘plant’	-	-
Celt.	-	-	-	-
Germ.	*aukan* ‘increase’	ON *auki* ‘increase’	*wahsjan* ‘grow’	OHG *wahsmo* ‘growth’
Gk.	-	-	ἀ(ϝ)έξω ‘grow’	Αὐξώ ‘growth goddess’
Ital.	*augeō* ‘increase’	*augmen* ‘addition’	-	-
IIr.	-	*ójas-* ‘power’	*úkṣati* ‘grow’	YAv. *vaxša-* ‘growth’
Toch.	?	?	B *auks-* ‘grow’	-

Overall, attested formations in *$h_2u̯eks$- (limited to Germanic, Greek, Indo-Iranian, and Tocharian) are relatively fewer than those of *$h_2eu̯g$-. As will be demonstrated, there appear to be no securely reconstructible nominal stems to *$h_2u̯eks$- in the parent language. The nominal formations that are attested in the daughter languages seem instead to be innovations isolated to their respective languages. As stated before, this argues for the view that the *s*-formant was originally some sort of verbal suffix. The following reanalysis was easily undertaken by speakers, thanks to the resulting allomorphy of *$h_2eu̯g$- / *$h_2u̯eg$-*s*- (caused by schwebeablaut):

(23) RESEGMENTATION OF *$h_2eu̯g$-

ROOT *$h_2eu̯g$- (STEM *$h_2u̯eg$-*s*-) → ROOT_A *$h_2eu̯g$- / ROOT_B *$h_2u̯eks$-

The fact that *$h_2u̯eks$- was clearly a separate root in its own right in the daughter languages that inherit it, when juxtaposed with its lack of securely reconstructible nominal stems — seems to argue for the spread of this stem (a type of characterized present?) to other verbal forms in

[159] BSL = Lith.; Germ. = Gothic, unless otherwise noted; IIr. = Vedic, unless otherwise noted; Ital. = Latin.

*$h_2eu̯g$- in late PIE, perhaps thanks in part to a certain amount of semantic bleaching in the function of the formation.

5.2.5 Reconstructible nominal stems in *$h_2eu̯g$-

A few key nominal formations in *$h_2eu̯g$- can be securely reconstructed on the basis of multiple attestation (in two or more daughter languages). NIL (328) gives *$h_2eu̯g$-*men*- as an example of a nominal stem inherited in multiple languages. Thus, Lat. *augmen*, -*inis* 'an addition, increase, increment' may be connected to Lith. *augmuõ*, -*eñs*[160] 'plant; fruit; offshoot.' To this may be added Toch. B *auki* (and the Toch. A hapax *okäm*) neut. 'increase,' which is connected by Adams (1999:130-131) to the above via a proto-Tocharian *$auk(ä)m̥iä(n)$.[161]

Ved. *ójas*- and YAv. *aojah*-, OAv. *aogō* 'power,'[162] can be connected with other forms to justify reconstructing *$h_2eu̯g$-*es*-. Indirect evidence for the *s*-stem may be seen in Lith. *augestis* 'growth' < *$h_2éu̯g$-*es*-. Lat. *augustus* 'solemn, venerable; worthy of honor,' a denominal *to*-adjective, has traditionally also been viewed as being built to an original *s*-stem **augus*, -*eris*. Comparable adjectival forms cited by Pike (2011:49[27]) include examples with an earlier *e*-grade suffix, thus, *fūnestus* 'deadly, fatal,' *modestus* 'modest, calm,' and *scelestus* 'wicked,' as well as latter examples with vocalism likely copied from the nominative, thus, *arbustus* 'planted with trees' (beside *arbustum* 'grove') and *rōbustus* 'oaken; strong.' Matching *s*-stems can be found in Italic for the above examples: *fūnus*, -*eris* 'funeral rites; a dead body,' Umb. **meřs** 'law' (and Lat. stem *moder*-, cf. *moderor* 'guide'), *scelus*, -*eris* 'a misfortune resulting from the ill-will of the gods; a wicked or accursed act,' *arbor*, -*oris* 'tree,' *rōbur*, -*oris* 'an oak-tree.'

---

[160] The fact that stems in -*muõ*, -*eñs* are known to have been fairly productive in Old Lithuanian somewhat lessens the value of its word equation with Lat. *augmen.*

[161] The cognate *ojmán*- is a Rig-Vedic hapax that is unlikely to be old, not least because its expected form would have been †*ogmán*-. Its single occurrence in RV VI.47.27 may be something of a poetic innovation, occurring beside *ójas*-: *divás pr̥thivyā́ḥ pári* ***ója*** *údbhr̥tam* | *vánaspátibhyaḥ pári ā́bhr̥tam sáhaḥ* || *apā́m* ***ojmā́nam*** *pári góbhir ā́vr̥tam* | *índrasya vájram havíṣā ráthaṃ yaja.* "**Strength** has been brought up from heaven, from earth; might has been brought here from the trees. To the **strongness** of the waters enclosed by cows, to the mace of Indra—to the Chariot—sacrifice with an oblation." (Jamison & Brereton 2014:837).

[162] OAv. *aogō* directly continues *$h_2éu̯g$-*os*, while Ved. *ójas* and YAv. *aojah*- have imported the shape of the oblique *$h_2eu̯g$-*és*- (EWAia I 278).

Lat. *augur*, *-uris* 'one who observes and interprets the behavior of birds'[163] has frequently been taken as the presumed base for *augustus*, and by extension, part of a word equation with Ved. *ójas* and YAv. *aojah-* / OAv. *aogō*.[164] However, both the form and meaning of *augur* (a masculine noun) are anomalous for an original *s*-stem that is supposed to have given Lat. *augustus* 'exalted.'[165] The original meaning has been variously conjectured as *'a reinforcement, confirmation (of good crops)' (de Vaan 2008:62) or *'an increase accorded by the gods to a venture' (Ernout-Meillet 1951:101).

Weiss (forthcoming) cogently argues that Lat. *augur* was in fact originally a *u*-stem adj. *aug-u-*, extended by *-s* exactly parallel to Ved. *tápu-* 'hot' → *tápuṣ* 'hot; heat.' A matching *u*-stem is found in OPruss. *augus* 'greedy (?).' Additionally, Weiss (following McCone 2003 and Prósper 2008) also identifies Celtiberian *auku* from the first Botorrita inscription as cognate with both OPruss. *augus* and Lat. *augur.* The original meaning of the *u*-stem should have been 'grown, increased,' and its *s*-stem derivative ***h*₂*eu̯g-u-s-*** in turn would have meant 'the increase,' according to Weiss. This in turn could have been reinterpreted to mean that the one who received the signs of increase (the *augur*) was himself favored. Consequently, Lat. *augustus*, on this view, does not go back to an *s*-stem in PIE, even though, as we have seen, both it and the *u*-stem ***h*₂*éu̯g-u-*** seem to be reconstructible from the testimony of the daughter languages.

5.2.6 Apparent exceptions (***h*₂*eu̯g-s-*)**

Lat. *auxilium* 'assistance, help, aid,' while clearly related to *augēre*, possesses an *-s-* that is unlikely to come from ***h*₂*u̯eks-***. Ernout & Meillet (1959:57-58) consider *auxilium* to be a backformation to the neuter plural *auxilia* 'troupes de renfort,' itself from an unattested adjective ***auxilis.* Leumann (1977:381) brings to attention other such cases of anomalous *s*-formants,[166] cf. *anxius* 'affected with anxiety, worry,' from *angō* 'to throttle, choke, strangle,' and *alsius*

[163] OLD 213.

[164] Thus, Ernout & Meillet 1959:58, EWAia I 278, Weiss 2009:77, et al.

[165] An alternative etymology (Neumann 1976:219-230) segments *augur* as an original verbal compound from ***avi-*** 'bird' + ***gus-*** 'selecter' (< PIE ***ĝeu̯s-***). Weiss (forthcoming) argues against this on the basis of the unambiguous semantics of Lat. *gustus* 'taste,' *gustāre* 'to taste,' which show that this verb never meant 'choose' in the language. It is also very difficult to connect *augur* with *augustus*, on this view.

[166] These are also cited by Ernout & Meillet (1959:58).

'liable to injury from a cold' from *algeō* 'to feel cold, be cold.' In both cases, extant neuter *s*-stems are attested (*angor* 'suffocation, choking' and *algor* 'narrow, confined, small'), which may be the source of *anxius* and *alsius*. In similar fashion, *augustus* 'solemn, venerable; worthy of honor' (from **h₂eu̯g-*) appears to witness an original *s*-stem, whose root could be the source of *auxilium*.

Lith. *áukštas* and Latv. *aûgsts* 'high'[167] are also occasionally connected to *augustus* (cf. Skardžius 1943:324), or otherwise viewed as representatives of PIE **h₂eu̯g-s-*, but the Latvian dialectal variant *aûkts* 'high' lacks the sibilant. A number of OPruss. adjectives[168] (from the *Enchiridion*) also agree with Latv. *aûkts*: <aucktimmien> (masc.acc.sg.) 'Oberstar,' <aucktairikijʃkan> (masc.acc.sg.) 'die Oberherren,' <auktimmiʃkan> (masc.acc.sg.) 'Obrigkeit.' The sole exception is an occurrence of <auckʃtimiskan> (fem.acc.sg.) 'Obrigkeit,' which is cited by Derksen (2015:70) (without mentioning other examples) as a comparandum to Lith. *áukštas*. This, however, is better taken as a scribal error (thus, Mažiulis 1988:113) in light of its direct parallel <auktimmiʃkan> (masc.acc.sg.) 'Obrigkeit,' as well as the other attestations of adjectives built to the same root. The opposition in Baltic between **aukta-* and **aukšta-* recalls other *to*-participles such as Lith. *mìnkštas*, Latv. *mîksts* 'soft' (cf. dial. Latv. *mîkt* 'to become soft') and Lith. *šlaĩtas* 'inclined' vs. Latv. *slàists* 'rascal.'

Gk. αὖξις and its derivatives are likely late formations taken directly from αὔξομαι, which was compared earlier with Av. *uxšiieiti* < **h₂uks-i̯é/ó-*. Gk. Αὐξώ 'goddess of growth' is attested relatively late and has no direct comparison elsewhere in Indo-European. The shape of the noun may have been influenced by the pattern seen in Gk. πείθω 'persuade' ~ Πειθώ 'Persuasion.'

In short, legitimately old forms across the daughter languages of PIE with the *s*-morpheme are either associated with State II **h₂u̯eg-* *or* the zero-grade **h₂ug-*. There is no compelling evidence in the daughter languages pointing to there ever having existed a State I **h₂eug-* with the attached *s*-formant (contra Sihler (1995:57), who reconstructs **h₂eu̯k-s-*).

---

[167] The Latvian orthography for *aûg-sts* represents an etymological approach, while that of Lithuanian (*áukštas*) is more phonological, showing laryngeal feature assimilation.

[168] Examples from Mažiulis 1988:113-6.

5.3 Other CR*e*C-*s* stems

Less abundant evidence exists elsewhere for the C*e*RC / CR*e*C-*s* pattern, but the facts together point in the same direction. LIV^2 reconstructs *h_2elk-[169] 'abwehren' and identifies *h_2leks-[170] 'abwehren, schützen' as "[w]ohl abstrahiert aus einer (schwebeablaut bewirkenden) *s*-Bildung (Desiderativ?) von *h_2elk-."[171] Anttila sets up an 'Al(e)k̂-' root and concludes with the statement that: '…[w]e seem to have *(*H*)*lek-s-*/**Aelk-*.'[172] Like *$h_2e\underline{u}g$-, it is therefore listed by him as a State I derivative (i.e. originally State II CR*e*C(*s*)).

The two Greek verbs ἀλέξω 'ward off' (< *h_2lek-*s*-) and ἀ(ϝ)έξω 'grow' (< *$h_2\underline{u}eg$-*s*-) have the look of an old pattern, which is highly unlikely to be due to analogy. Gk. ἀ(ϝ)έξω, therefore, must go back to PIE (contra LIV^2's "Neubildung").[173] Greek ἀλέξω is matched by Ved. *rákṣati* 'protects,' while Gk. ἀλκή 'help' and implied PG *$alγō$ (based on denominal OE *ealgian* 'defend' < **algōjan*) are nominal representatives of the *s*-less root.[174] Gk. ἀλάλκω 'ward off' shows reduplication which does not appear to conform to the typical type of present reduplication with an *i*-linking vowel (cf. γίγνομαι 'become'). Its root shape *h_2elk- (> *h_2el-h_2elk- (?)), however, matches to the pattern thus far seen.

5.3.1 ***$me\underline{i}\hat{k}$-* and ***$m\underline{i}e\hat{k}$-s-**

A third root **mei*k̂- 'mix' is analyzed by Anttila as also having originally been in State II. He states that '[s]tate two forms occur only in Indo-Iranian…', but overlooks the crucial fact that in every case (5x in the RV), the State II shape of the root is accompanied by the *s*-suffix, which itself is unattested outside of Indo-Iranian (for *$me\underline{i}\hat{k}$-). PIE *$me\underline{i}\hat{k}$- thus perfectly conforms to the pattern established by *$h_2e\underline{u}g$-. Ved. verbs in *myakṣ*- 'to be fixed, situated' have the following

[169] LIV^2 64 = IEW 32 '*aleq-*.'

[170] LIV^2 78 = IEW 32 '*aleq-*.'

[171] LIV^2 78^1.

[172] Anttila 1969:117-118.

[173] Yet another Mycenaean personal name *a-re-ke-se-u* /Arekseus/ demonstrates the antiquity of this form.

[174] Despite the apparent word equation with PG *$alγō$, Gk. ἀλκή is not likely to be very ancient, given the Homeric hapax ἀλκί (dat.sg.), which must be from an old root noun.

attestation: imper. *myakṣa* (1x), aor. pass. *amyakṣi* (1x), aor. *amyak* (1x), and perf. *mimyakṣa* (3x). These all show a *myakṣ*- root, reflecting CR*e*C-*s*.

The LIV^2 (445), following the analysis of Kümmel (2000:388-389), links **mi̯eks*- with **meiḱ*- even though the only evidence for this *s*-extended root appears to exist in Vedic. As noted above, the fact that the evidence for the *s*-extended root appears to be limited to Vedic here in the case of **meiḱ*- should invite caution. Furthermore, the interesting semantics of this Sanksrit verb 'to be fixed or situated firmly' invite much discussion about the exact nature and function of the *s*-morpheme, as the semantic link between the two roots is not as clear-cut as with the other examples mentioned above.

Much of the rest of the forms in the daughter languages show zero-grade of this root (simplex **miḱ*-). For example, the characterized present **miḱ-skḗ/ó-* 'mix' has cognates across many branches: Lat. *misceō*, Germ. *mischen*, Gk. μίσγω,[175] etc. But the zero-grade cannot be the basis for all full-grade State I formations, as Anttila claims. Not only Gk. μεῖγμα, but also μείγνυμι, Lith. *miešiù* and OCS *měšǫ* all agree on State I **meiḱ*-. OCS *měšǫ* 'I mix' is rather to be taken together with Lith. *maišaũ* (and Latv. *maisît*) 'I mix,' as a legitimately old causative **moi̯ḱ-éi̯e/o-*.[176] Note that the expected BSL *sḱe*-present †*mište/a-* (< **miḱ-skḗ/ó-*) is nowhere attested, and therefore the zero-grade cannot credibly form the foundation for any neo-State I forms here. Another *skḗ/ó*-present in PIE, **pr̥ḱ-skḗ/ó-* (Ved. *pr̥cchắti* 'asks', Lat. *poscō* 'I ask'), is likewise absent from Baltic or Slavic, and has instead been replaced by another causative formation (**proḱ-éi̯e/o-*): Lith. *prašaũ*, OCS *prošǫ* 'I ask.' Full grades in both State II (**proḱ-*) and State I (**moi̯ḱ-*) are thus independent from *skḗ/ó*-presents, where absent.

5.4 Summary of *s*-extended forms

Evidence has thus far been presented for a type of *s*-extended root in three verbal pairs: **h$_2$eu̯g-* : **h$_2$u̯eg-s-*, **h$_2$elk-* : **h$_2$lek-s-*, and **mei̯ḱ-* : **mi̯ek-s-*. State I C*e*RC is exclusively found with the non-extended variant, and hence, must be the original shape of the root (contra Anttila

[175] Forms with γ such as μεῖγμα are an inner-Greek development.

[176] LIV^2 385

1969:175-176). Kloekhorst (forthcoming) examines other likely *s*-extended verbs in Hittite and Indo-European; one particular candidate is promising, **demh*$_2$- vs. **dmeh*$_2$-*s*- 'tame.' The non-Anatolian languages show **demh*$_2$-, cf. Ved. *damáyati*,[177] Gk. δάμνημι 'tame,' and OIr. *-damna* 'binds' < **dm̥-ne-h*$_2$-, while Hitt. *damāšzi* '(op)press' might show schwebeablaut, if the first <a> is to be interpreted as a dummy vowel (thus, **dmeh*$_2$-*s*-*ti*).

Most verbal pairs cited by Kloekhorst, however, do not exhibit schwebeablaut, cf. *pa-aḫ-ḫa-aš-ḫi* 'protect' (< **peh*$_2$-*s*-) vs. Ved. *pā́ti* 'protect,' Lat. *pāscō* 'graze' (< **peh*$_2$-). A particularly well-known example is **k̂leu̯-* (LIV^2 297) > Ved. *śr̥ṇóti*, OIr. *ro-cluinethar* 'hears' and its counterpart **k̂leu̯-s-* (LIV^2 298) > Latv. *klàusos* 'hear; obey,' *śróṣati* 'obey.' These facts suggest that the schwebeablaut inherent to certain *s*-extended roots was not a function of any synchronic morphological process.[178] The formal shape of the *s*-extended roots also offers a clue as to the actual mechanism behind the schwebeablaut, as will be seen.

5.5 Exploring phonological solutions

The previous discussion has established the existence of a class of forms descriptively characterized by original C*e*RC roots (**h*$_2$*eu̯g-*, **h*$_2$*elk-*, **meik̂-*) modified via the addition of an *s*-formant. The presence of this formant resulted in altered root shapes in State II (CR*e*C-*s*). It was further demonstrated that these C*e*RC ~ CR*e*C-*s* alternations could not have had a basis in any of the other solutions discussed to account for 'schwebeablaut.' These forms therefore demand a unique solution, and it is reasonable to now pursue a possible phonological one for them.

In his review of Anttila's work, Schindler (1970:146-152) made crucial observations and recommendations. The first is that the goals of the dissertation could have been better served with a structured phonological analysis into the particular types of roots that show schwebeablaut. For example, Schindler observed that the sonorant *r* appears to occur in more

[177] Ved. *damáyati* is almost certainly a metrically conditioned shortening of **damāyáti*, as argued by Jamison (1983:101-102).

[178] Admittedly, **ph*$_2$*e-s-* and **k̂lu̯e-s-* would not be well-formed sequences, either; however, we would still expect some sort of phonological 'fix' should *s*-formations be viewed as a broad morphological process.

than half[179] of the roots listed by Anttila while in regular roots, both *r* and *u̯* show approximately the same frequency. Metathesis involving liquids, especially rhotics, has long been demonstrated to be a cross-linguistic tendency[180] (cf. Hock 1991:111, Blevins & Garrett 2004:128), and so this was suggested as a possible factor by Schindler.

A similar process is brought to bear in Anttila's discussion of the Indic evidence for schwebeablaut.[181] At the beginning of the chapter, he cites a number of formations (chiefly future forms in *-sya-*, but also infinitives in *-tu-*, and nouns in *-tr̥-*) from Whitney (1885) which in Sanskrit show apparent schwebeablaut. With the exeption of *klp̥-* 'be adapted', all contain a medial *r* and generally take the form of C*ar*C / C*ra*C-C-. Roots like *dr̥ś-* 'see,' *pr̥c-* 'mix' and *sr̥p-* 'creep,' which are otherwise State I (C*e*RC), produce certain State II formations when followed immediately by a consonantal suffix. The root **derk̂-* (C*e*RC), for example, is established on the basis of forms like *dadárśa*, *darśati*, etc., Av. *darəsəm* (aor. inj.) 'see,' and Gk. δέρκομαι 'watch.' But numerous other forms with a following consonant exhibit a type of metathesis: *drakṣyáti* (future), *dráṣṭum* (infinitive), *draṣṭŕ̥* (agent noun), etc. It is noteworthy that, with the exception of *asrāk* and *sraṣṭr̥* (to *sr̥j-* 'creep') this pattern is entirely post-RV, and Avestan nowhere evidences such formations. An important question as to the actual mechanism behind this phenomenon remains, however. Given Schindler's mention of *r*-metathesis, it is difficult to tease apart whether the well-known propensity for *r* to be involved in metathesis was at work here, or the avoidance of a marked syllable coda, or both.

Though the process examined above by Anttila was clearly an inner-Sanskrit innovation and had no counterpart in Avestan, as pointed above, it was credibly driven by phonological processes. We should therefore also examine the *s*-extended roots (at the PIE level) discussed earlier in a similar light.

---

[179] It is not entirely clear to me how Schindler arrived at this figure. Anttila's Table 9 ("schwebeablauting items and their explanations") lists Ar(e)ǵ-/Aerg-, d(e)r-(H-)/der(H)-, ǵhres-/ǵhers-, g^{w}r(e)H-/g^{w}er(H)-, Hr(e)H-/HerH-, ḱr(e)A-/(Gk kera-), mr(e)gh-/mergh-?, pr(e)k-/perk-?, pr(e)ḱ-/perḱ-, tr(e)s-/ters-?, wr(e)ǵ-/werǵ-. This is out of a list of thirty eight pairs in total (not counting items explainable due to an internal morpheme boundary or extension).

[180] Earlier work already recognized this, cf. chapter 8 of Grammont 1933.

[181] Anttila 1969:53.

The reader will note that none of our *s*-extended candidates contain a medial *r* sonorant (**h₂eu̯g-/*h₂u̯eks-*; **h₂elk-/h₂leks-*; **meḭk-/*mḭeks-*). Instead, this particular type of schwebeablaut is characterized by its occurrence in a very specific environment, namely before a sibilant. It would therefore seem plausible to suggest that some other kind of phonological mechanism is at work here, since the schwebeablaut is 'activated' in a particular phonological environment.

5.5.1 Metathesis and heavy syllable codas

In his summary of the history of scholarship on the phenomenon of schwebeablaut, Anttila in fact makes mention[182] of a phonological explanation advanced by Schmitt-Brandt (1967:14-15). Schmitt-Brandt noted that a ready phonological explanation was at hand for Benveniste's root enlargement theory (Benveniste 1935:147-173), which required that the second 'enlargement' be added to a State II base (schematically CC*e*C_1-C_2, where C_1 = first root extension, C_2 = second root extension). Under Benveniste's schema, the canonical shape of the root was C*e*C[183] (cf. **deḭ-* 'to shine'), to which an ablauting root extension could be added (C*e*C-C_1 ~ CC-*e*C_1; cf. **deḭu̯-o-* ~ **dḭeu̯-* 'sky-god'). A maximum of two root extensions were possible for any individual root, leading to a maximal CC*e*CC template. This maximal template, in a doubly-extended root (according to Schmitt-Brandt) like **pr-ek̂-s-* is motivated by phonological considerations. Its primitive form is **per-*, to which the first root extension *-k̂-* could create both State I **per-k̂-* and State II **pr-ek̂-*. However, the addition of a second extension *-s-* was made exclusively to State II **prek̂-*, and not State I **perk̂-*. Schmitt-Brandt then reasoned that the prohibition against **perk̂s-* was due to the avoidance of a marked or illicit coda in the root. Similarily, according to Schmitt-Brandt, codas with double sonorants were prohibited in PIE (C*e*R-R), this, however, forced him to account for how a clearly secondary formation like **deḭu̯-*

[182] Anttila 1969:6.

[183] Benveniste (1935:148-149) subsumed roots such as **ed-* 'eat,' **ag̑-* 'drive,' and **okᵘ-* 'eye' under C*e*C by pointing out that the laryngeals posited by Saussure and equated by Kuryłowicz with the Hittite fricative *ḫ* demonstrated the existence of onsets for these roots in the parent language (**h₁ed-*, **h₂eg̑-*, and **h₃ekᵘ-*, respectively). Similarily, so-called lengthened-grade roots lacking codas (e.g. **dʰēi̯-* 'place') could in fact be reconstructed as C*e*H (thus, **dʰeh₁-*), another subtype of C*e*C.

o- ‘the one of the sky; sky-god’ could have arisen from the root noun **dḭeu̯*- (supposedly the result of regular phonological metathesis).

Because of inconsistencies such as the above, Anttila ultimately rejects metathesis as a motivation since he views the attested data as too irregular and inconclusive in order to justify a regular, systematic phonological process. Today, for the most part, neither Benveniste’s root extension theory, nor the particular phonological motivations for it offered by Schmitt-Brandt are tenable. However, in light of the findings of this dissertation, the specific cases of schwebeablaut examined in this chapter are clearly in a class of their own, featuring what appears to be regular (analogous) metathesis motivated by the addition of additional phonological material (the *s*-formant). This is in contrast to cases discussed in other chapters, where the perceived alternations occurred between roots or words that do not appear to be mutually distinguishable by any additional systematic phonological phenomenon.

There are in fact good reasons to pursue a similar phonological motivation for the metathesis observed in *s*-extended roots of the type **h₂eu̯g*-/**h₂u̯eks*-. While Indo-European clearly allowed both complex onsets and codas, cross-linguistically, onsets tend to be more prevalent than codas, and no language has been found to prohibit onsets while allowing codas (Kobayashi 2004:22). In fact, a universal phonological constraint requiring onsets has been proposed by many phonologists (Steriade 1982:76; Prince & Smolensky 2004:139-140), while no such equivalent constraint exists for codas. The universal well-formedness of CV syllables, together with the corresponding markedness of codas, especially heavy codas, is therefore a plausible overarching explanation for the metathesis we observe. The avoidance of superheavy medial syllables (of the type $[CeRC]_{\sigma}$) is tentatively adopted by Byrd (2010:150) as the driving force behind certain cases of schwebeablaut (such as *dadárśa* / *drakṣyáti*).

It would be preferable, however, to have a non-circular means of actually establishing the markedness of heavy codas in Proto-Indo-European. Similarily, unrelated evidence should also be presented that would confirm that metathesis was in fact the particular ‘solution’ undertaken, as opposed to other repair strategies such as consonant deletion, vowel epenthesis, resyllabification, etc. The tools of Optimality Theory (Prince & Smolensky 2004) are particularly well-suited to the task of establishing a constraint ranking hierarchy in a given language. Such a

constraint ranking hierarchy could therefore serve to either confirm or disconfirm the hypothesis that a violation of a highly ranked constraint in the language against heavy codas was actually the actual cause of the metathesis.

5.5.2 Theoretical basis for inquiry

Optimality Theory (OT) hypothesizes that grammars in languages arise from the interaction of competing contraints that themselves are not equally serious violations of some particular phonological phenomenon. Instead, each particular language possesses a different ranking of the same constraints, which leads to a diversity of actually realized phonological outcomes. Two types of constraints have been proposed: faithfulness constraints and markedness constraints. Faithfulness constraints require that the surface representation be identical to the underlying representation in some way. Markedness contraints in turn require that the surface representation not violate some well-formedness feature. By design, therefore, constraints make competing demands and this requires that the winning candidate satisfy a higher ranked constraint in order to be considered the most optimal outcome. The two types of contraints therefore interact according to the particular constraint ranking in a language and select the most favorable outcome.

To take an example from Spanish: it is well-known that complex word-initial onsets in the language feature a 'prothetic' vowel, cf. *espera* < Lat. *spērat* 'he hopes.' To develop an explanatory account for this phenomenon, we may postulate the following constraints for Spanish:

(24) CONSTRAINTS IN SPANISH EPENTHESIS[184]

a. M-CONT: Don't insert segments into a morpheme. Assign one * for each violation.

b. SONORITY: Segments must increase in sonority the closer they are to the nucleus. Assign one * for each violation.

[184] Adapted from Eddington 2001.

c. FAITH-V: Only vowels in the underlying representation may appear in the surface structure. Assign one * for each instance of vowel epenthesis.

d. NOCODA: Syllables may not contain codas. Assign one * for each violation.

In conducting this analysis, various possible surface representations are compared to determine the underlying constraint ranking for the particular language in question. The constraints M-CONT and FAITH-V are faithfulness constraints because they require the output to match the underlying represenation in some fashion. The constraints SONORITY and NOCODA are markedness constraints because they impose particular well-formedness criteria on the output. The interaction of these four constraints results in one ideal candidate as the outcome because it only violates lower ranked constraints.

(25) SPANISH EPENTHESIS

/spera/		M-CONT	SONORITY	FAITH-V	NOCODA
a.	[spe.ra]		*!		
b.	[se.pe.ra]	*!		*	
c. ☞	[es.pe.ra]			*	*

Candidate (a) was rejected because it incurred a fatal violation (*!) of SONORITY, a markedness constraint against structures that are in violation of the SONORITY SEQUENCING PRINCIPLE (SSP), which dictates that, "Between any member of a syllable and the syllable peak, only sounds of higher sonority rank are permitted."[185] Since other constraints are no longer relevant due to the fatal violation of SONORITY, they are shaded grey. Candidate (b) was also rejected because, although it satisfied SONORITY by inserting an epenthetic segment, that vowel resulted in a fatal violation of M-CONT, which dictates that a morpheme may not be broken up by the insertion of a segment. Candidate (c) is the ideal candidate and the winning form because it satisfies both SONORITY and M-CONT by inserting the epenthetic vowel to the left of the morpheme. This outcome also demonstrates that in Spanish, both FAITH-V and NOCODA are lower ranked

[185] Clements 1990:284.

constraints in the grammar than both SONORITY and M-CONT. We may thus assume the following constraint ranking: SONORITY, M-CONT ≫ FAITH-V, NOCODA. Since this data does not establish a finer-grained ranking for SONORITY vs. M-CONT, or FAITH-V vs. NOCODA, the cell borders dividing these constraints are dotted.

The utility of Optimality Theory is thus to be found in the recovery of an underlying ranking of both faithfulness and markedness constraints in a given language, even a dead language. Such a ranking may be used to explain a large number of diverse phonological phenomena in a language, connecting such processes with their actual motivating factors. Optimality Theory has been successfully employed in Byrd 2010 to shed much light on Proto-Indo-European syllabification.[186] In particular, various independent phonological phenomena such as Hackstein's laryngeal deletion law, the μέτρον-rule, schwa primum and schwa secundum have been shown to be the product of specific 'conspiracies' in the constraint hierarchy of the language. Since the constraint ranking in a given language is universally applicable to its own phonological contexts, the postulation of a ranking that serves to 'explain' disparate phonological phenomena is of great value. In general, the soundness of a scientific hypothesis is greatly increased when it explains other, seemingly unrelated phenomena.

The findings of Byrd's dissertation are of direct relevance to our discussion since it is important to determine how a sequence /CeRC + s +E/ (where E = verbal desinence) would have been syllabified and whether or not the resulting underlying syllabification would have been well-formed. A constraint ranking derived from multiple independent pieces of evidence could thus assist in determining whether or not metathesis is to be directly connected to the particular markedness of such sequences, and if so, in what way such structures are actually ill-formed in the grammar.

5.5.3 What type of formation was *$h_2\underline{u}eg$-s-?

Like all verbal formations in Indo-European, the verbal root or stem had to be attached to an overt ending in word formation. Therefore, in considering the syllabification of /h_2e$\underline{u}$g + s/, it

[186] See Byrd 2015, a revised and expanded version of his dissertation.

may be important to determine what sort of phonological material followed this sequence (e.g. thematic or athematic).

As we have seen, the *s*-extended roots appear in simple thematic presents (from a synchronic point of view). They are, in fact, generally viewed as types of characterized presents, much like *sk̂é/ó-* or nasal-infix presents were. If so, however, the category is likely to have become semantically bleached over time (even more so than other characterized presents), since particular nuances or shades of meaning of these forms (in contrast to their non-characterized counterparts) are very hard to identify based on what the comparative method has yielded.

There appear to be several anomalies in this class that have attracted more extensive solutions. Chief among these is the puzzling *o*-grade of Goth. *wahsjan*, which (from a diachronic perspective) is unexpected for simple thematics. Jasanoff (2003) is a fairly new reworking of the traditional understanding of the PIE verb that postulates the earlier existence of a parallel conjugation (called the *h2e*-conjugation) that was parallel to the familiar athematic *mi*-conjugation. The direct continuation of this type is seen in Hittite *ḫi*-verb endings, which are curiously parallel in look to two other sets of internally reconstructed endings: the passive (*-*h2e*, *-*th2e*, *-*e*) and middle (*-*h2e*(*r*), *-*th2e*(*r*), *-*o*(*r*)). Jasanoff has further argued that elsewhere in IE, many correspondents of the Hittite *ḫi*-conjugation are various types of thematic formations. In this way, Jasanoff (2003:113) reconstructs verbs with the *s*-formant (**h2u̯eg-s-*, also **gʷel-s-* (> Gk. βούλομαι 'plan')) featuring *o*-grade in the root (Goth. *wahsjan*) as originally having belonged to a type of *h2e*-conjugation characterized present, with *o/e* root ablaut. Thus, the underlying paradigm of **h2eu̯g-* would have been as follows:

(26) *h2e*-CONJUGATION (**h2eu̯g-*)[187]

**h2óu̯g-s-h2e*	**h2éu̯g-s-meH*
**h2óu̯g-s-th2e*	**h2éu̯g-s-*(*H*)*e*
**h2óu̯g-s-e*	**h2éu̯g-s-r̥s*

[187] Jasanoff directly reconstructs **h2u̯ók-s-*/**h2u̯ék-s-* without further comment on the schwebeablaut.

There is much in Jasanoff's work that recommends itself, and his views are gaining more acceptance in the broader field (cf. its inclusion in Fortson 2010). However, in order to avoid extra theoretical assumptions, the *h₂e*-conjugation proposal will be avoided for the moment, and the analysis will work with thematic formations. It will be shown that the assumption of the *h₂e*-conjugation theory is not required in order to account for the facts.

5.6 Syllabification of /CeRC + s + E/

Assuming, then, that the forms /h₂eu̯g + s/, /h₂elk + s/, /mei̯k + s/ were directly followed by a vowel, a number of theoretical syllabification options immediately come to mind. Taking a 3sg. present in *-e-ti* as an example, and assuming the desinence formed a separate syllable, the following options are presented:

(27) SYLLABIFICATION OPTIONS FOR /h₂eu̯gseti/, /h₂elkseti/, /mei̯kseti/

a. [h₂e]$_\sigma$[u̯kse]$_\sigma$[ti]$_\sigma$, [h₂e]$_\sigma$[lkse]$_\sigma$[ti]$_\sigma$, [me]$_\sigma$[i̯kse]$_\sigma$[ti]$_\sigma$

b. [h₂eu̯]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$, [h₂el]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$, [mei̯]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$

c. [h₂eu̯k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$, [h₂elk]$_\sigma$[se]$_\sigma$[ti]$_\sigma$, [mei̯k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$

d. [h₂eu̯ks]$_\sigma$[e]$_\sigma$[ti]$_\sigma$, [h₂elks]$_\sigma$[e]$_\sigma$[ti]$_\sigma$, [mei̯ks]$_\sigma$[e]$_\sigma$[ti]$_\sigma$

Not all of these options are well-formed sequences. Particular phonotactic constraints govern which medial sequences of consonants in any given language are legal. Furthermore, even legal medial consonant sequences may be prohibited by an illegal onset or coda due to a particular syllabification. One tool used by Byrd (2010:63) to ascertain the legality of potential medial consonant cluster sequences forming syllable onsets and codas is the DECOMPOSITION THEOREM (DT).[188]

[188] Hammond 1999:69.

(28) DECOMPOSITION THEOREM (Hammond 1999)

"All medial clusters should be decomposable into a sequence composed of an occurring word-final cluster and an occuring word-initial cluster."

The DT thus states that speakers are unlikely to produce medial syllable onsets and codas that are illicit word-initial onsets and word-final codas, respectively. This should allow the number of theoretical possibilites to be narrowed down. Among the possibilities screened by the DT, not all are equally well-formed or able to surface in a phonetic representation. The candidates eliminated by the DT are merely the least likely to be the basis for syllabification.

Among the options listed above, medial onsets consisting of a sonorant followed by any obstruent(s) ($_\sigma$[RCs) are never found in word-initial position. Thus, it may be inferred from the syllabification of sequences such as *η-$g^{\mu}d^{h}$itó- (> Gk. (κλέος) ἄθφιτον, Ved. (*śráva*-) *ákṣitam* 'undying fame') that a word-initial sonorant became syllabic when followed by a consonant of lower sonority, and it thus was never part of the onset. This eliminates option (a) ([h_2e]$_\sigma$[u̯kse]$_\sigma$[ti]$_\sigma$, [h_2e]$_\sigma$[lkse]$_\sigma$[ti]$_\sigma$, [me]$_\sigma$[i̯kse]$_\sigma$[ti]$_\sigma$) from consideration.

Options (b) and (c) show well-formed onsets (#[ks and #[s) as demonstrated by the verbal root **kseu̯*- 'shave'[189] and the numerous roots beginning in **s*- (e.g. **sek*$^{\mu}$- > Lat. *sequitur* '(it) follows'), respectively. Additionally, option (b) codas u̯]#, l]# and i̯]# are reasonably secured by examples like PIE **seh*$_2$-*u̯ōl* 'sun' > Lat. *sol*, **toi̯* 'you' (dat.sg.) > Gk. τοι, and possibly the vocatives of *i*- and *u*-stems **men-tei̯* 'mind,' **medh-eu̯* 'honey' (?). However, the option (c) codas u̯k]#, lk]#, and i̯k]# are more problematic, given the necessary restrictions a highly inflected language like Proto-Indo-European imposed on what a word could end with. Yet the clear occurrence of option (d) codas u̯ks]#, lks]#, and i̯ks]# in the reconstructed words **lóu̯k-s* 'light' > Lat. *lūx*, **h*$_2$*elk-s* (?) > Hom. Gk. hapax dat.sg. ἀλκί 'strength,'[190] suggests that the non-occurrence of u̯k]#, lk]#, and i̯k]# is likely due to accidental gaps in the language, rather than to a specific phonotactic ban on these sequences.

---

[189] LIV^2 332.

[190] Dat.sg. of an unattested root noun *ἄλξ; Il E 299. λέων ὣς ἀλκὶ πεποιθώς 'like a lion confident in his strength.'

The DT thus serves to eliminate only the first option from consideration, leaving three others. Further discussion must consider how PIE would have syllabified /h$_2$eu̯gseti/, as the DT theoretically permits [h$_2$eu̯]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$, [h$_2$eu̯k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$, and [h$_2$eu̯ks]$_\sigma$[e]$_\sigma$[ti]$_\sigma$. A key question to be resolved is why metathesis occurred at all, if PIE preferred to maximize onsets (hence [h$_2$eu̯]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$). The motivation for metathesis proposed by Byrd was the avoidance of a superheavy syllable coda, yet such a dispreference is trivially solved by maximizing the onset of the following syllable. If, on the other hand, onset maximization was dispreferred, leading to the second option [h$_2$eu̯k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$ (or the third option [h$_2$eu̯ks]$_\sigma$[e]$_\sigma$[ti]$_\sigma$) and resulting in a superheavy coda [h$_2$eu̯k]$_\sigma$ (or [h$_2$eu̯ks]$_\sigma$), it is not immediately clear why a drastic 'fix' like metathesis was necessary, unless both complex onsets *and* complex codas were dispreferred in PIE. As may be seen from the above, it is important to first establish what the underlying syllabification of a sequence like /h$_2$eu̯gseti/ would have been before determining what, if anything, was marked about the resulting structure.

5.6.1 Avoidance of complex onsets in PIE

Though extensive research on the nature of IE and PIE syllabification has been rather sparse in the history of the field, a number of key contributions have been made. An important early study on IE syllabification was Hermann 1923:351ff., which established (through the comparative method) that the outcome of a /VCCV/ sequence was uniformly [VC]$_\sigma$[CV]$_\sigma$ in the daughter languages, even when the medial cluster consisted of a legal onset. Thus, a verbal form like **h*$_1$*es-ti* was syllabified as /h$_1$esti/ → [h$_1$es]$_\sigma$[ti]$_\sigma$, and never as †[h$_1$e]$_\sigma$[sti]$_\sigma$, based on the testimony of certain ancient languages. The failure of expected [V]$_\sigma$[CCV]$_\sigma$ to surface demonstrates that another, higher ranked constraint was in operation in PIE (from an OT perspective) that overruled onset maximization. This, then, could perhaps be viewed as a parallel phenomenon to the hypothetical syllabification of /h$_2$eu̯gseti/ → [h$_2$eu̯k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$, with the assumption that the same constraint that prohibited /h$_1$esti/ → †[h$_1$e]$_\sigma$[sti]$_\sigma$ could have prevented [h$_2$eu̯]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$ from syllabifying and therefore triggered metathesis in the resulting superheavy syllable.

Based on the evidence of /VCCV/ → [VC]$_\sigma$[CV]$_\sigma$ syllabification, Keydana (2004) took a view that held that PIE ultimately avoided complex onsets over any type of codas (in other words, a structure with complex onsets was more *marked* than one with codas). With an OT approach, Keydana attempted to account for the syllabification of the following sequences of obstruents and sonorants:

(29) SYLLABIFICATION OF CLUSTERS (Keydana 2004:171)

a. /VCCV/ → [VC]$_\sigma$[CV]$_\sigma$; Ved. *áśva-* 'horse,' with coda ś]$_\sigma$

b. /VCRV/ → [VC]$_\sigma$[RV]$_\sigma$; Gk. μέτρον 'measure,' with coda t]$_\sigma$[191]

c. /VCCRV/ → [VCC]$_\sigma$[RV]$_\sigma$; Ved. *mátsya-* 'fish,' with complex coda ts]$_\sigma$

Keydana proposed three constraints in order to account for the syllabifications assumed for the examples above. *COMPLEXONSET prohibited onsets of two or more consonants. NOCODA prohibited codas, while *COMPLEXCODA prohibited codas of two or more consonants. The constraints were ranked as follows: *COMPLEXONSET ≫ NOCODA ≫ *COMPLEXCODA. The following tableau illustrates their outcomes:

(30) Keydana 2004:171[192]

/VCCV/, /VCRV/, /VCCRV/	*COMPONS	NOCODA	*COMPCODA
a. [V]$_\sigma$[CCV]$_\sigma$, [V]$_\sigma$[CRV]$_\sigma$, [VC]$_\sigma$[CRV]$_\sigma$	*!		
b. ☞ [VC]$_\sigma$[CV]$_\sigma$, [VC]$_\sigma$[RV]$_\sigma$, [VCC]$_\sigma$[RV]$_\sigma$		*	(*)

The markedness constraint NOCODA was overruled in each case by a higher ranked constraint prohibiting complex onsets (*COMPLEXONSET). This is confirmed by the heterosyllabic division of Ved. *áśva-* 'horse' and Gk. μέτρον 'measure.'

However, Keydana's ranking of NOCODA ≫ *COMPLEXCODA is puzzling, since it implies that simple codas were *more* marked in PIE than complex codas (not less, as might be expected).

[191] PIE **métro-* is usually taken from earlier **méd-tro-*. See now, however, Neri 2011.

[192] A violation enclosed in parenthesis is only applicable to part of the candidate(s).

This ranking is adopted due to an argument made by Schindler (1977:56–65) explaining why words like Ved. *mátsya-* failed to undergo vocalic epenthesis via Sievers' law (†*mátsiya-*). This phenomenon was first described by Sievers (1878), who noted that heavy root syllables in *i̯o-* stems produced epenthetic vocalic correspondents. A famous example is the Gothic pair *harjis* 'army' (< PG **har-i̯a-*) vs. *hairdeis* 'shepherd' (< PG **herd-ii̯a-*). Sievers' law was motivated by Schindler as being due to an avoidance of complex onsets consisting of C + R. Thus, Proto-Germanc [her]$_\sigma$[di̯az]$_\sigma$ → [her]$_\sigma$[di]$_\sigma$[i̯az]$_\sigma$. It followed that the reason for the failure of Sievers' law to apply to Ved. *mátsya-*, according to Schindler, was its syllabification [máts]$_\sigma$[ya]$_\sigma$ (not [mát]$_\sigma$[sya]$_\sigma$).[193]

Such a conclusion, however, is typologically unfounded (viewed from Keydana's constraint ranking), as it requires the language to have preferred complex codas over simple codas. It would also require the coda of the first syllable [máts]$_\sigma$ to have violated the SONORITY SEQUENCY PRINCIPLE (SSP), which is a typologically common preferrence in world languages for onsets and codas to have consonants of increasing sonority as they approach the nucleus (itself the segment with the highest sonority in the syllable). A different explanation proposed by Byrd that is better able to account for the same facts with a syllabification [mát]$_\sigma$[sya]$_\sigma$ will be discussed below.

A number of exceptions also fail to follow Keydana's ranking (as pointed out by Byrd (2010:30). For example, Ved. *śvábhis* 'dogs' (instr.pl.), is evidence that PIE **k̂u̯n̥-bʰis* was clearly syllabified in such a way as to actually *prefer* a complex onset: /k̂u̯nbʰi̯s/ → [k̂u̯n̥]$_\sigma$[bʰis]$_\sigma$. (not [k̂un]$_\sigma$[bʰis]$_\sigma$ > †*śúnbhis*). It seems then, that Hermann's syllabification of /VCCV/ as [VC]$_\sigma$[CV]$_\sigma$ does not appear to be attributed to any dispreference for complex onsets over complex codas. The conclusions thus to be drawn for /h$_2$eu̯gseti/ are that the syllabification [h$_2$eu̯]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$, if in fact it was prohibited in PIE, was not due to an avoidance of complex onsets (and, as was shown above, #[ks was a well-formed word-initial cluster in PIE).

[193] See Barber 2013 for an comprehensive discussion of Sievers' law.

5.6.2 Onset maximization in PIE

Returning to the original hypothesis of onset maximization, it is instructive to note that the standardly adopted view of PIE syllabification as first described in Schindler 1977:56–65 in fact demonstrates a type of preference for sonorant onsets over codas. Schindler took a right-to-left approach in syllabifying sequences of sonorants, unless they were adjacent to vowels. His formulation may be stated as follows:

(31) PIE SYLLABIFICATION (Schindler 1977:56)

$$\begin{bmatrix} -syll \\ +son \end{bmatrix} \rightarrow [+syll] \; / \begin{Bmatrix} -syll \\ \# \end{Bmatrix} \_ \begin{Bmatrix} -syll \\ \# \end{Bmatrix}$$ (Iterative from right to left)

Starting from the right: a non-syllabic sonorant (nasal, liquid, or glide) became syllabic when surrounded by either a word boundary or a non-syllabic element. In a case where a word ended with two sonorants (VRR#), the rightmost sonorant would be expected to become syllabic first, leaving the first non-syllabic. In a case where two sonorants preceded a vowel, the first would be expected to become syllabic, while the second remained non-syllabic. Schindler's rule thus preferred onsets over codas, but not complex onsets.

However, Schindler himself noted five exceptions to his rule. These are listed below:

(32) SYLLABIFICATION EXCEPTIONS (Schindler 1977:56-57)

a. Root onsets in #RR (expected #R̥R), cf. Ved. verbs in *myakṣ-*.
b. Nasal-infix presents (expected [iu̯n̥génti]), cf. **i̯ung-é-nti* > Ved. *yuñjánti* 'they yoke.'
c. Accusatives in **-im*, **-um*, **-r̥m* (expected i̯m̥]#, u̯m̥]#, rm̥]#), cf. PIE **mén-ti-m* > Lat. *mentem* 'mind.'
d. The *asno*-law (deletion of sonorant in CRR sequence), cf. **h₂ek̂-mn-és* (gen.sg.) > Av. *asno* 'stone' (expected [h₂a]$_\sigma$[k̂m̥]$_\sigma$[nés]$_\sigma$).
e. [CRR̥]$_\sigma$[V sequences (in paradigmatic alternation with [CRR̥]$_\sigma$[C, cf. PIE **triōm* (gen.pl.) > Gk. τριῶν 'three' (expected †[tr̥]$_\sigma$[i̯ōm]$_\sigma$).

Though exception (e) may be explainable due to analogy (driven by the desire to reduce of the allomorphy of **tri-* and **tr̥i̯-*), the other cases are not so easily solved. Exceptions (a), (d) and (e) appear to require complex onsets, contrary to what is predicted by Schindler's rule. In other words, this proposal fails to account for specific cases of onset maximization in PIE. Additionally, (b) and (c), which require #[RV and VR]# syllabifications, remain unexplained.

A reformulation by Kobayashi (2004:22) attempts to improve Schindler's account by retaining the assumption of onset maximization. This is a sensible position to hold, given that onset maximization is a common tendency cross-linguistically. In order to better account for the facts, he proposed the following three constraints:

(33) CONSTRAINTS IN Kobayashi 2004

a. HNUC: Syllabify the segment with the highest sonority. Assign one * for each violation.
b. ALIGNNUC: Align the right edge of a syllable nucleus with the right edge of a syllable, i.e. minimize codas. Assign one * for each violation.
c. ONSET: A segment to the left of a syllable nucleus is an onset; in other words, diereses are not allowed. Assign one * for each violation.

The typologically reasonable constraint HNUC requires that the segment of highest sonority be the syllable nucleus (usually a vowel). This would account for nasal-infix presents and the accusatives of *i*- and *u*-stems. In order to account for the syllabification of forms such as Ved. *śvábhis* (/k̂u̯nbʰi̯s/ → [k̂u̯n̥]$_\sigma$[bʰis]$_\sigma$), Kobayashi specified a markedness constraint ALIGNNUC that preferred the right edge of a syllable's nucleus lack a coda. Finally, a final third constraint ONSET prohibited diereses, something that was clearly disfavored in PIE (Schindler's exception (e) seems to be a case of analogy[194]). The ranking of these three constraints is as follows: ONSET ≫ ALIGNNUC ≫ HNUC. The following tableau illustrates their outcomes:

[194] Andrew Byrd points out to me that there is likely a prosodic word boundary between **treu̯i-* and *-ōm*.

(34) PIE *$\hat{k}_{\underline{u}}n$-$b^h_{\underline{i}}is$ (Kobayashi 2004)

/$\hat{k}_{\underline{u}}nb^h_{\underline{i}}is$/	ONSET	ALIGNNUC	HNUC
a. [$\hat{k}$un]$_\sigma$[b^{h}is]$_\sigma$		*!	
b. ☞ [$\hat{k}_{\underline{u}}n_{\underline{\circ}}$]$_\sigma$[b^{h}is]$_\sigma$			*
b. [$\hat{k}$u]$_\sigma$[$n_{\underline{\circ}}$]$_\sigma$[b^{h}is]$_\sigma$	*!		

Note that no constraint against onsets (complex or otherwise) was employed by Kobayashi in his derivation. The constraint ranking offered by him neatly solves two of Schindler's exceptions. Roots with onsets consisting of two sonorants are maximized #[RRV, and *asno*-law examples undergo the following syllabification: /h$_2$e$\hat{k}$mnés/ 'stone' (gen.sg.) → [h$_2$a$\hat{k}$]$_\sigma$[mnés]$_\sigma$ (with subsequent consonant deletion). Both processes are in accord with ALIGNNUC. Overall, Kobayashi's constraint ranking is to be preferred to that of Keydana because it is better able to account for the data, and because it is better founded typologically. An overall strong tendency to maximize onsets over codas may thus be reconstructed for PIE. Byrd (2010:150) accepts Kobayashi's principle of onset maximization, though, as will be shown, he qualifies this.

When applied to /h$_2$e$_{\underline{u}}$gseti/, metathesis as a 'fix' satisfies Kobayashi's grammar since it renders the sequence essentially unsyllabifiable without some sort of phonological repair:

(35) PIE *$h_2e_{\underline{u}}g$-s-e-ti

/h$_2$e$_{\underline{u}}$gseti/	ONSET	ALIGNNUC	HNUC
a. [h$_2$e$_{\underline{u}}$]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$		*!	
b. [h$_2$e$_{\underline{u}}$k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$		*!	
b. [h$_2$e]$_\sigma$[u]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$	*!		
d. ☞ [h$_2$$_{\underline{u}}$e]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$			

However, upon further inspection, it appears that Kobayashi's ALIGNNUC is ranked too highly in the grammar. Were it to not be checked by anything other than ONSET, it would incorrectly predict that all heavy medial syllable sequences (of the type [CVC]$_\sigma$) were prohibited

in PIE. This is directly contradicted by Hermann's demonstration (from the daughter languages) of the syllabification of /VCCV/ → [VC]$_\sigma$[CV]$_\sigma$. In other words, the grammar disproportionately prefers complex onsets to codas, since the consequences of the former affect the latter. Naturally, the two key remaining exceptions identified by Schindler also persist and require additional considerations. It is the ranking ALIGNNUC ≫ HNUC that is specifically responsible for the incorrectly predicted nasal infix presents (†[i̯u̯n̥]$_\sigma$[ge]$_\sigma$[nti]$_\sigma$), as well as the accusatives (of the type *-im* (expected †-[i̯m̥]$_\sigma$). It is therefore likely that Kobayashi's proposed grammar must be modified in order to account for the metathesis of /h$_2$eu̯g + s/, /h$_2$elk + s/, etc.

5.6.3 Qualifying onset maximization

The persistent problems discussed in the previous section led Byrd (2010:116ff) to qualify the general principle of onset maximization by hypothesizing that it was not strictly enforced at all levels of the grammar. Furthermore, its specific application was constrained and informed by considerations of morpheme boundaries. This is a well-justified assumption based on the very nature of PIE morphology, in which morphemes were generally monosyllabic, and diereses (adjacent vocalic nuclei) were prohibited. That morphology influences syllabification has been demonstrated elsewhere, for example in Eddington, Treiman & Elzinga (2013:33-54), which found that speakers of American English tended to syllabify consonant clusters in accordance with morpheme boundaries (where possible).[195] For example, the existence of a morpheme boundary before a medial consonant in American English favors $_\sigma$[C syllabification, while a boundary after a consonant favors C]$_\sigma$ syllabification.

Morphemes in PIE tended to have particular phonological shapes. For example, the minimal PIE root shape was CVC (all verbal and nominal roots were monosyllabic, characterized by a single medial vowel and at least one sonorant or obstruent in the onset and

[195] Compare *mistake* and *miss-take*.

coda); for example, **ser-* 'seize,'[196] **pekʷ-* 'cook,'[197] **kʷer-* 'cut,'[198] **dʰeu̯-* 'run.'[199] More complex roots added either a consonant to the coda (CVCC), e.g. **serp-* 'crawl,'[200] **pesd-* 'fart,' or to the onset (CCVC), e.g. **smei̯-* 'laugh,'[201] **pleh*$_1$- 'to be full.' Up to three consonants for the onset are found in roots reconstructible in the LIV^2 (e.g. **pster-* 'sneeze'[202]), while only two (with rare exceptions[203]) are found in the coda. Quite a few roots are of the shape CCVCC, thus **stei̯gʰ-* 'climb'[204] with a coda RC). No roots of the shape CV or VC are reconstructible;[205] e.g. †*se-* or †*et-*.[206]

To the root were added primarily suffixes of various kinds which did not have as strict phonotactic constraints as roots, though there were definite tendencies. The monosyllabic requirement characteristic of roots is followed nearly as closely in suffixes, though quite a few lacked nuclei (and were therefore not syllables), and a select few were disyllabic (unlike roots). An argument could further be made that all cases of disyllabic suffixes were simply underlyingly suffix + theme vowel. Thus, for example, while the comparative **-tere/o-* and the causative suffix **-éi̯e/o-* are disyllabic from a synchronic standpoint, they may also be decomposed as suffix + thematic **-e/o-*. Additionally, those suffixes that had syllabic nuclei frequently also had a single consonant in their onset, for example, the present suffix **-i̯é/ó-*, passive participle **-tó-*,

---

[196] LIV^2 535.

[197] LIV^2 421.

[198] LIV^2 350.

[199] LIV^2 128.

[200] LIV^2 536.

[201] LIV^2 568.

[202] LIV^2 446.

[203] The following LIV^2 roots are reconstructed with codas consisting of three consonants: **u̯elh*$_1$*bh-, *ĝhei̯sd-, *h*$_2$*ei̯sd-, *spherh*$_2$*g-, *dhei̯Hgʷ-, *meu̯sH-, *TerKh*$_2$*-, *mei̯kh*$_2$*-, *peh*$_3$*lH-, *rei̯k*$^{(u)}$*h*$_2$*-, *h*$_1$*ei̯sh*$_2$*-, *mei̯th*$_2$*-, *g*$^{(u)}$*renth*$_2$*-, *preu̯th*$_2$*-, *stelh*$_2$*k-, *bhrei̯Hk-*. These exceptions will be discussed later.

[204] LIV^2 593.

[205] As noted, this applies only to verbal and nominal formations. No such restrictions have been observed for other categories of PIE words.

[206] Some view the automatic assumption of **h*$_1$*e* for roots such as **h*$_1$*es-* 'to be' as unwarranted.

Caland adjectives in *-*ro*-, 1pl. desinence *-*me*(*n*). Significantly less frequent are suffixes with two consonants in the onset, e.g. presents in *-*sk̂é/ó*- and instrument nouns in *-*tlo*- and *-*tro*-.

The distribution detailed above entailed that a /VCCV/ sequence involved a morpheme boundary between two morphemes. Since all roots in PIE had codas, the most common morpheme boundary in a /VCCV/ would have been between both consonants, the first being a coda of a root and the second an onset of the suffix (e.g. *h_1*es-tu* 'let it be' > Ved. *ástu*, *$\underset{\cdot}{u}$*id-mé*(-) > Gk. (ϝ)ἴδμεν 'we know'). This means that the syllable boundary in Hermann's cases frequently coincided with a morpheme boundary, leading to the conclusion that PIE syllabification was not only informed by phonotactic constraints, but also by speakers' knowledge of morpheme boundaries. This fact led Byrd to qualify the principle of onset maximization by hypothesizing that it was restricted to within a given morpheme boundary. This prevents /$h_1$es-tu/ and /$\underset{\cdot}{u}$id-me/ from being syllabified as †[h_1é]$_\sigma$[stu]$_\sigma$ and †[$\underset{\cdot}{u}$i]$_\sigma$[dmé]$_\sigma$, respectively, despite the fact that #[st- and #[dm- are legal word-initial onsets. A revised principle of onset maximization is given below.

(36) GENERAL PRINCIPLE OF PIE SYLLABIFICATION (Byrd 2010:117)
Maximize onsets within a given morpheme at the stem level. Avoidance of marked sequences may change this formulation later in the derivation.

The first part of the principle dictates that onset maximization is to occur in the initial syllabification of a form, with the restriction that this cannot be made across morpheme boundaries. As was shown, this accounts for the coincidence of morpheme and syllable boundaries in /VCCV/ sequences. This is formalized by Byrd with the postulation of a constraint ALIGN, which dictates that every morpheme boundary must coincide with a syllable boundary. The same constraint may also have played a role determining the initial syllabification that was instrumental in the metathesis of /h_2e$\underset{\cdot}{u}$g-s-e-ti/ → [$h_2\underset{\cdot}{u}$ek]$_\sigma$[se]$_\sigma$[ti]$_\sigma$ (cf. Homeric Gk. ἀ(ϝ)έξομαι).

On this view, the superheavy syllable [h_2e$\underset{\cdot}{u}$k]$_\sigma$ (from the root **h₂eug-*) may have been prevented from syllabifying as †[h_2e$\underset{\cdot}{u}$]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$ (in accordance with onset maximization) thanks to ALIGN. *Medial* superheavy syllables were nevertheless avoided in PIE, as demonstrated

by Byrd's (2010:86) analysis of compensatory lengthening in word-final *$\underline{u}$*éd-or-h*$_2$ 'waters' / $\underline{u}$édorh$_2$/ → [$\underline{u}$é]$_\sigma$[dōr]$_\sigma$ (> Hitt. *$\underline{u}$idār*), vs. its avoidance in medial syllables: **ĝenh*$_2$*-trih*$_2$ / ĝenh$_2$trih$_2$/ → †[ĝēn]$_\sigma$[trih$_2$]$_\sigma$ (Ved. *jánitrī-* 'bearer, mother,' with laryngeal epenthesis instead of compensatory lengthening). Metathesis would then be triggered thanks to the ranking *SUPERHEAVY ≫ LINEARITY (a faithfulness constraint requiring that the sequence of output segments match the order of the input segments). The addition of these constraints to those of Kobayashi's would have to produce the following ranking:

(37) MODIFIED CONSTRAINT RANKING FOR METATHESIS
ONSET ≫ ALIGN, *SUPERHEAVY ≫ LINEARITY ≫ HNUC ≫ ALIGNNUC

This ranking is justified as follows: ONSET ≫ ALIGN because **b*^{h}*er-e-ti* 'carries' → [b^{h}e]$_\sigma$[re]$_\sigma$[ti]$_\sigma$, not †[b^{h}er]$_\sigma$[e]$_\sigma$[ti]$_\sigma$. *SUPERHEAVY ≫ LINEARITY based on the assumptions of this analysis. Note that LINEARITY also must outrank ALIGNNUC, because **h*$_1$*es-ti* 'is' → [h$_1$es]$_\sigma$[ti]$_\sigma$, not †[h$_1$se]$_\sigma$[ti]$_\sigma$. The following tableau illustrates the possible outcomes:

(38) PIE **h*$_2$*e$\underline{u}$g-s-e-ti* (*SUPERHEAVY)

/h$_2$e$\underline{u}$gseti/	ONSET	ALIGN	*SUPERHEAVY	LINEARITY	HNUC	ALIGNNUC
a. [h$_2$e$\underline{u}$]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$		*!				*
b. [h$_2$e$\underline{u}$k]$_\sigma$[$\underline{s}$]$_\sigma$[e]$_\sigma$[ti]$_\sigma$	*!		*		*	*
c. [h$_2$e$\underline{u}$k]$_\sigma$[se]$_\sigma$[ti]$_\sigma$			*!			*
d. [h$_2$e]$_\sigma$[u]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$	*!	*			*	
e. [h$_2$$\underline{u}$e]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$		*!				
f. ☞ [h$_2$$\underline{u}$ek]$_\sigma$[se]$_\sigma$[ti]$_\sigma$				*		*

Candidate [h$_2$e$\underline{u}$]$_\sigma$[kse]$_\sigma$[ti]$_\sigma$ is avoided because the highly ranked ALIGN requires morpheme boundaries to match syllable boundaries. Note, however, that the particular definition of ALIGN used is one in which a violation is *only* incurred if a syllable boundary in the output intersects a

morpheme. The morpheme *-s-* was fairly unique among PIE suffixes (as discussed above) in that it did not possess a syllabifiable nucleus, and hence had to be adjoined to a neighboring syllable. Candidate $[h_2e\underline{u}k]_\sigma[\underline{s}]_\sigma[e]_\sigma[ti]_\sigma$ fails for this exact reason. Next, candidate $[h_2e\underline{u}k]_\sigma[se]_\sigma[ti]_\sigma$, although satisfying ALIGN (under our particular definition), is itself not optimal, due to the violation of *SUPERHEAVY. The winning option $[h_2\underline{u}ek]_\sigma[se]_\sigma[ti]_\sigma$ satisfies both *SUPERHEAVY and ALIGN, despite violating lower ranked ALIGNNUC and LINEARITY.

Unfortunately, this grammar is too powerful, as it predicts that *every* superheavy syllable must undergo metathesis. This was clearly not the case in PIE, demonstrated no less by reconstructible nominal derivatives built to the same root (!): **h₂eu̯g-men-* /$h_2$eu̯g-men-/ → $[h_2e\underline{u}g]_\sigma$[men-]$_\sigma$ (not †$[h_2\underline{u}eg]_\sigma$[men-]$_\sigma$), cf. Lat. *augmen*, *-inis*, Lith. *augmuõ* 'growth.' There is clearly something unique to the morphophonology of the *s*-formant that triggered metathesis, and thus it likely preferable to look for a motivation behind this metathesis that is different than the avoidance of a superheavy syllable. Such a solution should be in harmony with the concepts developed thus far. In particular, the derivational stages of **h₂eu̯g-s-*, **h₂elk-s-*, etc. may warrant the hypothesis that, at an earlier stage in the grammar's derivation, *-s-* was underlyingly co-syllabified with its root, thanks to morphology. Thus, we may perhaps theorize that it was a resulting illegal coda that triggered metathesis, and not the avoidance of a superheavy syllable. Such a modified sequence would then have subsequently been resyllabified as additional morphemes were added in the derivation. The theoretical concept of multiple phonological strata, formalized in Stratal Optimality Theory, was adopted by Byrd (2010) to explain a number of morphologically driven processes, among them, Sievers' law, as well as Schindler's exceptions (nasal-infix presents and accusatives of the type *-im*, *-um*, *-r̥m*). The same framework will be adopted in the analysis in the following sections.

5.7 Stratal Optimality Theory

The second part of Byrd's formulation (GENERAL PRINCIPLE OF PIE SYLLABIFICATION) predicts that the initial syllabification may be subsequently modified at a later stage in the morphological derivational process, influenced by altered morphology and/or a different constraint ranking.

For example, nasal-infix presents like Ved. *yuñjánti* 'they yoke' /i̯ u̯ngenti̯/ → [i̯un]$_\sigma$[gen]$_\sigma$[ti]$_\sigma$ directly contradict the Ved. example *śvábhis* discussed above (/k̂ u̯nbʰi̯s/ → [ku̯n̥]$_\sigma$[bʰis]$_\sigma$). The similar phonetic environments (CVRC sequences), yet different syllabifications mean that the distinction must have been driven by differences of morphology in some fashion. Byrd (2010:152) hypothesized that the insertion of the nasal-infix during the derivational process was phonologically driven by a desire to not alter the initial syllabification of the stem (sans **-ne/n-*). Thus the initial syllabification produced by the root **i̯eu̯g-* in zero-grade ([i̯ug]$_\sigma$) was maintained following the insertion of the nasal-infix.

The hypothesis that the phonological 'cycle' may be applied multiple times during a morphological derivation has been proposed in various iterations well before the introduction of OT. A modified version of what is called Stratal Optimality Theory[207] is employed by Byrd in his dissertation to account for the phenomena described above. Chief among its advantages over traditional OT is its ability to account for the phenomenon of opacity, a process in which the original environment for a phonological rule has subsequently been eliminated by a later, unrelated phonological rule.

For example, Bermúdez-Otero (2003) demonstrates that a stratal OT approach is able to account for the well-known process of Canadian raising in the minimal pair *writing* [ɹəɪɾɪŋ] ~ *riding* [ɹaɪɾɪŋ].

(39) OPACITY IN CANADIAN RAISING (Bermúdez-Otero 2003:7)

UR	#ɹaɪtɪŋ#	'writing'	#ɹaɪdɪŋ#	'riding'
Raising	ɹəɪtɪŋ		—	
Flapping	ɹəɪɾɪŋ		ɹaɪɾɪŋ	
PR	[ɹəɪɾɪŋ]		[ɹaɪɾɪŋ]	

The synchronic (and sequential) application of these two phonological processes demonstrates that the operation of constraints had to occur in phases. Vowel raising before voiceless consonants (triggered by particular constraints) had to occur in an initial, separate phase in order

[207] Bermúdez-Otero, forthcoming.

the minimal pair ‘writing’ ~ ‘riding’ to be preserved, despite subsequent flapping, which erased the environment originally responsible for vowel raising. The specific level in which the constraint ranking caused vowel raising may be determined by examining the following distribution:

(40) CANADIAN RAISING EXCEPTIONS (BERMÚDEZ-OTERO 2003:9)

a. Raising does not apply at the phrasal level:

i. [láɪfəɹmi] *lie for me*

ii. [ləɪfəɹ] *lifer*

b. Raising does not apply at the word level:

i. [áɪfʊl] *eyeful*

ii. [əɪfəl] *Eiffel*

In the examples above, one may infer that vowel raising occurred at a high stage in the morphological derivation, since it is unexpectedly missing when followed by certain morphemes. We may deduce that Canadian raising must have occurred at the stem level (and not the phrasal or word level). Note that this analysis concludes that certain derivational suffixes were added later, while others were attached earlier in the grammar: cf. *-er*: [ləɪfəɹ] *lifer* vs. *-ful*: [áɪfʊl] *eyeful*. A similar scenario underlies the differences (as shown above) between the syllabification of Ved. *śvábhis* ‘dogs’ (PIE /k̂u̯nbʰi̯s/ → [k̂u̯n̥]$_\sigma$[bʰis]$_\sigma$) vs. nasal-infix presents like Ved. *yuñjánti* ‘they yoke’ (PIE /i̯u̯ngenti̯/ → [i̯un]$_\sigma$[gén]$_\sigma$[ti]$_\sigma$).

It will likewise be argued that instantiations of metathesis of the type /h$_2$eu̯gseti/ → [h$_2$u̯ek]$_\sigma$[se]$_\sigma$[ti]$_\sigma$ are driven by specific constraint rankings early in the derivation (the STEM level) that have become opaque in later levels due their subsequent reordering. This dissertation will employ the same three levels used by Byrd (2010), namely, STEM, WORD, and POSTLEXICAL. Each introduces (or reintroduces) a phonological cycle with a unique constraint hierarchy, such that the syllabification of a particular form may be altered during the derivational process from STEM > WORD > POSTLEXICAL. At the STEM level, although an initial syllabification is produced, the sequence is not actually pronounceable, since it lacks inflectional

morphology. At the WORD level, inflectional morphemes are added (possibly also some derivational morphemes, as demonstrated above), while at the POSTLEXICAL level, phonological rules are applied without regard to morphology. The influence of morphology thus varies depending on the stratum, and this factor, together with the unique constraint hierarchy in each level, may alter syllabification during the course of the entire phonological derivation.

5.8 Deriving /CeRC + s + E/

The analysis pursued below will take /$h_2$eu̯g+s/ (root + suffix) as the starting point for the derivation of /$h_2$eu̯g+s+e-ti/. At the STEM level, then, the relevant constraint ranking will produce an optimal outcome from its input, which is not the entire word. Thus the thematic vowel *-e/o-*, on this view, is treated more like a desinence, which is linked to a personal ending, than a derivational morpheme (which is reasonable from the standpoint of Proto-Indo-European morphology, given that its vowel color is determined by the ending paired with it, e.g. 3sg. *-e-ti* vs. 3pl. *-o-nti*). Additionally, the introduction of a new constraint against an illegal coda is required in order to drive metathesis. Since, as was shown above, the DECOMPOSITION THEOREM allows the coda u̯ks]$_\sigma$ (as well as lks]$_\sigma$ and i̯k̂s]$_\sigma$), the particular 'illegality' of the coda must be due to the number of its consonants, and not their sequence. In other words, the coda -u̯ks]$_\sigma$, allowed according to the DT, must have nevertheless been illegal due to the fact that it consisted of more than two consonants.

Byrd's (2010) detailed study of PIE phonotactics and various phonological processes led him to posit a maximum (medial) syllable template (MST)[208] for the parent language consisting of no more than two consonants in the onset and coda each (CCVCC). The PIE syllable was further governed by the SONORITY SEQUENCING PRINCIPLE (SSP), a common markedness constraint in languages that required that a syllable's consonants be of increasing sonority relative to their proximity to the nucleus. According to Byrd, the syllable onset could violate the SSP, but not the coda. MST was an undominated constraint responsible for the following phonological conspiracies:

[208] In Byrd (2010:107), the term MAXST was employed, now since updated to MST in Byrd (2015).

(41) MST VIOLATIONS (BYRD 2010:149-150)

a. Hackstein's Law: A /CHCC/ sequence, syllabified as CH$CC, incurred an SSP violation (in the coda) which resulted in laryngeal deletion: C$CC.

b. The *métron*-rule: PIE **méd-tro-*, syllabified as [mét]$_\sigma$[tro]$_\sigma$, could not undergo *s*-epenthesis (required for geminates) because of a MST violation in the resulting onset (†[mét]$_\sigma$[stro]$_\sigma$). This caused deletion of the final root consonant: [mé]$_\sigma$[tro]$_\sigma$ > Gk. μέτρον.

c. Laryngeal deletion vs. epenthesis in the oblique cases of **d^{h}ugh$_2$-tr-* 'daughter' and **ph$_2$-tr-* 'father': Both processes are driven by MST violations that result in [d^{h}uk]$_\sigma$[trés]$_\sigma$ and [pəh$_2$]$_\sigma$[trés]$_\sigma$ (nom.pl.). As can be seen, consonant deletion, where possible, was preferred over epenthesis.

d. Schwa secundum: A word like **k$^{\underline{u}}$t̯u̯ór* 'four' incurred a MST violation that was fixed by epenthesis [k$^{\underline{u}}$ə]$_\sigma$[t̯u̯ór]$_\sigma$ > Lat. *quattuor*.

As can be seen, violations of the SSP were clearly prohibited in medial codas in PIE. However, our analysis would require an SSP violation at the STEM level in order to both trigger and carry out metathesis. While rare, SSP coda violations (in medial syllables) do occur in certain languages, cf. perhaps Engl. *dumpster*. That PIE ultimately prohibited any such sequences from surfacing in the phonological representation is not in dispute, the question, however is whether or not evidence (or after-effects) of syllabified medial codas violating the SSP can be detected. In other words, should we expect any differences in the surface representation if the constraint against SSP violations was not equally high at all levels in the grammar (i.e. STEM, WORD, and POSTLEXICAL)?

The analysis undertaken above has established that a superheavy syllable was not the motivation for metathesis, nor of course was it due to the nature of the segments in the codas themselves, which are permitted by the DT. Similarily excluded is cross-linguistically common liquid metathesis, which — although it could be an option (in principle) for **h$_2$lékseti* — is not available for **h$_2$u̯ékseti* or **mi̯éḱseti*. Perhaps, then, the very fact that metathesis has occurred

may be taken as indirect evidence that *-s-* was cosyllabified with the root at an earlier stage in the grammar, despite an SSP violation. This would be a case of phonological opacity similar to the others discussed earlier. We may perhaps hypothesize that the *-s-* was syllabified at the STEM level because at that point in the grammar, it was actually located at the edge of the stem. Word-medial segments that cannot be syllabified due to SSP violations are deleted by a process called STRAY ERASURE. This occurs because the segment cannot be anchored to any higher phonological structure. However, segments at word's edge have such an option, allowing them to remain extrasyllabic. At the earliest derivational stage (the STEM level), the *-s-* would be located in exactly such a position because no additional morphology would be present.

This dissertation will therefore operate with the assumption that SSP violations, while strictly prohibited in later strata, were not as highly marked at the STEM level.[209] The SSP component will be decoupled from Byrd's constraint MST, with the SSP itself formalized by a separate constraint (SSP). The ranking MST ≫ LINEARITY ≫ SSP must be followed, since a coda syllabified with three consonants did not 'fix' the SSP violation, upon having undergone metathesis. This ranking will also screen out, or prevent, metathesis in the stem level derivation of PIE **d*^{h}*ugh*$_2$*ter-* 'daughter' ([d^{h}ugh$_2$]$_\sigma$).[210] Subsequent stray erasure or epenthesis (depending on **d*^{h}*ugh*$_2$*ter-* vs. **d*^{h}*ugh*$_2$*tr-*) will occur in a later level, due to the reranking of constraints. The following tableau illustrates the outcomes:

[209] Note that Byrd's (2010:37[71]) dissertation operated with the assumption that sonority plateaus counted as SSP violations. There is, however, cross-linguistic evidence that sonority reversals (such as VCR]$_\sigma$, where C = obstruent) are generally treated as more marked structures than sonority plateaus (sequences of two sonorants or two obstruents). Morelli (1999) argues that it is better work with a more finely-grained constraint structure. Thus, she employs two constraints, *PLATEAU and *REVERSAL, in place of SSP. Of course, the type of violations incurred by STEM level [h$_2$u̯eks]$_\sigma$, [h$_2$leks]$_\sigma$ and [mi̯e̯ks]$_\sigma$ would be violations of *REVERSAL, but not *PLATEAU, according to Morelli.

[210] Note that the morpheme boundary **dhugh*$_2$*-ter-* is assumed here, which may or may not have been accurate in the earliest stage of the proto-language (another option is **-h*$_2$*ter-*). However, it is reasonable to think that speakers would have been informed by the morphology of the productive derivational morpheme *-ter-* in deriving kinship terms, sooner or later in the history of the language.

(42) STEM LEVEL */h$_2$eu̯g + s/ ‘grow’

/h$_2$eu̯g + s/	MST	ONSET	ALIGN	LINEARITY	HNUC	ALIGNNUC	SSP
a. [h$_2$eu̯k]$_\sigma$[s̥]$_\sigma$		*!			*		
b. [h$_2$eu̯]$_\sigma$[ks̥]$_\sigma$			*!		*	*	
c. [h$_2$eu̯ks]$_\sigma$	*!					*	*
d. [h$_2$e]$_\sigma$[uks]$_\sigma$		*!	*		*		*
e. ☞ [h$_2$u̯eks]$_\sigma$				*		*	*

Candidate (e) wins (unlike candidate (c), [h$_2$eu̯ks]$_\sigma$) because it avoids a fatal violation of CC]$_\sigma$, which prohibited codas of more than two consonant. Conversely, metathesis is avoided in the STEM level for PIE **dhugh$_2$ter-* because there is no violation of MST.

(43) STEM LEVEL */d^{h}ugh$_2$ + ter/ ‘daughter’

/d^{h}ugh$_2$ + ter/	MST	ONSET	ALIGN	LINEARITY	HNUC	ALIGNNUC	SSP
a. [dhug]$_\sigma$[h̥$_2$]$_\sigma$[ter]$_\sigma$		*!	*		*		
b. [d^{h}u]$_\sigma$[gh̥$_2$]$_\sigma$[ter]$_\sigma$			*!		*		
c. [d^{h}g^{h}uh$_2$]$_\sigma$[ter]$_\sigma$				*!		*	*
d. ☞ [d^{h}ug^{h}h$_2$]$_\sigma$[ter]$_\sigma$						*	*

At the next stage in the derivation (WORD level), the desinence is added to the form. A highly ranked faithfulness constraint FAITH(σ) (do not alter the syllabification of the input) ensures that superheavy syllables are not altered before they undergo Sievers’ law. This is hypothesized by Byrd (2010:123) to have occurred at the POSTLEXICAL level, based on the arguments of Ringe (2006:120), who saw it as a kind of surface filter, and not a fossilized phonological rule (as might be expected of phenomena originating at the STEM or WORD levels). Sievers’ law is largely limited to Indic and Germanic, but appears to be inherited (with modifications) as a living and ongoing process in these languages.

At the same level, however, SSP now outranks other constraints, including ALIGN and FAITH(σ). This insures that cases of metathesis are resyllabified so as to satisfy the SSP. Examples like Ved. *mátsya-*, (with an SSP violation) are also resyllabified as [mát]$_\sigma$[syas]$_\sigma$, which prevents Sievers' law from operating on them at the POSTLEXICAL level (†*mátsiya-*), since the application of epenthesis (according to Byrd) was driven by a combination of a violation of *SUPERHEAVY *and* an avoidance of complex onsets at this level. This is in accord with the data from the daughter languages, which reveal that the conditions for Sievers' law as being restricted to suffixes with simple onsets (-RV-), when followed by a superheavy syllable. The case of **d^{h}ugh$_2$ter-*, however, must be resyllabified, as that would only result in another SSP violation. Therefore, it either underwent deletion in the oblique or caused epenthesis in the strong cases (oblique /[d^{h}ugh$_2$]$_\sigma$[ter]$_\sigma$ + es/ → [d^{h}uk]$_\sigma$[trés]$_\sigma$ vs. strong stem /[d^{h}ugh$_2$]$_\sigma$[ter]$_\sigma$ + s/ → [d^{h}u]$_\sigma$[gəh$_2$]$_\sigma$[ters]$_\sigma$).

The crucial constraint ranking for the WORD level is as follows:

(44) WORD LEVEL CONSTRAINT RANKING

MST, SSP ≫ FAITH(σ) ≫ ALIGN ≫ *SUPERHEAVY, ONSET

SSP is now undominated together with MST, which triggers resyllabification in the forms discussed above. Next, FAITH(σ) ≫ ALIGN insures that the addition of the nasal-infix (or accusatives to **i-*, **u-*, and **-r-*stems) does not alter the syllabification of the input.[211] Finally, ALIGN ≫ *SUPERHEAVY, because Sievers' law was not applied at this level. The following tableau illustrates the outcomes:

(45) WORD LEVEL /[h$_2$u̯eks]$_\sigma$ + e-ti/ 'grow'

/[h$_2$u̯eks]$_\sigma$ + e-ti/	MST	SSP	FAITH(σ)	ONSET	ALIGN	*SUPERHEAVY
a. [h$_2$u̯eks]$_\sigma$[e]$_\sigma$[ti]$_\sigma$		*!		*		*
b. ☞ [h$_2$u̯ek]$_\sigma$[se]$_\sigma$[ti]$_\sigma$			*		*	

[211] Byrd (2010:152) admits that is it odd that the nasal-infix should be added at the WORD level, and not the STEM level. However, as we have seen, there is evidence that certain derivational morphology may be added at later levels.

The resyllabification was undertaken at the WORD level, thereby erasing the original conditions for metathesis. This survives on in the heterosyllabification evident in the daughter languages, cf. Gk ἀ(ϝ)έξομαι [a]$_{\sigma}$[u̯ék]$_{\sigma}$[so]$_{\sigma}$[mai]$_{\sigma}$.

5.9 Metathesis in the wider (P)IE context

There are two other notable cases of metathesis reconstructible for Proto-Indo-European. One concerns roots of the shape C*e*H-*i*- and C*e*H-*u*- in zero-grade formations, where metathesis of the laryngeal and high vowel is observed to have occurred, cf. **peh*$_3$*-i-* 'drink' : **ph*$_3$*i-* > **pih*$_3$- (Ved. *pītá-* 'having been drunk,' OCS *pitъ* 'drank' < **pih*$_3$*-tó-*). The other case is a famous univerbation of the root noun **k̂erd-* 'heart' and the verb **d*^{h}*eh*$_1$- 'place, set' seen in Ved. *śraddhā́-*, Lat. *crēdō* 'trust.' Finally, as already was mentioned in this chapter, Indic appears to feature somewhat regular *r*-metathesis in certain forms, cf. aor. *adrākṣīt* vs. perf. *dadárśa* 'see.' How are we to view these phenomena in light of the previous discussion? Is the mechanism adopted as the driving mechanism for the metathesis described above the same motivating factor in the univerbation of **k̂erd-* and **d*^{h}*eh*$_1$-? And is there any continuity between that metathesis and the one observed in Indic? These questions will be the focus of the remainder of this chapter.

5.9.1 CUH sequences

A number of verbal roots feature the addition of an element *-i-* or *-u-*, whose original function is usually considered to have been in forming some type of presents in PIE. The classic example is **peh*$_3$*-i-*[212] whose *-i-* appears, for example, in Ved. *pāyáyati* 'drinks. Similarily **keh*$_2$*-u-*[213] > Gk. καίω 'kindle' (cf. ἔκαυσα). The zero-grades of these roots, however, feature laryngeal metathesis: CHU̯- > CUH-, CUH-. The long vowel of Ved. *pītá-* 'having been drunk' reveals the metathesized laryngeal (< **pih*$_3$*-tó-*), as does that of Lith. *kūlės* 'bunt' (< **kuh*$_2$-). There must therefore have been something marked about #CH onsets, though, as pointed out by Byrd

[212] LIV^2 462; IEW 839-40.

[213] LIV^2 345; IEW 595.

(2010:59), one or two roots may have had such shapes, e.g. (*(*s*)$g^{\underline{u}h}h_2el$- 'tumble,' and we may also reconstruct desinences like 2sg. perf. -th_2e.

What does this type of metathesis reveal about the ranking of LINEARITY (against metathesis) among other phonological 'fixes,' namely, epenthesis (violation of DEP-V) and deletion (violation of MAX-C)? In the case of WORD level *d^hugh_2tres, deletion was preferred to epenthesis, meaning DEP-V ≫ MAX-C (/d^hugh_2tres/ → [d^huk]$_\sigma$[trés]$_\sigma$, not †[d^hug]$_\sigma$[h_2ə]$_\sigma$[trés]$_\sigma$). However, in order to account for Sievers' law at the POSTLEXICAL level, Byrd (2010:134) was forced to reverse the order of these two constraints to MAX-C ≫ DEP-V, allowing vowel epenthesis to be carried out. What was the ranking of DEP-V and MAX-C at the STEM level, and where would LINEARITY fit among them?

Neither epenthesis, nor consonant deletion was carried out in onsets of the type #CHV (i.e. no epenthesis #[Cə]$_\sigma$[HV]$_\sigma$ or laryngeal deletion #[CV]$_\sigma$). This is significant, because both were avoided *despite* the fact that the resulting structures would have been otherwise well-formed. The same is true of STEM level *$h_2e\underset{\wedge}{\underline{u}}k$-*s*. The tableaux below give the outcomes:

(46) STEM LEVEL /$ph_3\underset{.}{\underline{i}}$ + to/ 'having drunk'

/$ph_3\underset{.}{\underline{i}}$ + to/	#[CH	ALIGN	DEP-V	MAX-C	LINEARITY	SSP
a. [ph_3i]$_\sigma$[to]$_\sigma$	*!					
b. [pə]$_\sigma$[h_3i]$_\sigma$[to]$_\sigma$		*!	*			
c. [pi]$_\sigma$[to]$_\sigma$				*!		
d. ☞ [pih_3]$_\sigma$[to]$_\sigma$					*	

(47) STEM LEVEL /$h_2eu̯k$ + s/ ‘grow’[214]

/$h_2eu̯g$ + s/	MST	ALIGN	DEP-V	MAX-C	LINEARITY	SSP
a. [$h_2eu̯ks]_\sigma$	*!					*
b. [$h_2eu̯]_\sigma[kəs]_\sigma$		*!	*			
c. [$h_2eu̯s]_\sigma$				*!		
d. ☞ [$h_2u̯eks]_\sigma$					*	*

In the tableaux above, the input structures incurring fatal violations are the sequences #[CH and CCC]$_\sigma$, respectively. Among the possible solutions, both consonant deletion and epenthesis make the resulting structures better formed in some ways than metathesis. Epenthesis results in cross-linguistically well-formed CV syllables in the case of [pə]$_\sigma$[h$_3$i]$_\sigma$[to]$_\sigma$ and syllables with simple codas and onsets in the case of [$h_2eu̯]_\sigma[kəs]_\sigma$. Similarily, deletion would give the same CV structure to [pi]$_\sigma$[to]$_\sigma$, while [$h_2eu̯s]_\sigma$ is no less well-formed than the actual outcome, [$h_2u̯eks]_\sigma$. That metathesis was nevertheless preferred to these structurally possible outcomes demonstrates clearly that LINEARITY was lower ranked than either DEP-V or MAX-C. The tentative ranking DEP-V ≫ MAX-C is adopted based on the fact that epenthesis (unlike consonant deletion) automatically incurs a violation of undominated ALIGN, which required syllabification to not break apart morphemes at the STEM level (something that seems to follow from the fact that roots and virtually all suffixes in Proto-Indo-European are both monomorphemic and monosyllabic).

5.9.2 *$\hat{k}$*erd- + *d^h*eh$_1$-

A univerbation of *$\hat{k}$*erd-* ‘heart’ and *d^heh_1-* ‘place, set’ is reconstructible on the basis of the Indo-Iranian nouns Ved. *śraddhā́-*, Av. *zrazdā-*, and the verbs Lat. *crēdō* and OIr. *creitid*, all meaning ‘trust.’ Metathesis appears to have occurred: *$\hat{k}$*erd-* > *$\hat{k}$*red-* when comparing the bare root noun, e.g. Gk. κῆρ, OPruss. *seyr* ‘heart’ < *$\hat{k}$*erd-*. The semantic development is presumed to

[214] Justification for the treatment of the plain thematic vowel of *$h_2eu̯k$ + s* as part of the WORD level (in contrast to the STEM level *$ph_3i̯$ + to*) may perhaps be granted when taking into account what seems like a tendency of speakers to view *$h_2u̯eks$-* as a separate root in its own right.

have been *'place (one's) heart on something' > 'trust.' NIL 422[25] explains the metathesis as due to an avoidance of the consonant cluster *rdzd*^{h} (with the *z* from *s*-epenthesis common to dental + dental clusters). However, on the view that the original syllabification would have been [ĉerd]$_\sigma$[zd^{h}e]$_\sigma$[d^{h}eh$_1$]$_\sigma$[ti]$_\sigma$, and not [ĉerdz]$_\sigma$[d^{h}e]$_\sigma$[d^{h}eh$_1$]$_\sigma$[ti]$_\sigma$ given the demonstrated preference in PIE for maximizing onsets, metathesis would have to be explained as being due to the avoidance of a superheavy syllable, and not an illicit consonant cluster. The coda rd]$_\sigma$ is well-formed according to the DT and $_\sigma$[zd^h must have been a licit onset in the parent language, (seen here, for example in *zrazdā-*).

Once again, then, we postulate that some underlying preference for the initial syllabification [ĉerdz]$_\sigma$[d^{h}e]$_\sigma$[d^{h}eh$_1$]$_\sigma$[ti]$_\sigma$ must have existed in order for the metathesis to have occurred. However, at face value, a morphological solution of the sort advocated previously seems impossible, since the medial sibilant here (unlike the *s*-present) is merely the expected epenthetic segment which is inserted into an illegal dental + dental cluster.

Schindler (1979:58) attempts to explain the "schwebeablaut" by appealing to the same phonological environment he pointed out for **h$_2$e̯u̯g-* ~ **hu̯eg-s-* in his review of Anttila. He suggests that an original *s*-stem *ĉred-s*, and not the root noun, was employed in the univerbation. For support, Schindler notes that root nouns are frequently paired with *s*-stems, cf. Indo-Iranian **kr̥p-* vs. Lat. *corpus* 'body,' etc. Furthermore, the tmesis of Av. *zrasca…dāṯ* (with final *-s*) would be difficult to explain otherwise. Schindler's own views (1975:259-267) on the prehistory of the Indo-European *s*-stem are reflected here, according to which the original neuter *s*-stem paradigm was of the regular proterokinetic ablaut type (thus with R(*é*)-S(*z*)-E(*z*) ~ R(*z*)-S(*é*)-E(*z*) ablaut).[215]

Stüber (2002:26-31) offers an alternative account for this univerbation and the others with **d^{h}eh$_1$-*. Av. *yaožda* 'to provide with vitality' (*yaoš…dā-* with tmesis), for example, is unlikely to go back to an *s*-stem (contra Schindler 1975) and is instead more straightforwardly taken as a genitive of the *u*-stem, i.e. *yaoš* < **h$_2$i̯éu̯-s* (Av. *āiiu-* 'life' < **h$_2$ói̯-u-*), cf. YAv. *drāoš* from *dāuru-* 'wood.' This would imply that Av. *mązdā-* 'impress onself' < **men-s d^{h}eh$_1$-* and

[215] NIL 423[25] rejects this as an unwarranted assumption. Litscher (2007) also argues against Schindler's account of *s*-stems.

zrazdā- < *k̂red-s dʰeh*$_1$- go back to acrostatic genitives of the type *nókʷ-t-* : *nékʷ-t-s* 'night,' though with *ē* ~ *e* ablaut. The occurrence of the sibilant after the first member of these univerbated compounds would therefore not be due to epenthesis (since only one compound features dental + dental clusters), nor would it be due to the fact that all three nouns must somehow have been *s*-stems. Rather, the construction with **dʰeh*$_1$- called for the genitive form of the first member.

If this is the case, then it becomes easy to motivate metathesis. The root noun **k̂erd-* in its genitive form **kérd-s* would not by itself undergo metathesis, since word final coda clusters of this sort were tolerated in PIE. However, once univerbated to **dʰeh*$_1$-, the coda of **kérd-s* would now be word-internal. The preference for syllabifying the sibilant with the onset of **dʰeh*$_1$- (thereby maximizing onsets) would be overruled by ALIGN, triggering metathesis. Notice, too, that **men-s dʰeh*$_1$- failed to undergo metathesis, arguing once again against *SUPERHEAVY being the motivating factor.

5.9.3 Indic *r*-metathesis

The clearly phonological character of the type of metathesis seen in Indic *dadárśa* ~ *drakṣyáti* was mentioned earlier in the chapter. However, there are crucial differences between it and the metathesis discussed above. Unlike with *-s* it occurs with many suffixes: futures in *-sya-*, nomina agentis *-tar-*, *s*-aorists. Secondly, it is limited to roots with medial *r*,[216] as seen from the examples below. Thirdly, it is non-existent in Avestan, as pointed out by Anttila (1969:53). In fact, most of the examples of *r*-metathesis appear to post-date the Rig-Veda itself. The following table is a selection of examples of *r*-metathesis from Indic literature:[217]

[216] An exception is *kl̥p-* 'be adapted,' cf. *klapsyate.* This verb is argued by Jamison (1983:124) as being a secondary root: a "*p*-causative" to *kr̥-* (with a "popular" *l*).

[217] Taken from Whitney 1885.

(48) INDIC *r*-METATHESIS

State I	Rig-Veda	Later Vedas	Brāhmaṇas	Epics	Sūtras
kárṣati- 'plough'	-	-	*kraṣṭum*	-	*krakṣyánt*
kálpate- 'be adapted'	-	-	*klapsyate*	-	-
tatarpa 'be pleased'	-	-	*atrapsyat*	-	-
darpayati 'rave'	-	-	*drapsyati*	-	-
dadárśa 'see'	-	*dráṣṭum*	*drakṣyáti*	-	-
párcas 'mix'	-	*aprāk*	-	-	-
mā́rṣṭi 'wipe'	-	-	*mrakṣyate*	-	-
várṣati 'rain'	-	-	-	-	*vraṣṭā́*
sasarja 'send forth'	*asrāk*	-	*asrāṭ*	-	-
sárpati 'creep'	-	-	*srapsyati*	-	-
sparśayate 'touch'			*spraṣṭā*	*asprākṣam*	

The rather late nature of this data seems to argue against inheritance from PIE. Furthermore, in many cases, non-metathesized variants are found alongside those listed above. For example, Brāhmaṇic *tarpsyati* (alongside *atrapsyat*), *darptā* (alongside *draptā*), etc. Additionally, there are roots which do not participate in metathesis at all, for example, *tarkṣyati* (from *tṛh-* 'crush').

These facts together argue for a different phonological explanation than the one advanced above. The relationship between Sievers' law in Proto-Indo-European and its fate in the daughter languages is instructive. Here, as argued by Byrd (2010:124), the law was active at the POSTLEXICAL level, where phonological rules applied without regard to morpheme boundaries. This process continue life in some fashion in the daughter languages, albeit in an altered form. In this, Byrd follows Ringe (2006:120), who argues that "[t]he reapplication of Sievers' Law is hard to understand if it was an ordered rule, fossilized within the phonology of the language but no longer operative on the postlexical phonetic level; but it makes sense if Sievers' Law was operating as a surface filter, applying to any derived input that met its structural description in much the same way as modern German obstruent devoicing."

If metathesis of *s*-extended roots were analogous to Sievers' law, then one might expect its effects to continue on through the generations in multiple daugher languages, in a manner that was not informed by considerations of morphology. This is plainly not the case. Instead, the rule itself is narrowly limited to *s*-extended roots, which appear to have been lexicalized already within PIE.

CHAPTER 6

Concluding Remarks

6.1 Further CR*e*C ~ C*e*RC alternations in secondary derivation

This dissertation has aimed to review past scholarship on the phenomenon of schwebeablaut, especially in interacting with the work of Anttila (1969), which to date is the only comprehensive treatment on the subject. A reassessment of the material admitted by Anttila has revealed that the majority of it can no longer be considered as evidence for schwebeablaut, due in part to more recent developments in etymology and sound laws. Chapters 3 and 4 in turn provided derivational accounts for the origin of the descriptive schwebeablaut featured in two major roots, **h*$_2$*u̯es-* 'become bright' and **ĝ*^{h}*i̯em-* 'winter,' which are the respective starting points for a set of forms built to stems in **h*$_2$*eu̯s-* and **ĝ*^{h}*ei̯m-*. Chapter 5 examined the phenomenon of *s*-extended verbal roots and provided a Optimality theoretic approach in order to account for the regularly observed metathesis of these formations. These forms, in their own way, also do not require the assumption of 'schwebeablaut,' as traditionally understood, since they are explained via phonological processes.

Importantly, however, there remains a small portion of cases — some addressed by Anttila, and a few others mentioned in the wider literature — whose comparanda are more etymologically sound than those screened in Chapter 2. These forms are more likely to be inherited from Proto-Indo-European, and they cannot be viewed as the product of phonological metathesis. This chapter will briefly present their evidence and pose questions for future research. While their respective explanations seem to be tied to various derivational processes in

the proto-language (as were the amphikinetic formations of Chapter 3 and 4), these are independent processes, and cannot be united under a single theory in the way that schwebeablaut presented itself. This material is thus the basis for further independent study (while allowing for the possibility that some of the formations discussed may not actually date to the proto-language).

6.2 CR*e*C → C*e*RC-*e/o-*

In this section we briefly discuss some remaining cases that are characterized by State I thematic derivatives. The LIV^2 (394[8]) proposes a phonological rule in PIE that took sequences of the shape CU̯*e*H (State II) that occurred before vowels and metathesized them to C*e*U̯H. Examples cited include **g*$^{u̯}$*i̯eh*$_3$- > **g*$^{u̯}$*ei̯h*$_3$- > Gk. βέομαι 'live' and **b*^{h}*u̯eh*$_2$- > **b*^{h}*eu̯h*$_2$- > Ved. *bhávati* 'be.' The latter example, however, is contested by some scholars (e.g. Jasanoff 1997:173-186), who consider **b*^{h}*uH-* to have been a root that appeared exclusively in the zero-grade in the parent language. While accepting the validity of PIE **g*$^{u̯}$*i̯eh*$_3$- > **g*$^{u̯}$*ei̯h*$_3$-, however, the sound law itself seems to be hindered by its typological unnaturalness. According to its formulation, speakers took an open syllable sequence $[CU̯V]_\sigma[CV]_\sigma$ (= $[g^{u̯}i̯e]_\sigma[h_3e]_\sigma$) and fashioned a closed initial syllable $[CVU̯]_\sigma[CV]_\sigma$ (= $[g^{u̯}ei̯]_\sigma[h_3e]_\sigma$) contrary to the fairly strong universal preference for open syllables. As will also be shown, there are possible counterexamples to the rule. A better explanation may be attributable to some derivational process, especially since the alternation may be observed in different phonetic environments than those originally proposed, thus, cf. *dhámati* 'blow,' which, as Gotō (1987:181) notes, is the only instantiation of **d*^{h}*emH-* (the others being State II **d*^{h}*meH-*, cf. Ved. *dhmā́tr̥-* 'smelter,' aor. *adhmāsam* 'blow'). Though he advocates a phonological solution, this example, too, is better explained (together with the above) as a kind of product of thematicization.

6.2.1 **g*$^{u̯}$*i̯eh*$_3$- 'live'

The LIV^2 (215) sets up State II **g*$^{u̯}$*i̯eh*$_3$- and notes that the State I variants tend to appear only before vowels, cf. Ved. *gáya-*, Av. *gaiia-* 'life,' Lith. *gajùs* and Old Russian *gojь* 'peace' <

*$g^{\mu}o\underset{\cdot}{i}h_3$-. Anttila's own position on this root is a bit unclear. As Schindler (1970:151) points out in his review of the dissertation on schwebeablaut, Anttila appears to doubt the status of PIE *$g^{\mu}\underset{\cdot}{i}eh_3$- on page 137, as he claims the only secure attestion of State II is Av. *jiiātu-* 'life.' However, on page 168 he then reconstructs the following developments: *$g^{\mu}\underset{\cdot}{i}eh_3$- : *$g^{\mu}ih_3$- → *$g^{\mu}e\underset{\cdot}{i}h_3$-o-*, *$g^{\mu}e\underset{\cdot}{i}h_3$-t-*, implying that *$g^{\mu}e\underset{\cdot}{i}h_3$- is secondary. In examining the other State II examples, Anttila rejects the compound form *-jiiāiti-* 'life' (following Insler (1965)), who sees it as a remodeling of *-jīti-*, influenced by *jiiātu-*, where full-grade is indeed expected. Av. *jiiātu-* probably goes back to at least Indo-Iranian, cf. Skt. *jīvā́tu-* 'food' (from **jyā́tu-*), which was itself clearly influenced by *jīvá-* and *jī́vati.*

Anttila takes no position on Gk. ζώ(ϝ)ω 'live,' which is likely derived from ζω(ϝ)ός 'alive.' One important issue regarding this Greek form, is whether or not it may actually be the regular reflex of zero-grade *$g^{\mu}ih_3$-. According to some scholars, e.g. Olsen (2009), the phonologically regular outcome of CUH sequences in Greek was C$\underset{\cdot}{\text{U}}\bar{\text{V}}$ (where $\bar{\text{V}}$ matches the triple reflex of laryngeals).[218] Phonologically, this type of 'laryngeal breaking' resembles the outcome of word-final UH# sequences (cf. Gk. ὄσσε vs. OCS *oči* 'eyes' < *h_3ek^{μ}-i-h_1), as well as more controversial word-initial #H*u* > V$\underset{\cdot}{u}$ (cf. Gk. αὔριον 'tomorrow' < *h_2us-).[219] On this view, then, a form like Gk. ζωός would be the regular reflex of zero-grade *$g^{\mu}ih_3$-$\underset{\cdot}{u}o$-, as opposed to State II *$g^{\mu}e\underset{\cdot}{i}h_3$-$\underset{\cdot}{u}o$-. Very strong comparative evidence for the adjective buttresses the sound law, cf. Skt. *jīvá-*, OCS *živъ*, Lat. *vīvus*, Lith. *gývas* 'alive' (all unambiguously zero-grade).

PIE *$g^{\mu}ih_3$-$\underset{\cdot}{u}o$- seems to have formed a verb already in the parent language, cf. Ved. *jī́vati*, Lat. *vīvō*, OPruss. *giwa*, OCS *živǫ* 'live.' In contrast, the LIV^2 reconstruction of an otherwise unattested athematic (as opposed to thematic) verb *$g^{\mu}\underset{\cdot}{i}éh_3$-u-/*$g^{\mu}ih_3$-u-ˊ is based solely on the view that Gk. ζώ(ϝ)ω must reflect a thematicized full grade *$g^{\mu}\underset{\cdot}{i}éh_3$-$\underset{\cdot}{u}$-e/o- in alternation with the thematicized zero-grade *$g^{\mu}ih_3$-$\underset{\cdot}{u}$-e/o- generalized elsewhere in IE.

Even if the sound law is accepted, however, the contrast between Av. *jiiātu-* (State II) and Ved. *gáya-*, Av. *gaiia-* 'life,' etc. (State I), makes the alternation unavoidable. The verb βέομαι 'live' is sometimes taken from *$g^{\mu}\acute{e}\underset{\cdot}{i}h_3$-e/o-*, in which case, however, the fate of the labiovelar

[218] See also 6.5.1 below on Gk. δήν, δηρός.

[219] As for #H*i*, recall that Bozzone (2013) argues that #H*i* > **hi* > Gk. ἰ-.

would be unexpected (cf. Gk. ἀ-δελφός 'brother' < *$g^{u}elb^{h}$-). One possibility is that it was influenced by the many forms in βιο-, cf. βίος, βίοτος 'life.' Another potential State I form, Arm. *keam* 'live,' has been variously analyzed; perhaps it is to be connected with Gk. βέομαι, however, the lack of palatalization would then be unexpected.

6.2.2 *$k^{u}i̯eh_1$- 'rest peacefullly'

Cognates classified by Anttila (1969:142) under State II include Av. *šāiti* (< *$šī̯āiti$) 'joy,' (also *šiiāta*- 'delight'), Old Persian *šiyāti* 'a comfortable feeling,' and Lat. *quiēs*, *-ētis* 'rest,' all reconstructible to *$k^{u}i̯eh_1$-*ti*-. Thus, this root appears to be clearly State II *$k^{u}i̯eh_1$- (LIV^2 393-394). Full-grade (State II) in Lat. *quiēscō* 'keep quiet,' on the other hand, is unexpected for a *sk̂é/ó*-present, and is likely modeled after the perfect *quiēvī* (from an old root aorist). It nevertheless goes back to a genuine old present, as is demonstrated by its comparison with Arm. *han-gčim* 'to rest' < *han-gi-č́-im* < *$sm̥$-$k^{u}ih_1$-sk̂é/ó*- (Klingenschmitt 1982:70).

The only difficulty is OCS *po-koi* 'peace' (the cognate verb is *po-čiti* 'rest' < *$k^{u}ih_1$-), as if reflecting *$k^{u}oi̯h_1$-*o*-. The schwebeabalut in causative *po-kojǫ* 'to calm' (presumably along with the matching *pokoi*) is explained by LIV^2 (394[8]) via the same laryngeal metathesis rule postulated for *$g^{u}i̯eh_3$-*e/o*- > *$g^{u}eu̯h_3$-*e/o*- > Gk. βέομαι 'live.' This rule, however, seems to be flatly contradicted by 'metathesized' *$k̂eu̯h_1$-*ro*- (> *$keu̯aro$- > Welsh *cawr* 'hero'), with preconsonantal environment. The explanation for the schwebeablaut in these forms, therefore, is likely best found in a morphological/derivational process. Given the restriction of State I entirely to Slavic, however, attributing any such process to the parent language (on the basis of OCS *pokoi*) cannot be done without caution.

6.3 Schwebeablaut and *vr̥ddhi*

Schwebeablaut has been linked to *vr̥ddhi* for much of the history of scholarship. The rationale for the rise of State I variants is similar to that of the patterns observed in the daughter languages, where full-grades are 'inserted' into a zero-grade root. The exact reason why PIE speakers seem to have confused the root structure in light of their synchronic knowledge is not entirely clear. In

the daughter languages, typically no corresponding full-grade was available to speakers, which they then remedied by the insertion of a neo full-grade. However, in the case of a word like **deiu̯-o-*, speakers would not only have had access to the zero-grade **diu̯-* of the root, but indeed a genuine full-grade as well, namely **di̯eu̯-*. Indo-European *vr̥ddhi* thus appears to have been a more straightforward process of speakers inserting a vowel (not identical to the root vowel) during the derivational process. Distinctive of this type of derivation is the fact that the inserted vowel was unaccompanied by accent. The derivative itself stood in a genitival relationship with its source, cf. **su̯éḱuro-* 'father-in-law' (Ved. *śváśura-*) → **su̯ēḱuró-* 'pertaining to one's father-in-law' > Skt. *śvāśura-* 'relating to one's father-in-law,' OHG *swāgur* 'father-in-law's son = brother-in-law' (Fortson 2010:130).

6.3.1 **di̯eu̯-* 'sky'

Anttila (1969:120) connects three roots here, **dei̯h₂-* 'gleam,' **di̯eu̯-* 'sky,' and **dei̯n-* 'day' following Benveniste's schema (**dei̯-* > **dei̯-h₂-*, **di̯-eu̯-* **dei̯-n-*); however he acknowledges schwebeablaut in only one (**di̯eu̯-* / **deiu̯-*). The *vr̥ddhi* exemplified in **di̯eu̯-* : **diu̯-* → **deiu̯-o-* is the *Paradebeispiel* of a misplaced neo-full-grade in Proto-Indo-European. The root noun **di̯eu̯-* (Ved. *dyāu-*, Gk. Zέυς, Lat. *Jū-piter*) is clearly older than the *o*-stem **deiu̯-o-* (Skt. *devá-*, Lat. *deus* (*dīvus*), Latv. *dìevs*, ON *Týr* 'god') , which is usually taken to be a thematic *vr̥ddhi*-derivative of the oblique **diu̯-*. The LIV² does not follow NIL (69) in setting up a primitive root **dei̯-*, from which the verbal root **dei̯-h₂-* 'to gleam,' and a host of other forms are supposed to have arisen. It seems that we are dealing here with an underived root noun **di̯eu̯-*, which is unrelated to **dei̯h₂-* and **dei̯n-*.[220]

6.3.2 **dʰu̯es-* 'breathe'

Anttila (1969:123) gives the following table of cognates for forms corresponding to LIV² 160 **dʰu̯es-* 'breathe':

[220] The derivational history of **di̯eu̯-* is extensively treated in Rau (2010:307-320).

(49) *$d^h\underline{u}es$- (Anttila 1969:123)

	State I	State II	
Greek	—	θεός ‘god’	
Latin	—	*bēstia* ‘beast’	
Lithuanian	*daũsos* ‘paradise’	*dvasas*, *dvasià* ‘spirit’	
Latvian	—	*dvẽsele* ‘soul’	
Russian	*duša* ‘soul’	*dvoxat’* ‘breathe’	
OCS	*duxъ* ‘breath’	—	
Germanic	**deuza*- ‘animal’	—	

Though the root is in fact solidly State II, a number of forms are now considered to not belong to this group. Lat. *bēstia* ‘beast’ would require the expected development *$d^h\underline{u}$- > *f*-, cf. *$d^h\underline{u}orom$ > *forum* (OCS *dvorъ* ‘court’).[221] Ernout-Meillet (1959:69) reads “Pas d’étymologie claire.” Gk. θεός is now taken to be from *d^hh_1s-*o*- (cf. Arm. *di-k̔* ‘gods’ < *d^heh_1s-[222] and Lat. *fēstus* ‘in honor of a god, festive’ < *d^heh_1s-*to*- ‘divine’[223]). No trace of a glide (from the putative *$d^h\underline{u}es$-) is found in Greek.

Germanic and Balto-Slavic appear to agree on a State I thematic noun (virtual *$d^he\underline{u}s$-*ó*-), reflected in OCS *duxъ* ‘breath,’ Lith. *daũsos*, *daũsios* ‘air, breath,’ and OE *dēor*, Goth. *dius* ‘wild animal’ (< Germanic **déuza*-). As seen above, parallel nominal State II forms are also attested in Lithuanian. Thus, Lith. *daũsos*, *daũsios* is paralleled by *dvasas*, *dvasià* ‘spirit.’ Interestingly, Latvian lacks State I reflexes of *$d^he\underline{u}s$-, and Slavic lacks nominal forms in State II. However, given the rather close semantic link between OCS *duxъ* ‘breath’ (better, OCS *duša* fem. ‘breath; soul’) and Lith. *daũsos* ‘breath,’ as well as OPruss. (fem.acc.) <dūsin>, <daūsin>, <doūsin> ‘soul’ justifies the reconstruction of a Proto-Balto-Slavic *$da\underline{u}s$-$\underline{i}\bar{a}$.

[221] Weiss 2015:161.

[222] Beekes 2010 I:540.

[223] Weiss 2015:75.

The next question is whether or not OE *dēor*, Goth. *dius* 'wild animal' should be viewed as a parallel innovation to Balto-Slavic, or instead as a form that should be taken back to Proto-Indo-European itself (*$d^heu̯s$-ó-). The case for inheritance would be greatly strengthened by a third comparandum, Alb. *dash* 'ram,' which, however, is equivocal. While it may indeed go back to Proto-Albanian **dauša-*, other options include *d* < *$\hat{g}^h$, cf. *dimër* 'winter' < *$\hat{g}^h$*im-*. If a genuine example, its semantic development would be closely paralleled by English *deer* < OE *dēor* 'wild beast' < PIE *$d^heu̯s$-o-* 'soul' (?). In short, should Alb. *dash* be a genuine comparandum to the Balto-Slavic and Germanic words, we may be better justified in reconstructing a *vr̥ddhi*-derivative *$d^heu̯s$-ó-* 'having breath; animal' from a root noun *d^hus-* 'breath; soul' (thus, LIV^2 160^1).

6.4 CR*e*C ~ C*e*RC alternations in secondary substantivizations

A second derivation process distinct from *vr̥ddhi*-derivatives took oxytone verbal adjectives and derived substantivized formations. The *Paradebeispiel* is *$\hat{g}n̥h_1$-tó-* (Gk. -γνητός 'born') → *$\hat{g}énh_1$-to-* > PG **kenþa-* OHG *kind* 'child.' Here, note that accent retraction accompanies the insertion of the vowel (cf. oxytonic †*kenda-*). Another example cited by Schaffner (2001:334-335) is *$mr̥$-tó-* (Ved. *mr̥tá-* 'dead') → **mér-to-* > Ved. *márta-* 'a mortal; man.' That this process could result in descriptive schwebeablaut is seen in Steer's (2015:49) citation of an adjective *$dn̥h_2$-nó-* 'built' (to State II *$demh_2$-* 'build') reflected by Doric Gk. νεο-δμᾱτος 'newly built,' which produced a substantivized *$dméh_2$-no-* seen in OAv. *dəmāna-* 'building.'

The same process appears to be at work in certain derivatives of *$\hat{k}u̯eh_1$-, discussed in Anttila (1969:141). State II *$\hat{k}u̯eh_1$-* seems to be established by Ved. *śvātrá-* (EWAia III 403 'swelling, powerful' (?); an epithet of *soma*). For zero-grade, the LIV^2 (339) connects Gk. κυέω 'be pregnant' with Skt. *śváyati* < **śuváyati* < *$\hat{k}uh_1$-éi̯e/o-*. Lat. *inciēns* 'pregnant' is most likely from *$\hat{k}uh_2$-éi̯e-* as well (via the *pius*-rule: **kūi̯ē-* > **kīi̯ē-*). Anttila analyzes the only State I verbal full grade among the cognates, Ved. *śūśávāma* (*hapax* RV I.166.14a), as an innovation à la *bhū-* : *bhávati* 'be.' The various nominal derivatives in Indic probably also contain neo-full-grades, cf. *śávas* 'strength.'

More ancient are the *ro*-stems *śū́ra-* 'hero' vs. *śávīra-* 'strong' if indeed Gaulish *Kauaros* and Middle Welsh *cawr* 'giant' (reflecting Celtic **kawaro-*) are to be connected here. Ved. *śū́ra-* is comparable with Gk. κύριος 'lord' (and even closer to Gk. ἄ-κῡρ-ος 'without authority' and OAv. *asūra-* 'powerless'; EWAia III 365). The other *ro*-formation *śávīra-*, on the other hand, is compared by Schrijver (1995:18) with Welsh *cawr* (with Proto-Celtic **keu̯aro-* > **kau̯aro-*), and reconstructed to **ḱeu̯H-ro-* (State I). Anttila suggests the possibility that Welsh *cawr* may be a borrowing from OIr. *caur*, gen. *caurad* 'hero, warrior,' which itself cannot be connected to Gaulish *Kauaros*; rather it is rather from a **karut-* preform.[224] However, Welsh *cawr* may be directly compared with a OIr. *cuar* (disyllabic) 'hero' (confusingly similar to OIr. *caur*), and perhaps also Bret. *keur-eug* 'giant salmon' and *ker-luz* 'giant pike,' according to Guyonvarc'h (1965:148), and following him, Schrijver (1995:98).

Assuming then, a Caland **ḱuh*$_1$*-ró-*, à la Toch. B *tapre* 'high' < **d*^{h}*ub*^{h}*-ró-*, Gk. ἐρυθρός 'red' < **h*$_1$*rud*^{h}*-ró-*, Ved. *ṛjrá-* 'brilliant' < **h*$_2$*ṛǵ-ró-*, its substantivized counterpart **ḱéu̯H-ro-* would account for State I *śávīra-* and Welsh *cawr*.

6.5 Miscellaneous forms

We examine here three cases that do not seem to fall into any of the categories discussed above. As with other cases, the reality of a PIE CR*e*C ~ C*e*RC alternation here depends firstly on the strength of the etymologies proposed, not all of which are equally convincing. This is not to say, therefore, that future research may not also eliminate such forms from consideration. Whatever the outcome of their analysis, however, it is clear that no theory of schwebeablaut for Proto-Indo-European is required to explain them.

6.5.1 ***du̯eh*$_2$- 'long'**

Arm. *erkar* 'long,' Gk. δήν (< **du̯ān*), δηρός, and Hitt. *tūwa* 'far' are cited by Anttila (1969:122) for State II beside OIr. *doë* 'long,' Arm. *tevem* 'remain,' OCS *davě* 'recently' (*davьnъ* 'ancient')

[224] Thurneysen (1949:51) identifies **caruth-* (= **karut-*) with the Germanic ethnonym *Harudes* (Ptolemy Χαροῦδες).

for State I. Zero-grade is found in Skt. *dūrá-* (comparative *dávīyas*, superlative *dáviṣṭha-*) 'remote, long (distance)' and Lat. *dū-dum* 'some time ago.'

An ancillary problem vis-à-vis the Hittite words is addressed by Melchert (2008:201-209). It is likely that an old root noun **dl̥éh₂-/*duh₂-és* is the source of a number of these forms, including the Hittite variants *duwān* (*parā*) 'long ago' and *tūwa* 'far.'[225] While *duwān* < **dl̥eh₂m* is regular via Stang's law, the loss of the laryngeal in *tūwa* is inexplicable, cf. expected †*tuḫḫa* (nor can the form itself reflect a metathesized **deu̯h₂-*). Among the range of solutions, one could simply taking *tūwa* as a reflex of an old endingless locative **dl̥éh₂*. Alternatively, the *ḫ*-less variant could have been regularly introduced into the paradigm via the nominative singular **dl̥éh₂-s* > **twāš*, provided the assumed root noun was still paradigmatic well into the prehistory of Hittite.

As with Gk. ζωός discussed above, the question of whether or not δήν, δηρός are the phonologically regular reflex of zero-grade **duh₂-* (as opposed to State II **dl̥eh₂-*) is significant. Also similarily (recall Skt. *jīvá-* = Gk. ζω(ϝ)ός), another word equation is at stake here: Skt. *dūrá-* and Gk. δηρός would immediately be a specific benefit of such an assumption.

The Old Irish form *doë* 'long' appears to be incorrectly glossed by Anttila as 'long,' when in fact it means '(upper) arm.' This complicates its alleged connection with the other forms. It is identified as an *nt*-stem in Thurneysen (1949:208), with acc.sg. *doit*, gen.pl. *doat*. Matasović (2009:103-104) compares *doë* to Skt. *dóṣ-* 'arm, forearm' and Latv. *pa-duse* 'armpit.'

The best (and perhaps only) cadidates for State I remain Armenian and Slavic. Arm. *erkar* 'long' is usually connected with **dl̥eh₂-*,[226] while the verb *tevem* 'remain' is seen by Kortlandt (2003:102) as being a derivative of *tev* 'duration,' though without further explanation. If so, it, together with OCS *davě* 'recently' (from **dōl̥h₂-*) and its derivative *davьnъ* 'ancient,' show State I. How the Slavic form acquired a long vowel is puzzling, assuming it belongs to the same root as the rest of the material (the semantics here are not as clear-cut). Deksen (2008:97) tentatively

[225] Note that Hitt. *duwān* < **dl̥eh₂m*, when offered together with Gk. δήν as a word equation, directly contradicts the zero-grade view outlined above.

[226] Clackson (1994:112-115) also considers the possibility that *-ar* is an inner-Armenian suffix.

suggests that the lengthened grade may have arisen due to monosyllabic lengthening. On the whole, this is one of the more tenuous cases that does not convincingly argue for inheritance.

6.5.2 *h_1reh_1- 'row'

Anttila (1969:127) points to Skt. *arítra*-, Gk. ἐρετμός 'oar,' and Skt. *aritár*-, Gk. ἐρέτης 'rower' as evidence for State I, while the Germanic forms such as OE *rōdor* 'rudder,' ON *róðr* 'rowing' are State II. ON *róa*, OE *rōwan* 'to row' are seen by him as showing a *w* root extension, but these are better explained via intervocalic glide insertion.

The prevalence of *ō* vowels in the Germanic forms (with unexpected *o*-grade in *-tro*-nouns) inclined Anttila to discount the Greek evidence and reconstruct *h_1reh_3- (on this view, the Greek full grade *ero* (< *erh_3) is analogically replaced by *ere*). However, the Germanic verb is Class VII, which features both reduplication and *ō* grade. As such, it cannot be used to determine the laryngeal of the original root, which must have been *h_1, on the testimony of Lat. *rēmus* 'oar' and Gk. ἐρέσσω 'row' (also note Mycenaean *e-re-e* /erehen/, an athematic infinitive, as if from *h_1erh_1-*sen*). Instead, the Germanic words for 'rudder' (cf. OE *rōdor*) look like later formations built to a refashioned Germanic verbal stem *rō-.

The other terms for 'oar' (except for Lat. *rēmus*) show the problematic State I, cf. Ved. *aritár*- 'rower' *arítra*-,[227] *aritā́*- 'oar,' Gk. ἐρέτης, which seem to all go back to *h_1erh_1-. Perhaps OPruss. *artwes* 'boat trip' (?), as if from *h_1orh_1-*tu*- (?), also belongs here. Schumacher (2004:530) takes OIr. *ráïd* 'row' to be from a Proto-Celtic present *$rā$-$i̯e/o$-, which looks very similar to ON *róa*, OE *rōwan.* If these indeed form an equation, they would reflect *h_1roh_1-$i̯e/o$-.

The State II (verbal) ~ State I (nominal) division established by Vedic, 1st. millennium Greek, and perhaps Old Prussian, seems to be broken by Myc. *e-re-e* (State I verb), and prevents us from reconstructing the verbal root as *h_1reh_1-. Furthermore, Lat. *rēmus* 'oar' goes the other direction as a State II noun (unless it is deverbal). The Old Latin form *triresmos* 'trireme' indicates the presence of a sibilant and has generally been taken to be from either *retsmos or *rēsmos (< *h_1reh_1smo-). However, the form's occurrence in the Columna Rostrata (CIL I^2 25)

[227] EWAia I 112 considers the possibility that *arítra*- may be derived from another verb.

compromises its potential etymological value, as this inscription is famously filled with phony archaisms that cannot be taken at face value.

6.5.3 **u̯erĝ-* 'enclose'

Skt. *vrajá-* 'fence' may be compared with Mycenaean Gk. *we-re-ke* /wreges/ 'flock,' and probably OIr. *fraig* 'interior wall' (*u̯rag-i-*)[228] to establish a Proto-Indo-European noun **u̯reĝ-o-* 'enclosure' (?).[229] Anttila's (1969:157) citation of Lith. *veržiù* 'squeeze' (alleged a State I verb), however, is probably better connected to Middle High German *erwergen* 'strangle' < **u̯érĝʰ-e/o-*. The Greek verb ἔργω 'shut in' contrasts with Homeric ἐ(ϝ)εργ- and Attic εἴργω, which seem to reflect **h₁u̯erĝ-*. If valid, however, this would directly contradict the testimony of Myc. *we-re-ke.* The other alternative is that the prothetic ἐ- is somehow secondary in Greek, allowing it to be included with the rest of the forms. In any case, it seems an alternation must be taken back to the parent language.

6.6 Conclusion

Part of the problem in this investigation has been defining schwebeablaut in a meaningful way. The purely formal description is trivial and generally accepted by all authorities, i.e. (1) that it generally involves roots consisting of three consonants, of which the medial consonant is a sonorant, and (2) that these roots appear in two guises, namely, State I C*e*RC and State II CR*e*C. The actual explanation of the phenomenon, however, has been constantly evolving, to the point that the original use of the German word *schweben* 'float' is no longer relevant,[230] even though the term *Schwebeablaut* continues to enjoy wide use in the literature (mostly as a handy way of capturing the formal facts about particular forms).

At this point we may look back and recall Weiss's (2015:77[38]) stated definition of classical schwebeablaut:

---

[228] Ossetic *æruæz* (< **u̯raza-*) 'herd (of deer),' is rather further afield in terms of semantics (Cheung 2002:163).

[229] Note also zero-grade Skt. *vr̥jána-* 'enclosure,' Av. *vərəzāna-* 'community,' Old Persian *vardana-* 'town.'

[230] See Chapter 1 for a brief history of the term.

> "Both a root of the shape CERC and a root of the shape CREC have zero-grades of the shape CR̥C. If on the basis of an ambiguous zero-grade a new full-grade is created with the ablauting vowel in the "wrong" place, this is known as *schwebeablaut*, 'floating ablaut.'"

Crucially, this dissertation has found *no positive evidence* for such a claim in Proto-Indo-European. While individual forms here and there may not be fully accounted for (cf. section 6.5 above), the overall trend is overwhelmingly against the standard formulation of schwebeablaut. Much of the material in Chapter 2, when not eliminated outright etymologically, was explained as the product of secondary processes in the daughter languages, thus, unrelated to PIE phenomena.

Elsewhere, we have argued that many of the forms explained via false back-formation are in fact clearly seen as the products of various derivational processes: in Chapter 3 and 4, the alternations are due to newly built amphikinetic formations; in 6.2, they were found in secondary thematic forms; in 6.3, as *vr̥ddhi*-derivatives; and finally, in 6.4 as substantizations of verbal adjectives.

What is more, Anttila's claim that State I is almost always secondary — largely taken from his observation that the anomalous forms tended to be derivatives of verbal roots (in State II) — has been shown to not be of descriptive value for the parent language. In fact, as was demonstrated repeatedly, not a few forms flatly contradict Anttila's theory.

Finally, investigation of C*e*RC / CR*e*C-*s* formations has similarly demonstrated that the verbal roots in question are originally State I (not State II). Schindler's (1970) suggestion that their behavior may be due to phonological processes has been confirmed and the type of metathesis underlying these forms has been shown to be parallel to that of **ĥ̂kerd* : *ĥ̂kred-s dʰeh*$_1$-.

WORKS CITED

Adams, Douglas Q. 1999. *A Dictionary of Tocharian B.* Amsterdam & Atlanta: Rodopi.

Anttila, Raimo. 1969. *Proto-Indo-European Schwebeablaut.* Berkeley & Los Angeles: University of California Press.

Aura Jorro, Francisco. 1985. *Diccionario micénico. Volumen 1.* Madrid: Consejo superior de investigaciones científicas.

Barber, Peter. 2013. *Sievers' Law and the History of Semivowel Syllabicity in Indo-European and Ancient Greek. Oxford classical monographs.* Oxford & New York: Oxford University Press.

Beekes, Robert S. P. 1969. *The Development of the Proto-Indo-European Laryngeals in Greek.* The Hague & Paris: Mouton.

———. 1979. Gav. *uzirəidyāi* and *rārəša-.* Appendix: Skt. *irayáti*, *ínakṣati*, *ānáśa*, ἐνεγκεῖν. *Münchener Studien zur Sprachwissenschaft* 38. 9-20.

———. 1995. *Comparative Indo-European Linguistics: An Introduction.* Amsterdam & Philadelphia*:* John Benjamins Publishing Company.

———. 2010. *Etymological Dictionary of Greek.* Leiden & Boston: Brill.

———. 2011. *Comparative Indo-European Linguistics: An Introduction.*

Benveniste, Émile. 1935. *Origines de la formation des noms en indo-européen.* Paris: Maisonneuve.

Bermúdez-Otero, Ricardo. 2003. The Acquisition of Phonological Opacity. In Jennifer Spenader, Anders Eriksson & Östen Dahl (eds.), *Variation within Optimality Theory: Proceedings of the Stockholm Workshop on 'Variation within Optimality Theory,'* 25-36. Stockholm: Department of Linguistics, Stockholm University.

———. Forthcoming. *Stratal Optimality Theory* (Oxford Studies in Theoretical Linguistics). Oxford & New York: Oxford University Press.

Bjorvand, Harald & Fredrik Otto Lindeman. 2000. *Våre arveord: Etymologisk ordbok.* Oslo: Novus forlag.

Blevins, Juliette & Andrew Garrett. 2004. *Phonetically Based Phonology.* Cambridge: Cambridge University Press.

Bopp, Franz. 1833. *Vergleichende Grammatik des Sanskrit, Zend, Griechischen, Lateinischen, Litthauischen, Altslawischen, Gotischen und Deutschen.* Berlin: Königliche Akademie der Wissenschaften.

Bozzone, Chiara. 2013. Initial "Yod" in Greek and the Etymology of Gk. ἵππος 'horse.' In Stephanie W. Jamison, H. Craig Melchert & Brent Vine (eds.), *Proceedings of the 24th Annual UCLA Indo-European Conference* 24. 1-26.

Brugmann, Karl. 1901. Homerisch μενοινάω und gottisch *briggan*, zwei Fälle von Wurzelangleichung. *Indogermanische Forschungen* 12. 150-8.

———. 1904. *Kurze vergleichende Grammatik der indogermanischen Sprachen.* Strassburg: Karl J. Trübner.

Brugmann, Karl & Berthold Delbrück. 1897-1916. *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*, vol. I/1-2, II/1-3. Berlin: Strassburg.

Byrd, Andrew M. 2010. *Reconstructing Indo-European Syllabification.* Los Angeles: UCLA dissertation.

———. 2015. *The Indo-European Syllable* (Brill's Studies in Indo-European Languages & Linguistics 15). Leiden & Boston: Brill.

Chantraine, Pierre. 1933. *La formation des noms in grec ancien.* Paris: Librairie Ancienne Honoré Champion.

———. 1968. *Dictionaire étymologique de la langue grecque: Histoire des mots.* Paris: Éditions Klincksieck.

Cheung, Johnny. 2002. *Studies in the Historical Development of the Ossetic Vocalism* (Beiträge zur Iranistik 21). Wiesbaden: Dr. Ludwig Reichert Verlag.

———. 2007. *Etymological Dictionary of the Iranian Verb*. Leiden & Boston: Brill.

Clackson, James. 1994. *The Linguistic Relationship between Armenian and Greek.* Oxford & Cambridge: Blackwell.

———. 2007. *Indo-European Linguistics: An Introduction.* New York: Cambridge University Press.

Clements, George Nick. 1990. The Role of the Sonority Cycle in Core Syllabification. In John Kingston & M. Beckman (eds.), *Papers in Laboratory Phonology I*, 283-333. Cambridge: Cambridge University Press.

Collinder, Björn. 1928. Studier i nordisk grammatik. *Acta Philologica Scandinavia* 3. 193-225.

Cowgill, Warren. 1965. Evidence in Greek. In Werner Winter (ed.), *Evidence for Laryngeals.* Berlin & New York: Mouton de Gruyter.

Darms, Georges. 1978. *Schwächer un Schwager. Hahn und Huhn. Die V̥rddhi-Ableitung im Germanischen.* Munich: Kitzinger.

de Vaan, Michiel. 2003. *The Avestan Vowels* (Leiden Studies in Linguistics). Leiden & Boston: Brill.

———. 2008. *Etymological Dictionary of Latin and other Italic Languages* (Leiden Indo-European Etymological Dictionary Series 7). Leiden & Boston: Brill.

Delisi, Jessica. 2013. Feature metathesis and the change of PIE *dṷ to Classical Armenian *-rk-*. *Diachronia* 30-4. 469-491.

Derksen, Rick. 2008. *Etymological Dictionary of the Slavic Inherited Lexicon* (Leiden Indo-European Etymological Dictionary Series 4). Leiden & Boston: Brill.

———. 2015. *Etymological Dictionary of the Baltic Inherited Lexicon* (Leiden Indo-European Etymological Dictionary Series 13). Leiden & Boston: Brill.

Driessen, C. Michiel. 2003. **h₂e-h₂us-o-*, the Proto-Indo-European Term for ‘gold.’ *The Journal of Indo-European Studies* 31. 347-362.

Dunkel, George E. 2014. *Lexikon der indogermanischen Partikeln un Prominalstämme* (Indogermanische Bibliothek. 2. Reihe: Wörterbücher). Heidelberg: Carl Winter Universitätsverlag.

Eddington, David. 2001. Spanish epenthesis: Formal and performance perspectives. *Studies in the Linguistic Sciences* 31:2. 33-54.

Eddington, David, Rebecca Treiman & Dirk Elzinga. 2013. Syllabification of American English: Evidence from a Large-scale Experiment, Part I. *Journal of Quantitative Linguistics* 20:1. 45-67.

Ernout, Adolf & Antoine Meillet. 1959. *Dictionnaire étymologique de la langue latin.* Paris: Librairie C. Klincksieck.

Fortson, Benjamin. 2010. *Indo-European Language and Culture: An Introduction* (2nd ed.). Chichester & Malden: Wiley-Blackwell.

Friedman, Jay. 2003. Notes on IE *$\hat{g}^{h}$i̯i̯ém- 'winter.' *Indo-European Studies Bulletin* 10-2. 1-20.

Frisk, Hjalmar. 1960. *Griechisches etymologisches Wörterbuch.* Heidelberg: Carl Winter Universitätsverlag.

Fritz, Matthias. 1998. Die urindogermanischen *s*-Stämme und die Genese des dritten Genus. In *Sprache und Kulture der Indogermanen. X Fachtagung der indogermanistischen Gesellschaft*, 255-264.

García-Ramón, José Luis. 1999. Zur Bedeutung indogermanischer Verbalwurzeln: *$h_2$nek̂- 'erreichen, reichen bis,' *$h_1$nek̂- 'erhalten, (weg)nehmen.' In Jürgen Habisreitinger, Robert Plath & Sabine Ziegler (eds.), *Gering und doch von Herzen: 25 indogermanistische Beiträge Bernhard Forssman zum 65. Geburtstag.* Wiesbaden: Dr. Ludwig Reichert Verlag.

Glare, P. G. W. 1983. *OLD: Oxford Latin Dictionary.* Oxford: Clarendon Press.

Goetze, Albrecht. 1951. On the Hittite Words for 'Year' and the Seasons and for 'Night' and 'Day.' *Language* 27-4. 467-476.

Gorbachov, Yaroslav. 2014. The origin of the Baltic inchoative in -*sta*-. *Indogermanische Forschungen* 119. 21-53.

Gotō, Toshifumi. 1987. *Die "I. Präsensklasse" im Vedischen. Untersuchung der vollstufigen thematischen Wurzelpräsentia.* Wien: Österreichischen Akademie der Wissenschaften.

Grammont, Maurice. 1933. *Traite de phonétique.* Paris: Delagrave.

Guyonvarc'h, C. 1965. Le nom des *Cavares. Ogam* 17. 147-149.

Hackstein, Olav. 1995. *Untersuchungen zu den sigmatischen Präsensstammbildungen des Tocharischen.* Göttingen: Vandenhoek & Ruprecht.

———. 2002. *Die Sprachform der homerischen Epen.* Wiesbaden: Dr. Ludwig Reichert Verlag.

Hajnal, 1992. Homerisch ἠέριος, Ἠερίβοια und ἦρι: Zur Interrelation von Wortbedeutung und Lautform. *Historische Sprachforschung* 105. 57-72.

Halla-aho, Jussi. 1999. *Problems of Proto-Slavic Historical Nominal Morphology*. Helsinki: University of Helsinki.

Hammond, Michael. 1999. *The Phonology of English: a Prosodic Optimality-Theoretic Approach.* Oxford & New York: Oxford University Press.

Hermann, Eduard. 1923. *Silbenbildung im Griechischen und in den anderen indogermanischen Sprachen.* Göttingen: Vandenhoek & Ruprecht.

Hirt, Hermann. 1900. *Der indogermanische Ablaut.* Strassburg: Karl J. Trübner.

Hock, Hans Henrich. 1991. *Principles of Historical Linguistics.* Berlin & New York: Mouton de Gruyter.

Hoffmann, Karl & Bernhard Forsmann. 2004. *Avestische Laut- und Flexionslehre* (Innsbrucker Beitrage zur Sprachwissenschaft). Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Höfler, Stefan. 2013. Notes on three '*acrostatic*' neuter *s*-stems. Unpublished handout. *Arbeitstagung der indogermanischen Gesellschaft* 29-31 July 2013, Leiden.

Insler, Stanley. 1965. Studien zum Awesta I. *Indogermanische Forschungen* 70. 14-24.

———. 1983. *Function and Form in the* -áya-*Formations of the Rig Veda and the Atharva Veda.* Göttingen: Vandenhoek & Ruprecht.

Jamison, Stephanie W. 2015. *Rigveda Translation: Commentary.* http://rigvedacommentary.alc.ucla.edu/?page_id=11

Jamison, Stephanie W. & Joel P. Brereton. 2014. *RV: The Rigveda. The Earliest Religious Poetry of India*, vol. I-III. Oxford & New York: Oxford University Press.

Jasanoff, Jay. 1997. Where Does Skt *bhávati* Come From? In Martin Huld, John A. C. Greppin & Dorothy Disterhelft (eds.), *Studies in Honor of Jaan Puhvel - Part One* 173-186. Institute for the Study of Man.

———. 2003. *Hittite and the Indo-European Verb.* Oxford & New York: Oxford University Press.

Johansson, Karl Ferdinand. 1888. Miscellen. *Beiträge zur kunde der indogermanischen Sprachen* 13. 111-28.

Karulis, Konstantīns. 2001. *Latviešu etimoloģijas vārdnīca.* Rīga: Avots.

Kellens, Jean. 1974. *Les noms-racines de l'Avesta* (Beiträge zur Iranistik 7). Wiesbaden: Dr. Ludwig Reichert Verlag.

Keydana, Götz. 2004. Silbenstruktur und Phonotaktik im Indogermanischen. In Maria Kozianka, Rosemarie Lühr & Susanne Zeilfelder (eds.), *Indogermanistik — Germanistik — Linguistik, Akten der Arbeitstagung der Indogermanischen Gesellschaft, Jena 18.-20.09.2002*, 163-192. Hamburg: Dr. Kovač.

Kiparsky, Paul. 1967. Sonorant Clusters in Greek. *Language* 43. 619-635.

Klingenschmitt, Gert. 1982. *Das altarmenische Verbum*. Wiesbaden: Dr. Ludwig Reichert Verlag.

Kloekhorst, Alwin. 2008. *Etymological Dictionary of the Hittite Inherited Lexicon* (Leiden Indo-European Etymological Dictionary Series 5). Leiden & Boston: Brill.

———. forthcoming. Hittite *kane/iššzi* 'to recognize' and other *s*-extended verbs.

Kluge, Friedrich. 1913. *Urgermanisch: Vorgeschichte der altgermanischen Dialekte.* Strassburg: Karl J. Trübner.

Kobayashi, Masato. 2004. *Historical Phonology of Old Indo-Aryan Consonants.* Tokyo: Fujiwara.

Kortlandt, Frederik H. H. 2003. *Armeniaca: Comparative Notes.* Ann Arbor: Caravan.

Kroonen, Guus. 2013. *Etymological Dictionary of Proto-Germanic* (Leiden Indo-European Etymological Dictionary Series 11). Leiden & Boston: Brill.

Kruopas, Jonas. 1968. *Lietuvių kalbos žodynas.* Vilnius: Mintis.

Kuiper, Franciscus Bernardus Jacobus. 1937. *Die indogermanischen Nasalpräsentia: Ein Versuch zu einer morphologischen Analyse.* Amsterdam: Noord-Hollandsche Uitgevers-Maatschappij.

Kuryłowicz, Jerzy. 1956. *L'apophonie en indo-européen*. Wroclaw: Polskiej Akademii Nauk.

Kümmel, Martin. 2000. *Das Perfect im Indoiranischen. Eine Untersuchung der Form und Funktion einer ererbten Kategorie des Verbums in den altindoiranischen Sprachen.* Wiesbaden: Dr. Ludwig Reichert Verlag.

Leumann, Manu. 1977. *Lateinische Laut- und Formenlehre.* München: C. H. Beck'sche Verlagsbuchhandlung.

Liddell, Henry George & Scott, Robert. 1961. *LSJ: A Greek-English Lexicon.* Oxford: Clarendon Press.

Litscher, Roland. 2007. Κρέας, *kravíḥ* and the original nom.-acc. sg. of the IE *s*-stem neuters. In Coulter George, Matthew McCullagh, Benedicte Nielsen et al. (eds.), *Greek and Latin from an Indo-European Perspective*, 107-120. Cambridge: Cambridge University Press.

Livingston, Ivy. 2004. *A Linguistic Commentary of Livius Andronicus.* New York & London: Routledge.

Lubotsky, Alexander. 1997. *A Ṛgvedic Word Concordance.* New Haven: American Oriental Society.

Lundquist, Jesse. 2014. Rig-Vedic *uṣar* and the Indo-European Locatival *-*er.* In Stephanie W. Jamison, H. Craig Melchert & Brent Vine (eds.), *Proceedings of the 24th Annual UCLA Indo-European Conference* 24. 87-103.

Mailhammer, Robert. 2007. *The Germanic Strong Verbs: Foundations and Development of a New System.* Berlin & New York: De Gruyter Mouton.

Mallory, James P. & Martin E. Huld. 1984. Proto-Indo-European *silver. Zeitschrift für vergleichende Sprachforschung* 97-1. 1-12.

Malzahn, Melanie. 2010. *The Tocharian Verbal System* (Brill's Studies in Indo-European Languages & Linguistics 3). Leiden & Boston: Brill.

Martirosyan, Hrach K. 2010. *Etymological Dictionary of the Armenian Inherited Lexicon* (Leiden Indo-European Etymological Dictionary Series 8). Leiden & Boston: Brill.

Matasović, Ranko. 2009. *Etymological Dictionary of Proto-Celtic* (Leiden Indo-European Etymological Dictionary Series 9). Leiden & Boston: Brill.

Mayrhofer, Manfred. 1985-2001. *EWAia I-III: Etymologisches Wörterbuch des Altindoiranischen.* Heidelberg: Carl Winter Universitätsverlag.

Mažiulis, Vytautas. 1988. *Prūsų kalbos etimologijos žodynas.* Vilnius: Mokslas.

McCone, Kim. 1991. OIr. *-ic* 'reaches', *ithid* 'eats', *rigid* 'stretches' and the PIE 'Narten' present in Celtic. *Ériu* 42. 1-11.

———. 2003. Old Irish *na nní*: a case of quid pro quo? *Celtica* 24. 168–181.

Meier-Brügger, Michael. 2003. *Indo-European Linguistics.* Berlin & New York: De Gruyter Mouton.

Meillet, Antoinne. 1894. Notes arméniennes. *Mémoires de la Société de Linguistique de Paris*. 8. 153-165.

Meiser, Gerhard. 2003. *Veni, Vidi, Vici: Die Vorgeschichte des lateinischen Perfektsystems.* München: C. H. Beck'sche Verlagsbuchhandlung.

Meissner, Torsten. 2006. *S-Stem Nouns and Adjectives in Greek and Proto-Indo-European: A Diachronic Study in Word Formation* (Oxford Classical Monographs). Oxford & New York: Oxford University Press.

Melchert, H. Craig. 1984. *Studies in Hittite Historical Phonology.* Göttingen: Vandenhoeck & Ruprecht.

———. 1994. *AHP: Anatolian Historical Phonology.* Amsterdam & Atlanta: Rodopi.

———. 2008. Hittite *duwān* (*parā*). In Claire Bowern, Bethwyn Evans & Luisa Miceli (eds.), *Morphology and Language History: In Honor of Harold Koch*, 201-209. Amsterdam & Philadelphia*:* John Benjamins Publishing Company.

———. 2010. Neuter Stems with Suffix *-*(e)n*- in Anatolian and Proto-Indo-European. *Die Sprache* 47 (2007/2008). 163-181.

———. 2014. Hittite *nakku*(*wa*)- '(spirits of) the dead.' In H. Craig Melchert, Elisabeth Rieken & Thomas Steer, *Munus amicitiae Norbert Oettinger a collegis et amicis dicatum*, 219-227. Ann Arbor & New York: Beech Stave Press.

Morelli, Frida. 1999. *The Phonotactics and Phonology of Obstruent Clusters in Optimality Theory.* College Park: University of Maryland dissertation.

Narten, Johanna. 1987. Ved. *śrīṇā́ti*, gr. κρείων, κρέων. *Historische Sprachforschung* 100/2. 270-296.

Neri, Sergio. 2011. *Wetter. Etymologie und Lautgesetz.* Jena: Friedrich-Schiller-Universität Jena dissertation.

Neumann, Günter. 1976. Zur Etymologie von lateinisch *augur. Würzburger Jahrbuch für die Altertumswissenschaft* 2. 219-230.

Nikolaev, Alexander.

Nikolaev, Alexander. 2008. Gedanken über ein neues Buch. Review of P. Widmer, *Das Korn des weiten Feldes. Interne Derivation, Derivationskette und Flexionsklassenhierarchie: Aspekte der nominalen Wortbildung im Urindogermanischen*. *Acta Linguistica Petropolitana* 4/1. 541-570.

———. 2009. The Germanic word for 'sword' and delocatival derivation in Proto-Indo-European. *Journal of Indo-European Studies* 37(3/4). 461-488.

Noreen, Adolf. 1894. *Abriss der urgermanischen Lautlehre.* Strassburg: Karl J. Trübner.

Nussbaum, Alan J. 1986. *Head and Horn in Indo-European.* Berlin & New York: Mouton de Gruyter.

———. 1999. Jocidus: An account of the Latin adjectives in *-idus*. In Heiner Eichner & Hans Christian Luschützky & Velizar Sadovski (eds.), *Compositiones indogermanicae in memoriam Jochem Schindler.* Prague & Vienna: Enigma Corporation.

———. 2004. A *-t-* Party: Various IE nominal stems in *-(*o*/*e*)*t*-. Unpublished handout. *Sixteenth Annual UCLA Indo-European Conference*, November 5-6, 2004.

Oettinger, Norbert. 1979. *Die Stammbildung des hethitischen Verbums.* Nürnberg: FachVerlag Hans Carl.

———. 1982. Die Dentalerweiterung von *n*-Stämme und Heteroklitika im Griechischen, Anatolischen und Altinischen. In Johann Tischler (ed.), *Serta Indogermanica. Festschrift für Günter Neumann zum 60. Geburtstag*, 233-245. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

———. 2001. Neue Gedanken über das *-nt-*Suffix. In Onofrio Carruba & Wolfgan Meid (eds.), *Anatolisch und Indogermanisch. Akten des Kolloquiums der indogermanische Gesellschaft. Pavia 22-25 September 1998*, 301-315. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Olsen, Birgit Annette. 1985. On the development of Indo-European prothetic vowels in Classical Armenian. *Revue des Études Arméniennes* 19. 5-17.

———. 2009. The conditioning of laryngeal breaking in Greek. In Rosemarie Lühr & Sabine Ziegler (eds.), *Protolanguage and prehistory. Akten der XII. Fachtagung der*

indogermanischen Gesellschaft, vom 11. bis 15. Oktober in Krakau, 384-386. Wiesbaden: Dr. Ludwig Reichert Verlag.

Orel, Vladimir E. 1998. *Albanian etymological dictionary.* Leiden & Boston: Brill.

———. 2000. *A Concise Historical Grammar of Albanian.* Leiden & Boston: Brill.

Pedersen, Holger. 1982. *Kleine Schriften zum Armenischen* (Collectanea XL). Hildesheim & New York: Georg Olms Verlag.

Peters, Martin. 1980. *Untersuchungen zur Vertretung der indogermanischen Laryngale im Griechischen.* Vienna: Österreichische Akademie der Wissenschaften.

Petit, Daniel. 2010. *Untersuchungen zu den baltischen Sprachen.* Leiden & Boston: Brill.

Pike, Moss. 2011. Latin *-tās* and Related Forms. Los Angeles: UCLA dissertation.

Pinault, Georges. 2012. Ved. *antárikṣa-* etymology and formation. *Historische Sprachforschung* 125. 264-284.

Pokorny, Julius. 1959. *IEW: Indogermanisches Etymologisches Wörterbuch*. Bern & München: Francke Verlag.

Prince, Alan & Paul Smolensky. 2004. *Optimality Theory. Constraint Interaction in Generative Phonology.* Malden, Oxford & Carlton: Blackwell.

Prósper, Blanca María. 2008. *El bronce celtibérico de Botorrita*, vol. 1, F. Rome: Fabrizio Serra Editore.

Puhvel, Jaan. 1991. *Hittite Etymological Dictionary.* Berlin & New York: Mouton de Gruyter.

Rau, Jeremy. 2007. The Derivational History of PGmc. **wethru-* 'lamb.' In Nussbaum, Alan J. (ed.), *Verba Docenti. Studies in Historical and Indo-European Linguistics Presented to Jay H. Jasanoff by Students, Colleagues, and Friends*, 281-292. Ann Arbor & New York: Beech Stave.

———. 2010. The derivational history of PIE **dḭeu̯-*/*diu̯-́* '(god of the) day-lit sky; day.' In Ronald Kim, Norbert Oettinger, Elisabeth Rieken & Michael Weiss (eds.), *Ex Anatolia Lux: Anatolian and Indo-European Studies in Honor of H. Craig Melchert on the Occasion of His Sixty-Fifth Birthday*, 307-320. Ann Arbor & New York: Beech Stave.

Rico, Christophe. 2000. L'alternance du type *θάνατος* : *θνητός*: bilan de cent vingt ans de recherches. *Indogermanische Forschungen* 105. 161-200.

Rieken, Elizabeth. 2001. Hethitisch *uitti meiani* und das urindogermanische Word für "Monat." *Historische Sprachforschung* 114. 73-79.

Ringe, Donald. 2006. *From Proto-Indo-European to Proto-Germanic.* Oxford & New York: Oxford University Press.

Ringe, Donald & Ann Taylor. 2014. *The Development of Old English.* Oxford & New York: Oxford University Press.

Rix, Helmut. 1976. *Historische Grammatik des Griechischen: Laut und Formenlehre.* Darmstadt: Wissenschaftliche Buchgesellschaft.

Rix, Helmut, Martin Kümmel, Thomas Zehnder, Reiner Lipp & Brigitte Schirmer. 2001. *LIV²: Lexikon des Indogermanischen Verben* (2nd ed.). Wiesbaden: Dr. Ludwig Reichert Verlag.

Sauge, André. 2000. *Les degrés du verbe: Sens et formation du parfait en grec ancien.* Bern: Peter Lang.

Schaffner, Stefan. 2001. *Das Vernersche Gesetz und der innerparadigmatische grammatische Wechsel des urgermanischen im Nominalbereich* (Innsbrucker Beiträge zur Sprachwissenschaft 103). Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.

Schindler, Jochem. 1970. Review of R. Anttila, *Proto-Indo-European Schwebeablaut. Kratylos* 15. 146-152.

———. 1975. Zum Ablaut der neutralen *s*-Stämme des Indogermanischen. In Helmut Rix (ed.), *Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft, Regensburg. 9. - 14. September 1973*, 259-267. Wiesbaden: Dr. Ludwig Reichert Verlag.

———. 1977. Notizen zum Sieversschen Gesetz. *Die Sprache* 23. 56–65.

———. 1979. Review of J. Kellens, *Les noms-racines de l'Avesta. Die Sprache* 25. 57–60.

Schleicher, August. 1852. *Die Formenlehre der kirchenslavischen Sprache.* Bonn: H. B. König.

Schmalstieg, William R. 1974. *An Old Prussian Grammar: The Phonology and Morphology of the Three Catechisms.* University Park & London: The Pennsylvania State University Press.

Schmitt, Rüdiger. 2009. *Die altpersichen Inschriften der Achaimeniden.* Wiesbaden: Dr. Ludwig Reichert Verlag.

Schmitt-Brandt, Robert. 1967. *Die Entwicklung des indogermanischen Vokalsystems.* Heidelberg: Julious Groos Verlag.

Schrijver, Peter. 1991. *The Reflexes of the Proto-Indo-European Laryngeals in Latin.* Amsterdam & Atlanta: Rodopi.

———. 1993. On the development of vowels before tautosyllabic nasals in Primitive Irish. *Ériu* 44. 33-52.

———. 1995. *Studies in British Celtic Historical Phonology.* Amsterdam & Atlanta: Rodopi

Schumacher, Stefan. 2000. *The Historical Morphology of the Welsh Verbal Noun.* Maynooth: National University of Ireland.

———. 2004. *Die keltischen Primärverben: Ein vergleichendes, etymologisches und morphologisches Lexikon.* Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Seiler, Hans Jakob. 1950. *Die primären griechische Steigerungsformen.* Hamburg: Hansischer Gildenverlag, Joachim Heitmann & Co.

Shared, Shaul. 1994. Two Parthian Ostraca from Nippur. *Bulletin of the School of Oriental and African Studies* 57-1. 208-212.

Sievers, Eduard. 1878. Zur Accent- und Lautlehre der germanischen Sprachen. *Beiträge zur Geschichte der deutschen Sprache und Literatur* 5. 63-163.

Sihler, Andrew L. 1995. *New Comparative Grammar of Greek and Latin.* Oxford & New York: Oxford University Press.

Skardžius, Pranas. 1943. *Lietuvių kalbos žodžių daryba.* Vilnius: Lietuvos mokslų akademija.

Steer, Thomas. 2013. Uridg. **$d^h(e)\hat{g}^hōm$* ‘Erde’ und **$\hat{g}^h(e)iōm$* ‘Winter.’ Eine kurze Revision der Stammbildung. *Indogermanische Forschungen* 118. 54-92.

———. 2015. *Amphikinese und Amphigenese: Morphologische und phonologische Untersuchungen zur Genese amphikinetischer Sekundärbildungen und zur internen Derivation im Indogermanischen.* Wiesbaden: Dr. Ludwig Reichert Verlag.

Steriade, Donca. 1982. *Greek Prosodies and the Nature of Syllabification.* Cambridge: Massachusetts Institute of Technology dissertation.

Strunk, Klaus. 1969. Verkannte Spuren eines weiteren Tiefstufentyps im Griechischen. *Glotta* 47. 1-8.

Stüber, Karin. 2002. *Die primären s-Stämme des Indogermanischen.* Wiesbaden: Dr. Ludwig Reichert Verlag.

Szemerényi, Oswald. 1957. Latin *rēs* and the Indoeuropean Long-Diphthong Stem Nouns. *Zeitschrift für vergleichende Sprachforschung* 73. 167-202.

———. 1959. Latin *hībernus* and Greek *χειμερινός*: The formation of time-adjectives in the classical languages. *Glotta* 38. 107-125.

———. 1996. *Introduction to Indo-European Linguistics.* Oxford: Clarendon Press.

Thurneysen, Rudolf & Daniel A. Binchy. 1949. *A Grammar of Old Irish.* Dublin: Dublin Institute for Advanced Studies.

Tremblay, Xavier. 1996. Un nouveau type apophonique des noms athématiques suffixaux de l'indo-européen. *Bulletin de la Société de linguistique de Paris* 91. 97-145.

———. 1997. Etudes sur le verb vieil-irlandais: les parfaits à longue en celtique et germanique (suite en fin). *Études celtiques* 33. 109-142.

———. 1998. Sur parsui du *Farhang-i-ōim*, *ratu-*, *pərətu-* et quelques autres themes avestiques en *-u. Studia Iranica* 27/2. 188-203.

———. 1982. *Indo-European Verbal Formations in* *-d-. Cambridge: Harvard University dissertation.

Vine, Brent. 1993. Greek *-ίσκω* and Indo-European "*-isḱe/o-." *Historische Sprachforschung* 106. 49-60.

———. 1998. The Etymology of Greek κώμη and Related Problems. In Jay Jasanoff, H. Craig Melchert and L. Oliver (eds.). *Mír Curad: Studies in Honor of Calvert Watkins* (Innsbrucker Beiträge zur Sprachwissenschaft 92), 685-702. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

———. 1999. On ‘Cowgill’s Law’ in Greek. In Heiner Eichner, Hans Christian Luschützky & Velizar Sadovski (eds.), *Compositiones indogermanicae in memoriam Jochem Schindler.* Prague & Vienna: Enigma Corporation.

———. 2006. On ‘Thurneysen-Havet’s law in Latin and Italic. *Historische Sprachforschung* 119. 211-249.

———. 2007. Latin *gemō* ‘groan,’ Greek γέγωνα ‘cry out,’ and Tocharian A *ken-* ‘call.’ In Nussbaum, Alan J. (ed.), *Verba Docenti.* Ann Arbor: Beech Stave Press.

———. 2009. A Yearly Problem. In Kazuhiko Yoshida & Brent Vine (eds.), *East and West. Papers in Indo-European Studies*, 205-224. Bremen: Ute Hempen Verlag.

Walde, Alois. 1954. *Lateinisches etymologisches Wörterbuch.* Heidelberg: Carl Winter Universitätsverlag.

Watkins, Calvert. 1973. Etyma Enniana. *Harvard Studies in Classical Philology* 74. 55-65.

Weiss, Michael. 2015. *Outline of the Historical and Comparative Grammar of Latin.* Ann Arbor & New York: Beech Stave Press.

———. forthcoming. Observations on the Prehistory of Lat. *augur*. *Acts of the Milan Convegno in memoriam Helmut Rix.*

Widmer, Paul. 2004. *Das Korn des weiten Feldes.* Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Willi, Andreas. 2007. Demeter, Gê, and the Indo-European word(s) for ‘earth.’ *Historische Sprachforschung* 120. 169-194.

Whitney, Dwight William. 1885. *The Roots, Verb-forms, and Primary Derivatives of the Sanskrit Language. A Supplement to his Sanskrit Grammar.* Breitkopf and Härtel: Leipzig.

———. 1894. *A Sanskrit Grammar.* Cambridge: Harvard University Press.

Wodko, Dagmar S., Britta Irslinger & Carolin Schneider. 2008. *NIL: Nomina im Indogermanischen Lexikon.* Heidelberg: Carl Winter Universitätsverlag.